Massachusetts Department of Environmental Protection **BWSC-105**

Bureau of Waste Site Cleanup

Wells G & H

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

119 282315

Release Tracking Number: 3 - 0471

A. RELEASE OR THREAT OF RELEASE LOCATION:

Release Name: (optional) Olin Wilmington

Street: 51 Eames Street Location Aid:

City/Town: Wilmington ZIP Code: 01887

☐ Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.

☐ Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114.

Specify Program: ☐ CERCLA ☐ HSWA Corrective Action ☐ Solid Waste Management ☐ RCRA State Program (21C Facilities)

Related Release Tracking Numbers That This IRA Addresses

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

☒ Submit an **IRA Plan** (complete Sections A, B, C, D, E, H, I, J and K).

☐ Check here if this IRA Plan is an update or modification of a previously approved written IRA Plan. Date Submitted:

☒ Submit an **Imminent Hazard Evaluation** (complete Sections A, B, C, F, H, I, J and K).

☐ Submit an **IRA Status Report** (complete Sections A, B, C, E, H, I, J and K).

☐ Submit a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** (complete Sections A, B, C, D, E, H, I, J and K).

☐ Submit an **IRA Completion Statement** (complete Sections A, B, C, D, E, G, H, I, J and K).

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.

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT IRA:

Identify Media and Receptors Affected: (check all that apply) ☐ Air ☐ Groundwater ☒ Surface Water ☐ Sediments ☐ Soil

☒ Wetland ☐ Storm Drain ☐ Paved Surface ☐ Private Well ☐ Public Water Supply ☐ Zone 2 ☐ Residence

☐ School ☐ Unknown ☐ Other Specify:

Identify Conditions That Require IRA, Pursuant to 310 CMR 40.0412: (check all that apply) ☐ 2 Hour Reporting Condition(s)

☐ 72 Hour Reporting Condition(s) ☒ Substantial Release Migration ☒ Other Condition(s)

Describe: Surface water management incident, October 5, 2000, during construction related RAM.

Identify Oils and Hazardous Materials Released: (check all that apply) ☐ Oils ☐ Chlorinated Solvents ☒ Heavy Metals

☒ Others Specify: chromium floc, low pH groundwater

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☐ Assessment and/or Monitoring Only

☐ Excavation of Contaminated Soils

☐ Re-use, Recycling or Treatment

○ On Site ○ Off Site Est. Vol.: _____ cubic yards

Describe:

☐ Store ○ On Site ○ Off Site Est. Vol.: _____ cubic yards

☐ Landfill ○ Cover ○ Disposal Est. Vol.: _____ cubic yards

☐ Removal of Drums, Tanks or Containers

Describe:

☐ Deployment of Absorbent or Containment Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

☒ Groundwater Treatment Systems

☐ Air Sparging

☐ Temporary Water Supplies

SECTION D IS CONTINUED ON THE NEXT PAGE.

SDMS DocID 282315

Massachusetts Department of Environmental Protection **BWSC-105**
Bureau of Waste Site Cleanup

Release Tracking Number

IMMEDIATE RESPONSE ACTION (IRA)
TRANSMITTAL FORM Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D) 3 - 0471

D. DESCRIPTION OF RESPONSE ACTIONS (continued):

☐ Removal of Other Contaminated Media

Specify Type and Volume: _____

☐ Temporary Evacuation or Relocation of Residents

☐ Fencing and Sign Posting

☒ Other Response Actions Describe: monitoring, containment and treatment of ground and surface water.

☐ Check here if this IRA involves the use of Innovative Technologies (DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse).

Describe Technologies: _____

E. TRANSPORT OF REMEDIATION WASTE: (if Remediation Waste has been sent to an off-site facility, answer the following questions)

Name of Facility: _____

Town and State: _____

Quantity of Remediation Waste Transported to Date: _____

F. IMMINENT HAZARD EVALUATION SUMMARY: (check one of the following)

☐ Based upon an evaluation, an Imminent Hazard exists in connection with this Release or Threat of Release.

☒ Based upon an evaluation, an Imminent Hazard does not exist in connection with this Release or Threat of Release. (see attached letter, Appendix C)

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

G. IRA COMPLETION STATEMENT:

☐ Check here if future response actions addressing this Release or Threat of Release will be conducted as part of the Response Actions planned for a Site that has already been Tier Classified under a different Release Tracking Number, or a Site that is identified on the Transition List as described in 310 CMR 40.0600 (i. e., a Transition Site, which includes Sites with approved Waivers). These additional response actions must occur according to the deadlines applicable to the earlier Release Tracking Number (i. e., Site ID Number).

State Release Tracking Number (i. e., Site ID Number) of Tier Classified Site or Transition Site: _____

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the IRA Completion Statement, you must submit either a Release Abatement Measure (RAM) Plan or a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the IRA Completion Statement.

H. 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 an **Immediate Response Action Plan** is being submitted*, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed 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;

> *if Section B of this form indicates that an **Imminent Hazard Evaluation** is being submitted*, this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation complies(y) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> *if Section B of this form indicates that an **Immediate Response Status Report** 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;

> *if Section B of this form indicates that an **Immediate Response Action Completion Statement** or a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** 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 H IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-105

Release Tracking Number: 3 - 0471

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM
Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

H. LSP Opinion (continued):

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: M. Margret Hanley LSP #: 8494 Stamp:

Telephone: 781-721-4022 Ext.:

FAX: (optional) 781-721-4073

Signature: M Margret Hanley

Date: December 22, 2000

I. PERSON UNDERTAKING IRA:

Name of Organization: Olin Corporation

Name of Contact: Steve Morrow, P.E. Title: Principal Environmental Engineer

Street: 1186 Lower River Road

City/Town: Charleston State: TN ZIP Code: 37310-0248

Telephone: 423-336-4511 Ext.: FAX: (optional)

☐ Check here if there has been a change in the person undertaking the IRA.

J. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA: (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 Undertaking IRA Specify Relationship:

K. CERTIFICATION OF PERSON UNDERTAKING IRA:

I, STEVE MORROW, 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: Steve Morrow (signature) Title: PRINCIPAL ENVIRONMENTAL SPECIALIST

For: STEVE MORROW (print name of person or entity recorded in Section I) Date: December 21, 2000

Enter address of the person providing certification, if different from address recorded in Section I:

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.

GEI Consultants, Inc.

December 22, 2000
Project 97598

1021 Main Street
Winchester, MA 01890-1970
781•721•4000
781•721•4073 Fax

Mr. Christopher Pyott
Environmental Analyst
Department of Environmental Protection
Northeast Regional Office
Bureau of Waste Site Cleanup
205A Lowell Street
Wilmington, MA 01887

Dear Mr. Pyott:

Re: IRA Assessment and Plan
South Ditch/Former Weir
Olin Corporation Property
51 Eames Street
Wilmington, MA
RTN 3-0471

The purpose of this submittal is to present the results of an Immediate Response Action (IRA) Assessment of conditions in the South Ditch and Former Weir area following an incident that occurred at the Olin Corporation (Olin) Property (the Property) on October 5 2000, and Olin's plan for further response actions in the vicinity of the South Ditch. As a result of the October 5, 2000, incident, MADEP determined that an IRA condition existed or potentially existed at the Property, and that additional assessment and abatement measures should be performed to address the condition. An IRA Transmittal Form (BWSC –103) is attached.

Please note that the statutory deadline for submission of this Plan was December 4, 2000. This deadline was extended with your verbal permission on December 8, 2000.

1. Contact Information

Responsibility for IRA
Steve Morrow, P.E.
Olin Corporation
1186 Lower River Road
Charleston, TN 37310
(423) 336-4511

Licensed Site Professional
M. Margret Hanley, LSP No. 8494
Sleeman, Hanley, and DiNitto
c/o GEI Consultants, Inc.
1021 Main Street
Winchester, MA 01890
(781) 721-4000

2. Background

A Construction Related Release Abatement Measure (RAM) to remove contaminated sediments from portions of the On-Property Ditch System and to construct a subsurface containment wall around Dense Aqueous Phase Liquid (DAPL) and significantly contaminated groundwater was initiated in August 2000. The Construction related RAM was conditionally approved by MADEP on June 26, 2000. A Plan showing the location of the remedial activities that were performed as part of the RAM is presented in Figure 1.

One aspect of the RAM was the installation of a box culvert, to replace the former Weir, just downstream of the confluence of the On-Property West Ditch and the South Ditch. The purpose of the box culvert is to control the elevation of surface water, and to create conditions that will permit the precipitation of chromium and iron floc from surface water in the area. The location of the box culvert is indicated on Figure 1. The base on the box culvert is several feet below the base elevation of the streambed of the South Ditch. To facilitate the installation of the box culvert, the site contractor diverted surface water from upstream of the box culvert to a sedimentation tank, which was then discharged to the "Delta Area" in the South Ditch, downstream of the work area. The pump that was used to divert surface water flow was inadvertently permitted to operate over night from a sump located at the base of the box culvert. This pumping resulted in a dewatering of the sump, and the eventual capture of shallow groundwater, which was discharged, untreated to the South Ditch. On the following morning, pumped groundwater in the sedimentation tank was observed to have a pH of about 4.6. Additionally, the release of low pH groundwater to the South Ditch resulted in the formation of white floc in the Delta Area, and elevated total and dissolved chromium concentrations in surface water leaving the Property.

MADEP was notified of the incident on October 5, 2000, within 2 hours of GEI's identification and initial assessment of the conditions in the South Ditch. A detailed summary of the incident, and subsequent response actions taken to abate the conditions that resulted from the incident is presented in my memorandum to Steve Morrow P.E. of Olin dated October 26, 2000, a copy of which is attached to this letter report as Appendix A.

GEI concluded that the inadvertent pumping of untreated groundwater in the vicinity of the box culvert, and the resulting increase in total chromium concentrations in surface water leaving the Property resulted in a violation of the terms of a National Pollution Discharge and Elimination System (NPDES) Permit Exclusion that was issued to Olin by the United States Environmental Protection Agency (USEPA) for the construction work at the Property in August 2000. Accordingly, USEPA was notified verbally on October 18, 2000, of the incident. A letter report summarizing the NPDES Permit Exclusion exceedance and the subsequent abatement measures taken on behalf of Olin, was submitted to USEPA on October 26, 2000

Based on a preliminary assessment of the incident on the afternoon of October 5, MADEP determined that conditions at the site met the criteria for an IRA condition, and requested that an IRA Assessment be performed.

3. Description of IRA Assessment Activities

As noted above, a detailed summary of the October 5 incident, surface water testing performed at the Property to evaluate the incident, and other mitigation measures are presented in Appendix A of this letter report. IRA Assessment Activities conducted after October 5 is summarized below.

3.1 Surface Water Monitoring.

In addition to the surface water monitoring described in Appendix A, GEI performed daily surface water monitoring at the downstream hay-bale check dam location NP-1, as shown on Figure 1. Surface water samples were tested for total chromium, dissolved chromium, pH, and ammonia, as well as other selected NPDES Permit Exclusion parameters. A summary of the surface water data collected at NP-1 is presented in Table. 1.

3.2. Evaluation of the Conditions in the Vicinity of the Box Culvert

Following the October 5 incident, MADEP expressed a concern that the discharge of low pH groundwater during a limited period of shallow groundwater pumping in the vicinity of the box culvert suggested that the conditions at the site might differ than were previously reported. To address MADEP's concern, Geomega, conducted a reassessment of the hydrologic and geochemical conditions in the vicinity of the box culvert. Geomega's analysis is presented in the document entitled The South Ditch Vault Interim Remedial Action dated December 18, 2000. A copy of this document is attached as Appendix B.

Geomega concludes that the conditions that resulted from the October 5 incident are consistent with existing data and our current understanding of the Site. Dewatering at the box culvert excavation increased the capture zone of the ditch system resulting in an increase in the flow of near-DAPL diffuse layer to that region of the Property.

It should be noted that GEI's field plan called for the treatment of all pumped or managed groundwater prior to discharge to the South Ditch. Treatment was to include filtering and pH adjustment if determined to be necessary, in anticipation that groundwater pumping could capture diffuse layer that exhibits low pH and elevated metals. The overnight pumping of groundwater at the box culvert was unintentional, and therefore these measures were not implemented.

Surface water data collected at the property indicates that pH and dissolved chromium concentrations returned to values observed prior to the October 5 incident. Transient increases in total chromium in surface water before and after the October 5th incident appears to be related to the disturbance of flocduring the excavation of sediments. Concentrations of total chromium in surface water following the completion of sediment excavation are similar to levels observed prior to construction.

Ammonia concentrations in surface water in the South Ditch during and following sediment removal are slightly above the concentrations observed prior to construction. The increase in values do not appear to be related to the October 5 incident, and may reflect the change in the elevation of the base of the South Ditch since they have not been back filled to original grade elevations, and the amount of groundwater that is discharging to the ditch system. Since pre-construction data is limited, additional monitoring is required to determine if the increase in the

range of ammonia concentrations is related to the RAM activities which are not completed, or to seasonal fluxuations in run-off and groundwater discharge.

3.3. Imminent Hazard Evaluation

On behalf of Olin, Harding ESE conducted an Imminent Hazard (IH) evaluation for ammonia and chromium in Surface Water at the Olin Property and the East Ditch, based on surface water samples collected at the Property during the Fall of 2000. Harding ESE's IH Evaluation is presented in Appendix C of this letter report. Harding ESE concludes that an IH does not exist in the South Ditch or the East ditch as a result of the concentrations of chromium or ammonia observed during the Construction related RAM.

4. IRA Plan

Based on the results of the IRA Assessments performed at the Olin Property since the October 5 incident, it is GEI's opinion that conditions that occurred during the incident, and which were observed following the incident do not pose an imminent hazard as defined in the MCP. As previously reported, the presence of chromium floc and ammonia in the ditch system does constitute a Substantial Release Migration (SRM) Condition(310 CMR 40.0950). A SRM Condition was reported and addressed in the IRA Completion Statement for the South Ditch/Weir Area dated September 21, 1998.

In order to further document conditions in the South Ditch / Former Weir Area, and to support an evaluation as to the need for continuing IRA measures at the Property, Olin proposes to perform additional weekly surface water monitoring in the South and East Ditch for the period of January through April 2001. These additional monitoring activities are described as Future Measures in Appendix B.

5. Reporting

The results of the additional monitoring activities will be submitted to MADEP in IRA Status Report No. 1 for the South Ditch in April, 2001.

If you have any questions regarding the information presented in this letter report, please call Steve Morrow at Olin (423-336-4511).

Very truly yours,

GEI CONSULTANTS, INC.

M. Margret Hanley, LSP
LSP of Record

MMH:cc
c: Tom Kahl, P.E., GEI
Steve Morrow, P.E., Olin
Attachments
M:\PROJECT\1997\97598\South Ditch-Former Weir Area IRA Plan sgmcomments.doc

Table 1
South Ditch Surface Water Sample Data
Olin Corporation Property
51 Eames Street, Wilmington, MA

Parameter	Method	Units	1150-SD-SWB1 10/24/00	1150-SD-SWB2 10/25/00	1150-SD-SWC1 10/26/00	1150-SD-SWC2 10/27/00	1150-SD-SWC3 10/30/00	1150-SD-SWC4 10/31/00	1150-SD-SWC5 11/1/00	1150-SD-SWC6 11/2/00	1150-SD-SWC7 11/3/00	1150-SD-SWC8 11/4/00	1150-SD-SWC9 11/6/00	1150-SD-SWC10 11/7/00	1150-SD-SWC11 11/8/00	1150-SD-SWC12 11/9/00	1150-SD-SWC13 11/10/00	1150-SD-SWC14 11/12/00	1150-SD-SWC15 11/13/00	1150-SD-SWC16 11/14/00	1150-SD-SWC17 11/15/00	1150-SD-SWC18 11/16/00	1150-SD-SWC19 11/17/00	1150-SD-SWC20 11/18/00
VOCs	8260B	ug/L																						
BTEX + MTBE																								
TPH (DRO)	8015M	mg/L																						
PAHs by HPLC	8310	ug/L																						
Flouranthene			< 1	< 0.2	< 0.2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Semivolatile Organics [4]	8270C	ug/L																						
Ammonia Nitrogen as N	LAC107061A	mg/L	120	160	170	100	150	97 F	50 F	40 F	46	60	44	38	62	78	68	18	41	72	37	50	87	110
Metals																								
Aluminum	EPA 200.7	ug/L																						
Aluminum, dissolved																								
Arsenic																								
Barium																								
Chromium, total			14	11	10	< 10	< 10	16	36	14	17	22	12	< 10	17	14	12	25	38	44	110	100	84	63
Chromium, dissolved			< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	52	< 10	< 10	< 10	< 10	16	17	11	< 10
Copper																								
Iron																								
Iron, dissolved																								
Nickel																								

General Notes:

1. Only analytes detected in at least one sample are reported here. For a complete list of analytes see the lab data sheets
2. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
3. Method 1 Standards (e.g. S1/GW3) and Upper Concentration Limits (UCL), where identified, are cited from the Massachusetts Contingency Plan
4. Due to a sample login error, no semivolatile data is available prior to December 1, 200 GEI is working with STL Lab to obtain data for these samples to the extent possible
5. All samples were collected from South Ditch at sample point MP 1 (Figure 1)

Qualifying Notes:

F The result is estimated due to matrix spike recovery outside of control limits

Table 1
South Ditch Surface Water Sample Data
Olin Corporation Property
51 Eames Street, Wilmington, MA

Parameter	Method	Units	1150-SD-SWC21 11/19/00	1150-SD-SWC22 11/20/00	1150-SD-SWC23 11/21/00	1150-SD-SWC24 11/22/00	1150-SD-SWC25 11/27/00	1150-SD-SWC26 11/28/00	1150-SD-SWC27 11/29/00	1150-SD-SWC28 11/30/00	1150-SD-SWC29 12/1/00	1150-SD-SWC31 12/4/00	1150-SD-SWC32 12/5/00	1150-SD-SWC33 12/6/00	1150-SD-SWC34 12/7/00	1150-SD-SWC35 12/8/00	1150-SD-SWC36 12/9/00
VOCs	8260B	ug/L															
BTEX + MTBE																	
TPH (DRO)	8015M	mg/L															
PAHs by HPLC	8310	ug/L															
Flouranthene			< 0.2	0.25	< 0.2	< 0.2	< 1	< 1	< 1	< 1	< 1						
Semivolatile Organics [4]	8270C	ug/L									< 10	< 10	< 10	< 10	< 10	< 10	< 10
Ammonia Nitrogen as N	LAC107061A	mg/L	94	57	77	76	24	50	84	76	90	68	91	84	60	72	55
Metals																	
Aluminum	EPA 200.7	ug/L								690							
Aluminum, dissolved										< 100							
Arsenic																	
Barium																	
Chromium, total			51	30	78	40	62	80	81	54	48	43	22	130	250	83	94
Chromium, dissolved			< 10	< 10	< 10	< 10	18	< 10	< 10	< 10	< 10	< 10	< 10	16	15	< 10	10
Copper																	
Iron										2300							
Iron, dissolved										1400							
Nickel																	

General Notes:

1. Only analytes detected in at least one sample are reported here.
   For a complete list of analytes see the lab data sheets.
2. "<" = Analyte not detected at a concentration above the
   specified laboratory reporting limit.
3. Method 1 Standards (e.g. S1/GW3) and Upper Concentration Limits (UCL),
   where identified, are cited from the Massachusetts Contingency Plan
4. Due to a sample login error, no semivolatile data is available prior to December 1, 200
   GEI is working with STL Lab to obtain data for these samples to the extent possible.
5. All samples were collected from South Ditch at sample point MP-1 (Figure 1)

Qualifying Notes:

F The result is estimated due to matrix spike recovery outside of control limits

Table 1
South Ditch Surface Water Sample Data
Olin Corporation Property
51 Eames Street, Wilmington, MA

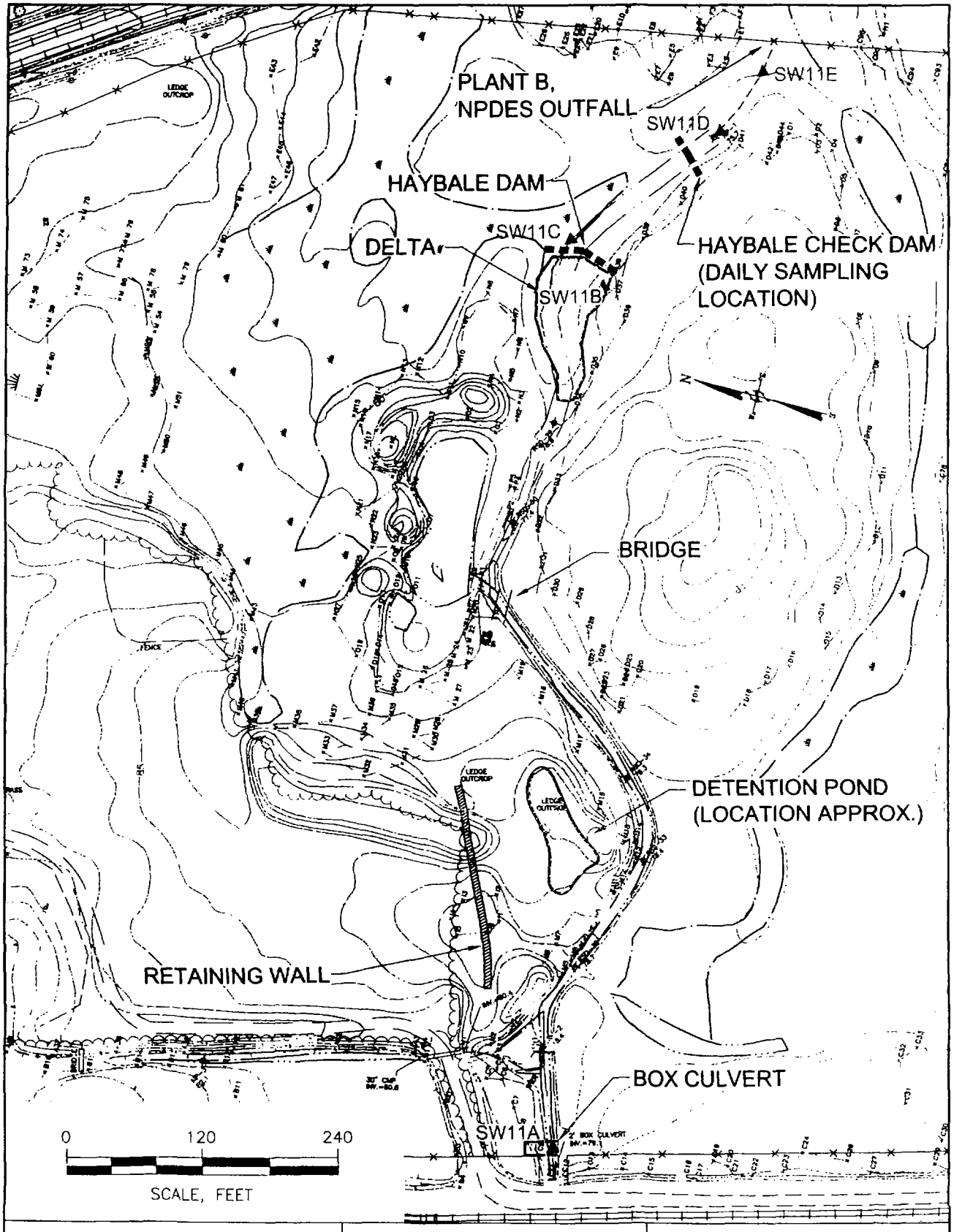
Parameter	Method	Units	1140-SD-SW1 9/20/00	1140-SD-SW2 9/21/00	1140-SD-SW3 9/22/00	1140-SD-SW4 9/23/00	1140-SD-SW5 9/25/00	1140-SD-SW6 9/26/00	1140-SD-SW7 9/27/00	1140-SD-SW8 9/28/00	1140-SD-SW9 9/29/00	1140-SD-SW10 10/2/00	1140-SD-SW11 10/4/00	1150-SD-SW11D 10/5/00	1150-SD-SWA1 10/7/00	1150-SD-SWA2 10/9/00	1150-SD-SWA3 10/10/00	1150-SD-SWA4 10/11/00	1150-SD-SWA5 10/12/00	1150-SD-SWA6 10/18/00	1150-SD-SWA7 10/19/00	1150-SD-SWA8 10/20/00	1150-SD-SWA9 10/21/00	1150-SD-SWA10 10/23/00
VOCs	8260B	ug/L																						
BTEX + MTBE														< 1										
TPH (DRO)	8015M	mg/L												< 0.1										
PAHs by HPLC	8310	ug/L																						
Flouranthene			< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 1
Semivolatile Organics [4]	8270C	ug/L																						
Ammonia Nitrogen as N	LAC107061A	mg/L	40	40	33	57	100	180	60	66	28	120	110		61	71	50	65	110	110	32	70	110	120
Metals																								
Aluminum	EPA 200.7	ug/L																						
Aluminum, dissolved																								
Arsenic														< 10										
Barium														62										
Chromium, total			49	18	13	25	1200	540	35	41	< 10	< 10	32	130	< 10	< 10	23	220	160	48	20	33	24	13
Chromium, dissolved														26	19	< 10	< 10	12	< 10	< 10	< 10	< 10	< 10	10
Copper														< 20										
Iron																								
Iron, dissolved																								
Nickel														61										

General Notes:

1. Only analytes detected in at least one sample are reported here.
   For a complete list of analytes see the lab data sheets.
2. " < " = Analyte not detected at a concentration above the specified laboratory reporting limit.
3. Method 1 Standards (e.g. S1/GW3) and Upper Concentration Limits (UCL), where identified, are cited from the Massachusetts Contingency Plan
4. Due to a sample login error, no semivolatile data is available prior to December 1, 2000
   GEI is working with STL Lab to obtain data for these samples to the extent possible.
5. All samples were collected from South Ditch at sample point MP-1 (Figure 1)

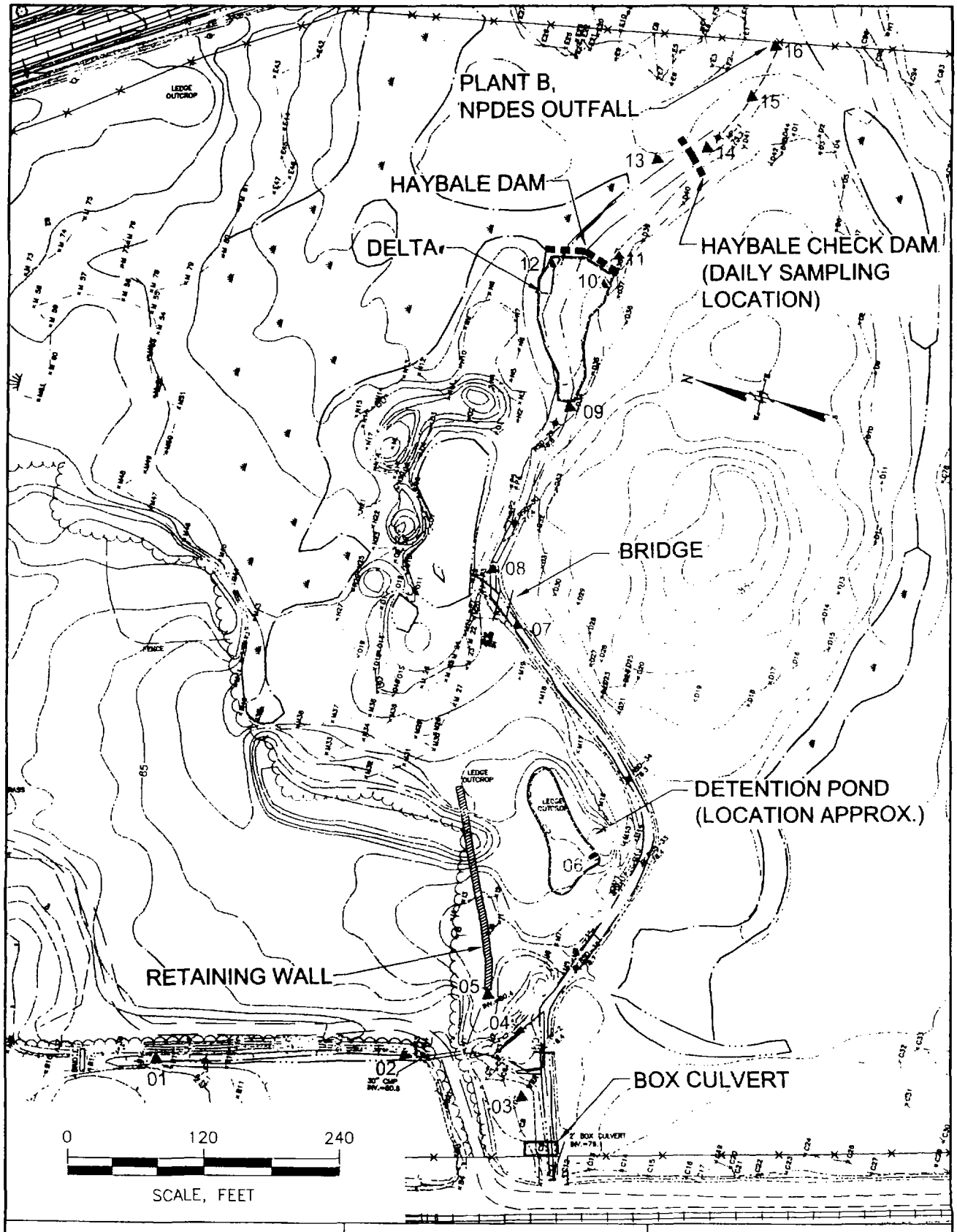
Qualifying Notes:

F The result is estimated due to matrix spike recovery outside of control limits



Olin Corporation Charleston, Tennessee	Eames Street Redevelopment 51 Eames Street Wilmington, Massachusetts	SURFACE WATER MONITORING LOCATIONS OCTOBER 5, 2000
GEI Consultants, Inc.	Project 97598-3	October 2000 Fig. 1

97598-SW-SAMP_OCT6 DJM/ptc 10/27/00



Olin Corporation Charleston, Tennessee	Eames Street Redevelopment 51 Eames Street Wilmington, Massachusetts	LOCATION OF PH MONITORING AND SURFACE WATER SAMPLES COLLECTED ON OCTOBER 6, 2000
GEI Consultants, Inc.	Project 97598-3	October 2000 Fig. 2

97598-SW-SAMP_OCT6 DJM/ptc 10/27/00

Φ

APPENDIX A

October 26, 2000, Memorandum

Memorandum

TO	Steve Morrow P.E., Olin Corporation
FROM	Margret Hanley LSP, Sleeman, Hanley & DiNitto
DATE	October 26, 2000
RE	Surface Water Management Incident Remediation Project at 51 Eames Street, Wilmington MA on October 5, 2000 Project 97598

Summary of Events

On Thursday morning, October 5, 2000, around 7:45 a.m., Larry Welch of GEI Consultants, the field engineer for the Remediation Project, was conducting an inspection of the work areas, and observed the formation of a light green floc in a temporarily dammed portion of the South Ditch referred to as "the delta".

The delta is the southeastern limit of sediment excavation in the South Ditch. In this area, the south ditch widens from about 10 feet to 50 to 75 feet, forming a triangular shaped bog area with a poorly defined stream channel. The sediments in the delta were previously excavated during the week of September 17 through the 23rd. A check dam constructed with hay bales, and oil booms was placed at the downstream limit of the delta to prevent sediments from being mobilized in surface water during and following the removal of the sediments. The hay bales impede flow to the remaining portions of the south ditch, and impound surface water within the delta. The head differential upstream between the delta and downstream portions of the south ditch is variable, but during periods of rainfall, was observed to be about 1 foot. A plan showing the location of the delta is presented as Figure 1.

Upon observing the presence of floc in the delta, Larry Welch contacted Tom Kahl of GEI, who arrived on-site around 8:00 a.m. Tom Kahl established that rerouted surface water from the upstream of the box culvert (shown on Figure 1) had been discharged overnight to a sedimentation tank that was pumped into the delta. The pH of water in the sedimentation tank was measured in the field at 4.6. The pH of the water in the delta area was measured to at 6.4. It was concluded that continuous pumping of surface water from upstream of the box culvert had drained upstream portions of the ditch system, and had captured shallow, low pH groundwater at the box culvert excavation. Low pH groundwater, when introduced to the sedimentation tank decreased the pH of water in the tank, and eventually discharged low pH water into the delta area. It was not apparent as to whether the floc formed initially in the sedimentation tank and then was discharged to the delta, or formed in the delta area, or both. The pumping of water from the sedimentation tank to the delta had ceased prior to Larry Welch's arrival to the site. It was subsequently determined that water was pumped from the box culvert excavation overnight at 10 to 50 gpm, on a periodic basis, at an elevation of approximately 72 to 75 feet NGVD. The total volume of groundwater and surface water

pumped from the box culvert excavation between the end of work of Wednesday, October 4th, and the morning of the 5th is estimated at 8,000 to 40,000 gallons.

Tom Kahl contacted Margret Hanley, LSP of Record for the Olin Site by cell phone around 9:15 a.m., and the following steps were taken immediately:

1. Water in the sedimentation tank that exhibited a pH of 4.6 was taken out of sequence, and held for further analysis.

2. Dewatering in the retaining wall excavation, which is approximately 170 feet northeast of the box culvert was pumped to a frac tank.

3. Surface water in the delta area was pumped at a rate sufficient to reverse flow in contiguous, downstream portions of the south ditch, to frac tanks. Additional frac tanks were ordered to accommodate flow for at least 24 hours. Treatment and discharge of all managed water was stopped, until it could be determined that the existing treatment system was adequate to meet NPDES discharge standards.

4. Surface water samples were collected from 5 locations in the South ditch, for all NPDES parameters, and dissolved chrome. 24-hour turn-around was requested from the laboratory. Sample locations are identified as the SW-11 series on Figure 1.

5. Chris Pyott of MADEP, Tom O'Brien and Steve Morrow of Olin were contacted by phone and email and informed of the conditions at the Property.

The following time critical issues were established during subsequent conversations with MADEP on Thursday afternoon.

- Due to the active construction sequence, it was necessary to continue the pumping of groundwater in the vicinity of the retaining wall *and* pump water from the delta area to frac tanks. These combined activities resulted in the accumulation of up to 5,000 gallons per hour of additional water that required storage in frac tanks.

- The contractor was in the process of backfilling Drum Area A, which contained several feet of water. This water needed to be pumped from the excavation and treated prior to discharge.

- It was not clear how quickly the laboratories could complete the analysis of the surface water samples, which were necessary to evaluate the adequacy of the treatment system (The samples were submitted Thursday afternoon before a holiday weekend).

- MADEP believed that shallow groundwater in the vicinity of the box culvert, with a relatively low pH was an unanticipated condition that warranted an Immediate Response Action (IRA), and requested that an IRA plan be prepared as soon as possible.

There was some discussion regarding the possible need to stop work associated with the retaining wall. After some deliberation, Chris Pyott and Valerie Thompson of MADEP agreed that dewatering required for the retaining wall construction could continue provided that all pumped water was held in frac tanks, and treated to NPDES standards prior to discharge.

Two additional 20,000-gallon frac tanks were delivered to the site on Thursday afternoon.

Tom Kahl, Chris Pyott, and Margret Hanley spoke at length on Thursday afternoon, and met at the site at 9:00 a.m. on Friday morning to review the incident, and the possible regulatory requirements stemming from the event. The following strategy was agreed upon:

1. MADEP agreed that water in the delta area should continue to be pumped to frac tanks. When and if the frac tanks were filled to capacity, water could then be pumped (through the fact tanks) to the central pond. If the central pond area were filled to capacity, MADEP would, as a last resort, permit water to be pumped to the excavation for Drum Area A. All water pumped out of the delta area would require treatment to NPDES standards prior to discharge to the South Ditch.

2. Treatment of water pumped from the delta with the existing treatment system could not begin until it was established that the treatment system was adequate to achieve the NPDES standards.

3. pH at 16 locations within the ditch system were measured and recorded. These locations are identified on Figure 2. All pH values were >6.4, suggesting a condition that would be inconsistent with dissolved Chromium.

4. Six additional surface water samples were collected in the delta area, and downstream for pH, and total, and dissolved chromium to determine if conditions had changed since the initial samples were collected on Thursday morning. Sample locations are identified on Figure 2.

5. Water in Drum Excavation A could be pumped through the treatment system, and discharged to the South Ditch, downstream of the delta.

One additional 20,000-gallon frac tank was delivered to the site on Friday afternoon.

On Friday evening, the results of the surface water samples collected on Thursday morning were reported verbally by the laboratory (Table 1). These data indicated that although the pH of the water was neutral (about 6-7pH), total and dissolved chrome was elevated in the delta, and at downstream locations. Total chromium in surface water at the eastern (downstream) property boundary was 130 parts per million (ppm), just slightly above the NPDES standard of 100 ppm.

On Saturday morning, the remaining frac tanks were at capacity, and were permitted to overflow into Central Pond. Tom Kahl directed Sevenson to form a temporary dam in the South Ditch, upstream of the delta, to prevent unimpacted surface water from flowing into the delta. This action resulted in the delta being pumped almost dry, and significantly reduced the amount of water that would ultimately be pumped from the delta to Central Pond over the weekend. It was therefore unnecessary to pump water to Drum Area A.

On Saturday, standing water from Drum Area A was pumped to the treatment system, and discharged to the south ditch, downstream of the Delta, in accordance with the NPDES permit. Drum Area A was backfilled with soil on Saturday afternoon, Sunday, and Monday.

On Tuesday, October 10, 2000, laboratory results for the surface water samples that were collected on Friday, October 6th were received and validated at GEI (Table 2). These data indicated that all surface water samples exhibited total chromium well below the NPDES standard of 100 ug/l. Dissolved chromium was reported as non-detect in all samples. These data indicate that dissolved chrome detected on Thursday morning had fully precipitated as a result of the elevated pH. Based on these results, it was Margret Hanley's opinion that water that was pumped from the delta to the

Central Pond could be adequately treated with the on-site treatment system (which includes filtration), and discharged to the South Ditch.

A thin layer of floc, estimated to have a volume of less than 2 cubic yards, was observed at the bottom of the delta, after the water was pumped to Central Pond. Sandy soil from Drum Area A, that had been tested and determined suitable for re-use on site, was used to stabilize the floc in place. The floc and sandy soil was dredged from the bottom of the delta with a backhoe on Wednesday, October 11, 2000. The total volume of floc and sandy soil re-excavated from the delta area, and portions of the south ditch, was about 50 yards. The material was staged on the storage pad, and will be tested to determine if the material requires off-Property disposal.

Following the removal of the floc, confirmatory samples were collected in the delta, in accordance with the RAM Plan.

Following the removal of the floc, and the collection of confirmatory samples, the pumps in the delta were removed, and water was permitted to accumulate in delta, behind the hay bail check dam. Check dams that were placed upstream and downstream of the delta were left in place.

Limestone was added to the low pH water in the retained settling tank in an effort to raise the pH and force the precipitation of the chromium. Once the pH of the water is greater that 6.5, the water will be tested for total and dissolved chromium. If dissolved chromium is reported as non-detect, the water will be treated on site to achieve the NPDES discharge standards, prior to discharge to the South Ditch. If the water in the settling tank are determined to exhibit dissolved chromium, further treatment or off-site disposal will be arranged.

Evaluation of NPDES Compliance

During the course of the remediation project, all pumped groundwater, and water that has accumulated in excavations has been treated prior to discharge in accordance with an NPDES exclusion issued by USEPA. Surface water that was rerouted around work areas was pumped to a settling tank, prior to discharge to the South Ditch. In addition, during any activities in the ditch system that could mobilize sediments in surface water, surface water samples have been collected daily at the downstream, eastern property boundary and tested for the NPDES exclusion parameters. A summary of all routine NPDES exclusion and downstream surface water samples collected at the Site is presented in Table 3.

Based on Margret Hanley's conversation with Desiree Moyer on September of USEPA on September 7, 2000, it is Olin's understanding that rerouted water does not require treatment beyond the use of a settling or frac tank to remove suspended solids. However, because the event described above appears to have resulted from the unintentional pumping of groundwater, which was discharged without treatment, the exceedance of the NPDES standard for Total Chromium at the property boundary, as measured on Thursday, October 5, 2000 constitutes an NPDES exceedance, that must be reported to MADEP and USEPA.

Testing data indicates that all treated water discharged to the South Ditch has been in compliance with the NPDES exclusion criteria with the exception of one sample on September 29th that had slightly elevated concentrations of nickel. The source of the nickel is unknown. Nickel is not a site contaminant. Influent samples colleted on the same day indicated nickel was present in pretreated water at levels below the NPDES criteria. Review of the surface water testing data collected at Site indicates that levels of total chromium detected downstream of the work areas have exceeded 100 ug/l, which is the NPDES exclusion criteria, on three occasions prior to the October 5 event described above. Based on a review of daily field reports prepared by GEI, these occasions are

coincident with the pump-down of Central pond, prior to sediment removal. Two of these occasions were also coincident with blasting in the vicinity of the proposed detention pond, near the south ditch. Since stream flow in the South Ditch during blasting was observed to be very low or non-existent, it is GEI's opinion that the elevated levels of total chromium are likely associated with suspended solids mobilized during the draining of Central Pond. Water from Central Pond was pumped to two, in-series settling tanks, prior to discharge to the South Ditch.

Previous surface water quality data collected in the ditch system indicates that under normal flow conditions in the on-property ditch system, total chromium in surface water is below 100 ug/l. Elevated total chromium has been observed in surface water at the site when turbid conditions are simulated.[1] The presence of elevated total chromium in downstream surface water samples indicate that despite the treatment of pumped groundwater to NPDES exclusion criteria, and the absence of visually apparent turbidity, remediation activities likely contributed to the suspension of floc in re-routed surface water, that was not sufficiently eliminated in the settling tanks. It is our preliminary opinion that the elevated levels of total chromium in the downstream surface water samples on three occasions do not constitute a violation of the terms of the NPDES exclusion per se, but should nevertheless be reported to MADEP and USEPA in the monthly NPDES report.

On Wednesday, October 11th, Margret Hanley contacted Chris Pyott of MADEP to inform him of the exceedance of the NPDES exclusion criteria for treated groundwater, and of the elevated levels of total chromium in the downstream surface water samples collected prior to October 5th. Ms. Hanley also called Desiree Moyer at USEPA to confirm that the NPDES treatment criteria do not apply to rerouted surface water. Ms Moyer, who was away from her office at the time, returned the call on Wednesday, October 18th, and confirmed that the rerouted water was not subject to the NPDES exclusion criteria. Ms Moyer expressed an interest in visiting the Site in the future to observe the remedial construction.

The Wilmington Conservation Commission (WCC) was informed of the incident in Wetland Preservation Inc.'s status report for the project, dated Friday, October 20, 2000.

Future Mitigation Measures

The event described above occurred at the completion of remedial activities that are anticipated to require rerouting of surface water, and dewatering of excavations. However, the following measures have been instituted or will be continued in order to monitor and control the impact of construction activities on surface water quality at the Property:

1. Check dams that were placed upstream of the delta will be left in place for the duration of construction. The check dams slow flow through the south ditch, permitting suspended solids to settle, and create detention areas for observing and monitoring water quality.

2. Surface water samples at the downstream property boundary will continue to be collected daily for total and dissolved chromium. Samples will be analyzed on a 72-hour turnaround. These samples will be collected downstream of the work area.

3. To the extent possible, <u>all</u> surface water that is disturbed as a result of remedial activities, including rerouted surface water, will be pumped to frac tanks, and then treated to achieve NPDES standards prior to discharge to the South Ditch.

---

[1] See surface water data from pre-construction sampling event, presented in GEI's letter to USEPA requesting an NPDES exclusion, dated August 16, 2000.

Remaining IRA Requirements

MADEP has indicated that the pumping of apparently low pH groundwater in the vicinity of the box culvert excavation constitutes an unanticipated condition, and has requested that an IRA investigation be performed. A primary initial concern of MADEP will be the potential that groundwater conditions in this area could be affected or exacerbated by the pending construction of the slurry wall. MADEP is also concerned that significant concentrations in this area indicate unmapped DAPL, and/or more concentrated diffuse layer than previously reported.

Chris Pyott of MADEP has agreed that the IRA assessment may be performed under the existing Weir-South Ditch IRA if still open at MADEP, or as a new IRA. He has asked that an IRA Plan be submitted to the Department as soon as possible. The plan should include the narrative of events presented above, as well as a detailed scope of work. This work is expected to be performed within 120 days of notification of an IRA condition, in accordance with the MCP.

MMH:lek

c: T. Kahl, GEI
J. Kelley, Wilmington Cons. Comm.
T. May, Sevenson
D. Moyer, USEPA
C. Pyott, MADEP
C. Young, WPI

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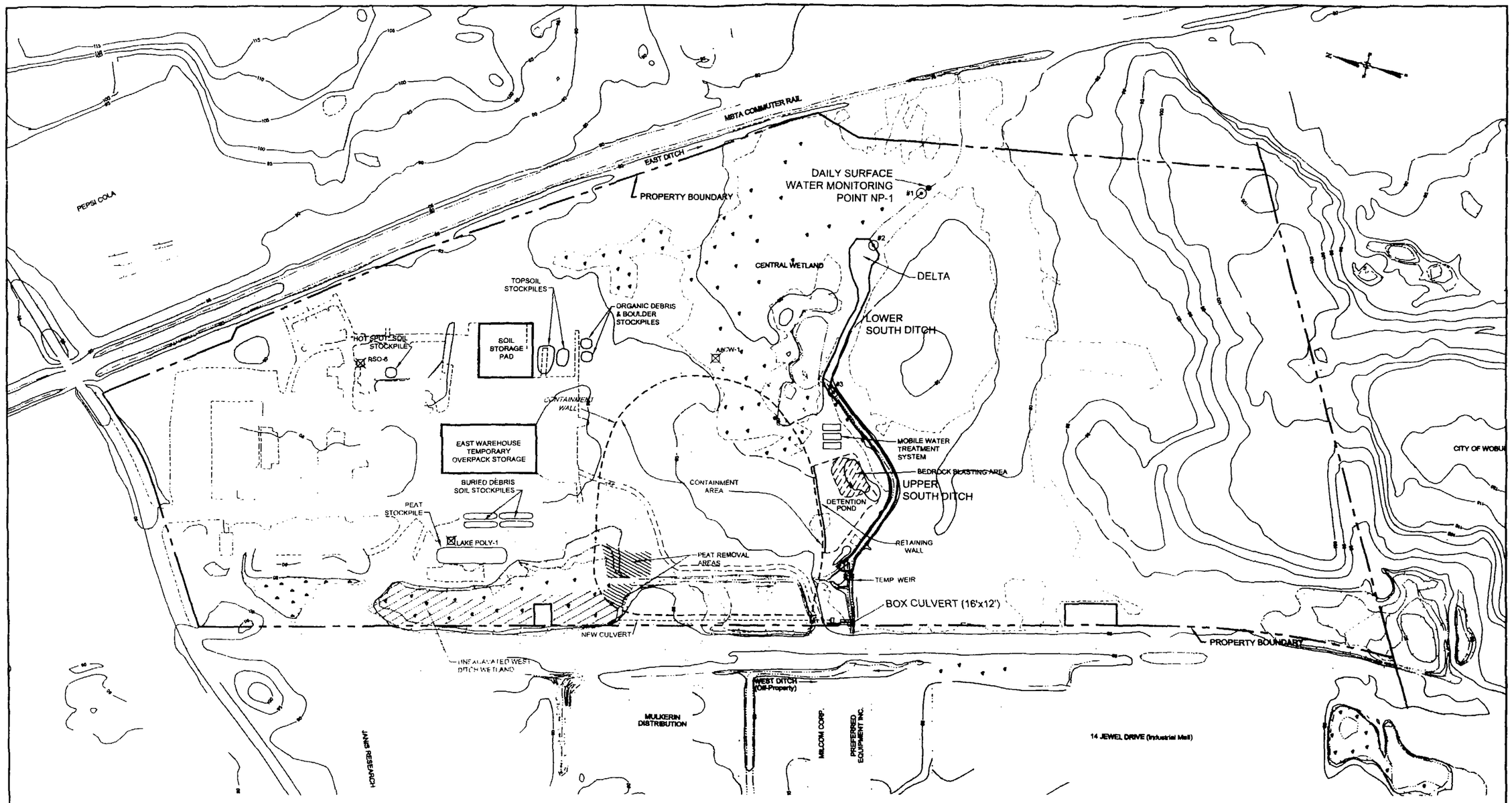

LEGEND:

- EXISTING CONTOURS (FT., NGVD)
- APPROXIMATE EXISTING WETLANDS BOUNDARY
- STREAM
- MOBILE WATER TREATMENT SYSTEM DISCHARGE POINT

NOTES:

1. BASE PLAN PROVIDED BY DANA F. PERKINS, INC

0 200 400

SCALE, FEET

NO.	DATE	DESCRIPTION	DES	DR	CH	APP
1		AS BUILT		DJM		

DESIGNED BY
DRAWN BY PTC/DJM
CHECKED BY
APPROVED BY
DATE 12/20/00

Olin Corporation
Charleston, Tennessee

GEI Consultants, Inc.
WINCHESTER · MASSACHUSETTS

IRA Assessment and Plan
51 Eames Street Wilmington, MA

SITE PLAN

FIG. NO. 1

GEI PROJECT 97598

SHEET NO. 1 of 1

ISSUE 1

97598-A8-142 12/22/00 ptc/djm

Table 1.
Chemical Testing Results
Surface Waters Collected 10/5/00 from South Ditch
51 Eames St
Wilmington, MA

Sample ID: Date Collected: Date Reported by Lab:	Units	Method	OLIN NPDES Exclusion Criteria (ugL)	1150-SD-SW11A 10/5/00 10/6/00	1150-SD-SW11A Dissolved 10/5/00 10/6/00	1150-SD-SW11B 10/5/00 10/6/00	1150-SD-SW11B Dissolved 10/5/00 10/6/00	1150-SD-SW11C 10/5/00 10/6/00	1150-SD-SW11C Dissolved 10/5/00 10/6/00	1150-SD-SW11D 10/5/00 10/6/00	1150-SD-SW11D Dissolved 10/5/00 10/6/00	1150-SD-SW11E 10/5/00 10/6/00	1150-SD-SW11E Dissolved 10/5/00 10/6/00
PAHs by HPLC													
2-Methylnaphthalene	ug/L	8310	100	< 1		< 1		< 1		< 1		< 1	
Acenaphthene			100	< 1		< 1		< 1		< 1		< 1	
Acenaphthylene				< 1		< 1		< 1		< 1		< 1	
Anthracene			0.2	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Benzo (a) anthracene				< 1		< 1		< 1		< 1		< 1	
Benzo (a) pyrene			0.2	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Benzo (b) fluoranthene				< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Benzo (g,h,i) perylene				< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Benzo(k)fluoranthene			0.2	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Chrysene			0.2	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Dibenzo(a,h)anthracene			0.3	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Flouranthene			100	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Flourene			100	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Indeno(1,2,3-cd)pyrene			0.4	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Naphthalene			100	< 1		< 1		< 1		< 1		< 1	
Phenanthrene			100	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
Pyrene			100	< 0.2		< 0.2		< 0.2		< 0.2		< 0.2	
VOCs		8260B											
Benzene			5	< 1		< 1		< 1		< 1		< 1	
Ethylbenzene				< 1		< 1		< 1		< 1		< 1	
m+p-Xylene				< 1		< 1		< 1		< 1		< 1	
Methyl-t-butylether			70	< 1		< 1		< 1		< 1		< 1	
o-Xylene				< 1		< 1		< 1		< 1		< 1	
Toluene				< 1		0.96		1.1		< 1		< 1	
Total BTEX			100	< 1		0.96		1.1		< 1		< 1	
Total Petroleum Hydrocarbons			5 mg/L										
Fuel Oil #2 (C9-C25)	mg/L	8015M		< 0.1		< 0.1		< 0.1		< 0.1		< 0.1	
Fuel Oil #6 (C9-C36)				< 0.1		< 0.1		< 0.1		< 0.1		< 0.1	
Kerosene (C9-C22)				< 0.1		< 0.1		< 0.1		< 0.1		< 0.1	
MODF (C14-C28)				< 0.1		< 0.1		< 0.1		< 0.1		< 0.1	
Motor Oil (C14-C36)				< 0.1		< 0.1		< 0.1		< 0.1		< 0.1	
Inorganics													
Ammonia Nitrogen as N	mg/L	LAC107061A											
Arsenic	ug/L	EPA 200.7	50	< 10		< 10		< 10		< 10		< 10	
Barium			2000	30		65		72		62		63	
Chromium			100	63	< 10	680	170	1400	560	130	26	130	18
Copper			1300	< 20		35		< 20		< 20		< 20	
Lead			15	< 10		< 10		< 10		< 10		< 10	
Nickel			100	< 20		120		160		61		73	

General Notes:
Samples named "SD" - South Ditch Area
Boxed results indicate result was above NPDES exclusion criteria
"<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
Sample locations are identified in Figure 1
Samples labeled "dissolved" were field filtered

Table 2.
Chemical Testing Results
Surface Water Collected 10/6/00 from South Ditch
51 Eames Street Wilmington

Sample ID		Total Chromium by 200.7 (ug/L)	Dissolved Chromium by 200.7 (ug/L)	pH
	Olin NPDES Exclusion criteria (ug/L):	**100**	**100**	**NA**
97598-SWLOC-9		25	< 10	7.3
97598-SWLOC-10		35	< 10	7
97598-SWLOC-11		40	< 10	7.1
97598-SWLOC-12		48	< 10	6.9
97598-SWLOC-14		36	< 10	7
97598-SWLOC-16		78	< 10	7

General Notes:
"<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
NA = not applicable
Sample locations identified in Figure 2.

Table 3.
Chemical Testing Results
Surface Water Collected Sept. through October 17, 2000
51 Eames St.
Wilmington, MA

Sample ID: / Date Collected: / Date Reported by Lab:	Units	Method	OLIN NPDES Exclusion Criteria (ugL)	1150-OUT-0 9/18/00 9/21/00	1150-IN-1 9/22/00 9/29/00	1150-OUT-1 9/22/00 9/29/00	1150-IN-2 9/22/00 9/29/00	1150-OUT-2 9/22/00 9/29/00	1150-IN-3 9/27/00 10/4/00	1150-OUT-3 9/27/00 10/4/00	1150-IN-4 10/4/00 10/10/00	1150-OUT-4 10/4/00 10/10/00	1150-OUT - A1 10/7/00 10/14/00	1150-OUT- A1 Dissolved 10/7/00 10/14/00	1150-IN - A1 10/7/00 10/13/00	1150-IN- A1 Dissolved 10/7/00 10/13/00	1150-IN-A2 10/9/00 10/16/00	1150-IN-A2 Dissolved 10/9/00 10/16/00
PAHs by HPLC																		
1-Methylnaphthalene	ug/L	8310		< 1	< 0.2	< 0.2	< 0.2	< 0.2										
2-Methylnaphthalene			100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		< 5	
Acenaphthene			100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		< 5	
Acenaphthylene				< 1	4.7	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		62	
Anthracene			0 2	< 1	< 0.2	< 0.2	< 0 2	< 0.2	< 0.2	< 0 2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Benzo (a) anthracene				< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		7.7	
Benzo (a) pyrene			0 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Benzo (b) fluoranthene				< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0 2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Benzo (g,h,i) perylene				< 1	< 0.2	< 0 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0 2	< 0.2		< 0.2		< 1	
Benzo(k)fluoranthene			0.2	< 1	< 0.2	< 0 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Chrysene			0.2	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Dibenzo(a,h)anthracene			0.3	< 0.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Flouranthene			100	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Flourene			100	< 1	0.24	< 0 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		0.85	
Indeno(1,2,3-cd)pyrene			0.4	< 0.4	< 0.2	< 0 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Naphthalene			100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		3.2	
Phenanthrene			100	< 1	1.1	< 0 2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
Pyrene			100	< 1	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 1	
VOCs																		
1,2-Dichlorobenzene	ug/L	8260B			< 1	< 1	< 1	< 1	< 1	< 1								
1,3-Dichlorobenzene					< 1	< 1	< 1	< 1	< 1	< 1								
1,4-Dichlorobenzene					< 1	< 1	< 1	< 1	< 1	< 1								
Benzene			5	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		< 20	
Chlorobenzene					< 1	< 1	< 1	< 1	< 1	< 1								
Ethylbenzene				< 1	1.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		19	
m+p-Xylene				< 1	0.68	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		< 20	
Methyl-t-butylether			70	< 1					< 1	< 1	< 1	< 1	< 1		< 1		< 20	
o-Xylene				< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		< 20	
Toluene				< 1	30	0.77	1.3	< 1	< 1	< 1	12	< 1	0 77		8.2		1200	
Total BTEX			100	< 1	31.88	0.77	1.3	< 1	< 1	< 1	12	< 1	0.77		8.2		1200	
Total Petroleum Hydrocarbons			5 mg/L															
Fuel Oil #2 (C9-C25)	mg/L	8015M		< 0 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1		< 0.1	
Fuel Oil #6 (C9-C36)				< 0.1	4.8	< 0 1	0.32	< 0.1	7.1	< 0.1	1	< 0.1	< 0.1		1.3		8.5	
Kerosene (C9-C22)				< 0.1	< 0.1	< 0 1	< 0 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1		< 0.1	
MODF (C14-C28)				< 0.1	< 0.1	< 0 1	< 0.1	< 0.1	< 0.1	< 0 1	< 0.1	< 0.1	< 0 1		< 0.1		< 0.1	
Motor Oil (C14-C36)				< 0.1	< 0.1	< 0 1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		< 0.1		< 0.1	
Inorganics																		
Ammonia Nitrogen as N	mg/L	LAC107061A																
Arsenic	ug/L	EPA 200 7	50	24	< 10	42	< 10	12	< 10	13	< 10	< 10	< 10		< 10		13	
Barium			2000	52	28	180	45	100	34	86	58	67	55		76		99	
Chromium			100	< 10	770	< 10	62	13	1800	13	91	< 10	14	< 10	160	< 10	2000	< 10
Copper			1300	57	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20		< 20		43	
Lead			15	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10		< 10		14	
Nickel			100	29	< 20	190	< 20	28	< 20	27	< 20	< 20	< 20		< 20		28	

General Notes:
"1150-IN-" series samples collected before treatment
"1150-OUT-" series samples collected after treatment and prior to discharge to South Ditch
"SD-SW-" series samples collected at the hay bale check dam shown on Figure 1
"CP" - Samples reflect existing conditions in Central Pond as of date of this memorandum.
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Boxed results indicate result was above criteria
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Table 3.
Chemical Testing Results
Surface Water Collected Sept. through October 17, 2000
51 Eames St.
Wilmington, MA

Date Collected: Sample ID: / Date / Reported by Lab:	Units	Method	OLIN NPDES Exclusion Criteria (ugL)	1150-OUT-A2 10/9/00 10/16/00	1150-OUT-A2 Dissolved 10/9/00 10/16/00	1150-IN-A3 10/12/00 10/18/00	1150-IN-A3 Dissolved 10/12/00 10/18/00	1150-OUT-A3 10/12/00 10/18/00	1150-OUT-A3 Dissolved 10/12/00 10/18/00	1140-SD-SW1 9/20/00 9/26/00	1140-SD-SW2 9/21/00 9/29/00	1140-SD-SW3 9/22/00 9/29/00	1140-SD-SW4 9/23/00 9/29/00	1140-SD-SW5 9/25/00 10/3/00	1140-SD-SW6 9/26/00 10/3/00	1140-SD-SW7 9/27/00 10/7/00	1140-SD-SW8 9/28/00 10/13/00	1140-SD-SW9 9/29/00 10/6/00
PAHs by HPLC																		
1-Methylnaphthalene	ug/L	8310																
2-Methylnaphthalene			100	< 1		< 1		< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Acenaphthene			100	< 1		< 1		< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Acenaphthylene				< 1		2 8		< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Anthracene			0.2	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzo (a) anthracene				< 1		< 1		< 1		< 0.2	< 1	< 1	< 1	< 0.2	< 1	< 1	< 1	< 1
Benzo (a) pyrene			0.2	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzo (b) fluoranthene				< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzo (g,h,i) perylene				< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benzo(k)fluoranthene			0.2	< 0.2		< 0.2		< 0 2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chrysene			0.2	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzo(a,h)anthracene			0.3	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Flouranthene			100	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Flourene			100	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Indeno(1,2,3-cd)pyrene			0.4	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Naphthalene			100	< 1		0.52		< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Phenanthrene			100	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Pyrene			100	< 0.2		< 0.2		< 0.2		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
VOCs																		
1,2-Dichlorobenzene	ug/L	8260B																
1,3-Dichlorobenzene																		
1,4-Dichlorobenzene																		
Benzene			5	< 1		< 1		< 1										
Chlorobenzene																		
Ethylbenzene				< 1		1 7		< 1										
m+p-Xylene				< 1		< 1		< 1										
Methyl-t-butylether			70	< 1		< 1		< 1										
o-Xylene				< 1		< 1		< 1										
Toluene				0.52		23		< 1										
Total BTEX			100	0 52		24.7		< 1										
Total Petroleum Hydrocarbons			5 mg/L															
Fuel Oil #2 (C9-C25)	mg/L	8015M		< 0.1		< 0 1		< 0.1										
Fuel Oil #6 (C9-C36)				< 0.1		< 0.1		< 0 1										
Kerosene (C9-C22)				< 0.1		< 0 1		< 0.1										
MODF (C14-C28)				< 0.1		< 0 1		< 0 1										
Motor Oil (C14-C36)				< 0.1		1 9		< 0 1										
Inorganics																		
Ammonia Nitrogen as N	mg/L	LAC107061A								40	40	33	57	100	180	60	66	28
Arsenic	ug/L	EPA 200.7	50	< 10		< 10		< 10										
Barium			2000	76		57		61										
Chromium			100	< 10	< 10	450	< 10	16	19	49	18	13	25	1200	540	35		< 10
Copper			1300	< 20		< 20		< 20										
Lead			15	< 10		< 10		< 10									< 10	
Nickel			100	< 20		32		< 20										

General Notes:
"1150-IN-" series samples collected before treatment
"1150-OUT-" series samples collected after treatment and prior to discharge to South Ditch
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"CP" - Samples reflect existing conditions in Central Pond as of date of this memorandum
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Chemical Testing Results
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51 Eames St.
Wilmington, MA

Date Collected: / Sample ID: / Date / Reported by Lab:	Units	Method	OLIN NPDES Exclusion Criteria (ugL)	1140-SD-SW10 10/2/00 10/12/00	1140-SD-SW11 10/4/00 10/11/00	1150-SD-SWA1 10/7/00 10/13/00	1150-SD-SWA1 - Dissolved 10/7/00 10/13/00	1150-SD-SWA2 10/9/00 10/16/00	1150-SD-SWA2 Dissolved 10/9/00 10/16/00	1150-CP-SW1 10/9/00 10/16/00	1150-CP-SW1 Dissolved 10/9/00 10/16/00
PAHs by HPLC											
1-Methylnaphthalene	ug/L	8310									
2-Methylnaphthalene			100	< 1	< 1	< 1		< 1		< 1	
Acenaphthene			100	< 1	< 1	< 1		< 1		< 1	
Acenaphthylene				< 1	< 1	< 1		< 1		< 1	
Anthracene			0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Benzo (a) anthracene				< 1	< 1	< 1		< 1		< 1	
Benzo (a) pyrene			0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Benzo (b) fluoranthene				< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Benzo (g,h,i) perylene				< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Benzo(k)fluoranthene			0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Chrysene			0.2	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Dibenzo(a,h)anthracene			0.3	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Flouranthene			100	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Flourene			100	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Indeno(1,2,3-cd)pyrene			0.4	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Naphthalene			100	< 1	< 1	< 1		< 1		< 1	
Phenanthrene			100	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
Pyrene			100	< 0.2	< 0.2	< 0.2		< 0.2		< 0.2	
VOCs											
1,2-Dichlorobenzene	ug/L	8260B									
1,3-Dichlorobenzene											
1,4-Dichlorobenzene											
Benzene			5							< 1	
Chlorobenzene											
Ethylbenzene										< 1	
m+p-Xylene										< 1	
Methyl-t-butylether			70							< 1	
o-Xylene										< 1	
Toluene										0.6	
Total BTEX			100							0.6	
Total Petroleum Hydrocarbons			5 mg/L								
Fuel Oil #2 (C9-C25)	mg/L	8015M								< 0.1	
Fuel Oil #6 (C9-C36)										0.49	
Kerosene (C9-C22)										< 0.1	
MODF (C14-C28)										< 0.1	
Motor Oil (C14-C36)										< 0.1	
Inorganics											
Ammonia Nitrogen as N	mg/L	LAC107061A		120	110	61		71			
Arsenic	ug/L	EPA 200.7	50							< 10	
Barium			2000							47	
Chromium			100	< 10	32	< 10	19	< 10	< 10	170	10
Copper			1300							< 20	
Lead			15							< 10	
Nickel			100							54	

General Notes:
"1150-IN-" series samples collected before treatment
"1150-OUT-" series samples collected after treatment and prior to discharge to South Ditch
"SD-SW-" series samples collected at the hay bale check dam shown on Figure 1.
"CP" - Samples reflect existing conditions in Central Pond as of date of this memorandum.
Water in Central Pond will be treated prior to discharge to the South Ditch.
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Φ

APPENDIX B

Report Entitled: The South Ditch Vault Interim Remedial Action
Prepared by Geomega
December 18, 2000

Olin Wilmington Technical Series

XIII. The South Ditch Vault Interim Remedial Action

Prepared for:
Olin Corporation
Wilmington, MA Facility
December 19, 2000

geomega

good science • hard work • creative thinking

The Olin Wilmington Technical Series

I. Review of Inductance Logging in Site Monitoring Wells (9/15/98)

II. A Statistical Analysis of Water Quality Trends in the Meadows Brook Aquifer and Proposed Modifications to the Western Bedrock Sentinel Well Program (9/29/98)

III. Results of the August, 1998 Multilevel Piezometer Sampling Event and DAPL/Diffuse Layer Discrimination Analysis (1/7/99)

IV. Geochemical Discrimination Between Groundwaters Emanating from the Calcium Sulfate and Woburn Sanitary Landfills (2/10/99)

V. Contingency Plan in Support of the Modified Western Bedrock Sentinel Well Program (2/17/99)

VI. The Main Street Boring Program: Configuration of the Bedrock Saddle (2/19/99)

VII. Proposed Inductance Logging Workplan (3/12/99)

VIII. 1999 Review of Inductance Logging in Site Monitoring Wells (11/5/99)

IX. The Use of Forensic Geochemistry in Defining the Location of the East Ditch Site Boundary (11/12/99 Draft)

X. The DAPL RAM Work Plan (12/2/99)

XI. The Effects of Capping and On-Property DAPL Containment on Groundwater Flow & Solute Transport at the Wilmington, MA Site (4/5/00).

XII. A Statistical Analysis of Water Quality Trends in the Maple Meadow Brook Aquifer (10/6/00)

XIII. The South Ditch Vault Interim Remedial Action (12/19/00)

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1. Executive Summary

Inadvertent dewatering of the box culvert excavation adjacent to the South Ditch resulted in the discharge of some lower pH water with elevated chromium. A review of the chemistry and hydrology related to this incident shows that:

1) Total chromium measured at the site boundary was 130 µg/l on October 5, 2000, exceeding the National Pollution Discharge Elimination System (NPDES) Permit Exclusion standard (0.1 mg/l or 100 µg/l). However, dissolved chromium at that time was well below the NPDES Permit Exclusion standard (18 µg/l). On all other dates since then, measured chromium in the South Ditch surface water has remained below the NPDES Permit Exclusion standard.

2) Hydrologic modeling using FEFLOW indicates that prior to pumping, water migrated from the DAPL/diffuse zone interface into the surface water ditch system. With the onset of dewatering for the excavation, the capture zone of the ditch system increased, resulting in an increase in the flux of water from the lower diffuse zone in the aquifer.

3) The pH in the excavation and in the sedimentation tank dewatering water was 4.6, characteristic of the diffuse zone groundwater overlying the DAPL.

4) The groundwater system dynamics are understood and no additional groundwater data are required at this time. However, weekly samples at the South Ditch/East Ditch confluence will be collected and analyzed for ammonia, total and dissolved chromium, conductivity and pH between January and April 2001 to verify surface water conditions.

2. Introduction

During installation of a box culvert designed to reroute surface water near the confluence of the On-Property West and the South Ditch, the groundwater quality in the discharge in the vicinity of the box culvert deteriorated slightly, resulting in the release of water with chromium (Cr) above the site NPDES Permit Exclusion standard (0.1 mg/l or 100 μg/l).

This area of the property is close to the previously identified margin of the Dense Aqueous Phase Liquid (DAPL) which resides in a layer on the top of bedrock, approximately 25 feet beneath the bottom of the box culvert. The DAPL is acidic (pH <3.5) with high concentrations (1000 to 20,000 mg/l) of iron, aluminum, sulfate, chloride, sodium, ammonia, and trivalent chromium (Geomega 1999). Groundwater contacting the DAPL entrains solutes, which upon discharge to surface water, oxidize ($Fe^{+2} \Rightarrow Fe^{+3}$) and then hydrolyze [$Al^{+3}$, $Fe^{+3} \Rightarrow$ Fe, $Al(OH)_3$] as a precipitate that sequesters Cr(III) and sulfate.

Because of the distribution of elevated metals in shallow groundwater across the property, it is not unexpected or inconsistent with the existing site paradigm (Olin 1997) that groundwater pumped in the vicinity of the DAPL would have relatively high metals concentrations.

A chronological review of the events leading to the NPDES Permit Exclusion exceedances of October 5 was described in an October, 26th 2000 memorandum from Margret Hanley, LSP, to Steve Morrow of Olin Corporation.

2.1. Surface Water Chemistry During Event

The analytical results of samples collected as soon as a potential problem was identified on October 5th and 6th show that several samples taken at stations SW11B and SW11C exceeded the NPDES exclusion criteria for chromium (100 μg/l) for both total and dissolved chromium (Table 1). At sites SW11D and SW11E (at the property boundary) total chromium was 130 μg/l in both the total samples, but less than 30 μg/l in the

dissolved samples. The following day, total chromium was well below the NPDES criteria for chromium in all South Ditch samples, i.e., <50 µg/l.

While the pH measured in the sedimentation tank was moderately low (4.6), the measured pH in all locations in surface water samples were above 6.0 at all sampling locations, typical of on-property surface water pH (Olin 1997). Hence, despite the discharge of pH 4.6 water containing some chromium into the ditch, the impact was ephemeral, with only 130 µg/l found beyond the property boundary on one occasion, declining rapidly, with most being particulate, rather than dissolved chromium.

3. Hydrogeochemistry of the Surface Water Ditches

The anticipated migration of lower pH water with elevated chromium to the box culvert is a logical extension of the hydrogeochemistry of the shallow ditch system. Surface water ditches at the Olin facility receive a large portion of their base flow from the discharge of shallow groundwater into the ditches (Olin 1997). The diffuse layer is only ~15 feet below these ditches (Figure 1), so varying levels of DAPL constituents are present in the shallow groundwater, with the specific concentrations depending on the proximity to DAPL (laterally and vertically), the local flow regime, and the local geochemical environment of the aquifer.

While DAPL constituents such as sulfate, chloride, and sodium migrate conservatively through the aquifer (i.e. they travel at approximately the same speed as groundwater), Cr, aluminum (Al), iron (Fe), and acidity from the DAPL are attenuated by mixing with overlying groundwater (Olin 1997). These constituents are attenuated by precipitation of Cr-Al-Fe sulfate phases either within the aquifer matrix or as floc in the local ditch system (Figure 2, Table 2). Hence, shallow groundwater alkalinity limits metal mobility.

3.1. Local Groundwater Chemistry

The diffuse layer overlying the DAPL contains dissolved solid concentrations at one to five orders of magnitude lower than in DAPL. At the box culvert excavation, the DAPL perimeter is <50 feet away (Figure 1). Chromium in nearby wells ranges from non-detectable to 790 mg/l, with local groundwater pH ranging from 3.1 to 7.1 (Table 3). In addition, chromium concentrations can increase over four orders of magnitude over a 6-foot vertical interval in the aquifer (Geomega 1999).

3.2. Groundwater Hydrology

The ditch system on the Olin property receives a substantial base flow from groundwater discharge resulting in occasional dynamic disequilibrium that has resulted in isolated floc outbreaks in certain sections of the Ditch system.

To understand these hydraulic circumstances, particle-track results from the site-wide FEFLOW hydrologic model (Geomega 2000) were run to simulate conditions in the ditch in October prior to any dewatering. The results show that local groundwater moves along flowpaths from the top of the DAPL to the ditch system. After a simulation of steady state flow, 60 "particles" were placed on the fifth layer of the model, corresponding to the top of the DAPL (a zone containing 10-100 mg/l chromium).

The particles migrate sequentially to the adjacent cell in the model with the lowest head, until they move either to a well, stagnation point, or exit the model domain. The results show that particles originating on top of the DAPL just north of the South Ditch move upwards and into the ditch system in the absence of pumping (Figure 3), consistent with the observation of floc in the ditches.

For the same scenario but incorporating the pumping rates estimated during the box culvert dewatering (12 hours at 50 gpm, followed by 12 hours at 25 gpm), many more particles from the top of the DAPL migrated to the dewatering operation than under the no-pumping scenario. The increased number of particles is due to the larger capture zone

resulting from pumping relative to the steady state ditch system, caused by lowering the local water table (Figure 4). Thus dewatering during excavation would be expected to increase the proportion of diffuse layer groundwater in the vicinity of the excavation.

These model results point to two important effects resulting from dewatering operations adjacent to the ditch system. First, the flux of water from DAPL impacted areas is increased by dewatering. Second, dewatering removes the overlying background groundwater that provides mixing and reactivity to attenuate the migration of DAPL constituents. Thus dewatering both increased the flux and decreased the attenuation capacity, resulting in an increase in metal concentrations in the local ditch system.

This conceptual model is supported both by analyses of the solids and waters from the property and by the application of geochemical models to test the conceptual feasibility. The mixing of DAPL constituents with background groundwater and surface water in the ditch system results in precipitation of an Fe-Cr-Al-sulfate floc (Figure 2), reducing the concentrations of these elements in solution. This amorphous phase has been observed throughout the subsurface and within the ditch systems of the Olin property.

Geochemical modeling using *Geochemist's Workbench* (Bethke 1996) confirms the importance of these phases. For example, dilution of diffuse zone water with surface water by a factor of 1000 results in evolution of the geochemical environment from chemical domains where Cr is soluble to a zone where Cr precipitates (Figure 5 and 5a). This interpretation is consistent with the chemistry of the sedimentation tank fluids collected on October 5, 2000 that was pH 4.6, with Cr and NH_3 concentrations consistent with the diffuse layer chemistry in the multilevel piezometers (Figure 6).

Once dewatering ceases, both the flux of diffuse zone water to the area will decrease, and the attenuation capacity will increase as the overlying groundwater layer is restored. Therefore, perturbation of the system appears to be a temporary anomaly that will be replaced by steady-state conditions as the diffuse zone water discharging to the ditch system becomes a smaller fraction of the total flow.

4. Future Measures.

This analysis of the groundwater hydrogeochemistry of the ditch system and the box culvert excavation dewatering operations indicates that temporary increases in metal concentrations during dewatering, although inadvertant, are not unexpected. Fortunately, as most DAPL constituents are transported conservatively, specific conductivity provides an excellent indicator of potential problems with dewatering water quality. For example, all groundwater samples collected over the last three years with a conductivity less than 1000 µmohs/cm had dissolved chromium levels less than the NPDES exclusion limit of 100 µg/l (Figure 7). This relationship allows the use of simple field techniques to diagnose future conditions.

4.1. Sampling Plan

Geomega recommends that sampling be performed weekly from January through April 2000. Samples will be collected at the confluence of the South and East Ditch and the surface water near the box culvert. The confluence area sampling will provide information on constituents leaving the property, while the area around the box culvert is appropriate given that this area has been prone to historical floc formation.

Samples will be collected and analyzed for ammonia, chromium (total and dissolved), conductivity and pH in accordance with methods identified in the site-wide QAPP. Comparing total and dissolved Cr concentrations will identify the propensity for Cr transport in the particulate form.

Sampling will be performed concurrent with other monitoring required to document and evaluate the impact of RAM related activities in the South Ditch during the specified monitoring period (January to April, 2001), and to meet other regulatory requirements and commitments, such as the South and West Ditch Quarterly groundwater monitoring, and NPDES Permit Exclusion monitoring. The results of the sampling will be reported in the next IRA Status Report.

5. Conclusions

The occurrence of low pH water in the box culvert excavation on October 5, 2000, is consistent with existing data and the current understanding of the site. Dewatering the excavation increased the capture zone of the ditch system, resulting in an increase in the flow of near-DAPL diffuse layer water to that region of the property. This hypothesis was confirmed by several different lines of evidence including:

1. Groundwater modeling which showed the increase in capture area due to pumping.
2. Prior observation and documentation of the precipitation of DAPL constituents across the Olin property.
3. Consistent results of geochemical modeling and analytical analysis confirming the behavior of Al, Cr and Fe in the ditch system.
4. Surface water chemistry in the vault area during the dewatering incident was consistent with diffuse zone water.

In addition:

1. Remaining RAM activities and development of the property are not expected to require groundwater pumping in this area.
2. This event although inadvertant, is explained by existing data and paradigms. Hence it is not necessary to collect additional data, except as a monitoring precaution.

6. References

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Tables

Table 1. Surface Water Results

Table 3. Relevant local groundwater analyses from surrounding wells from 1998 to present.

Sample	Units	NPDES Exclusion Criteria	1150-SD-SW11A	1150-SD-SW11A	1150 SD-SW11B	1150 SD-SW11B	1150-SD-SW11C	1150-SD SW11C	150-SD-SW11D	150-SD-SW11D	150-SD-SW11E	150-SD-SW11E
Matrix				Dissolved		Dissolved		Dissolved		Dissolved		Dissolved
Date Collected			10/5/00	10/5/00	10/5/00	10/5/00	10/5/00	10/5/00	10/5/00	10/5/00	10/5/00	10/5/00
Date Reported			10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00
Ammonia Nitrogen as N	mg/L											
Arsenic	ug/L	50	<10		<10		<10		<10		<10	
Barium	ug/L	2000	30		65		72		62		63	
Chromium	ug/L	100	63	<10	**680**	170	**1400**	**560**	**130**	26	**130**	18
Copper	ug/L	1300	<20		35		<20		<20		<20	
Lead	ug/L	15	<10		<10		<10		<10		<10	
Nickel	ug/L	100	<20		**120**		**160**		61		73	

Samples Collected October 6, 2000

Sample Name	Units	NPDES Exclusion Criteria	97598-SWLOC-9	97598-SWLOC-10	97598 SWLOC-11	97598-SWLOC 12	97598-SWLOC-13	97598-SWLOC-14
pH			7.3	7.0	7.1	6.9	7.0	7.0
Chromium, Total	ug/L	100	25	35	40	48	36	78
Chromium, Dissolved	ug/L	100	<10	<10	<10	<10	<10	<10

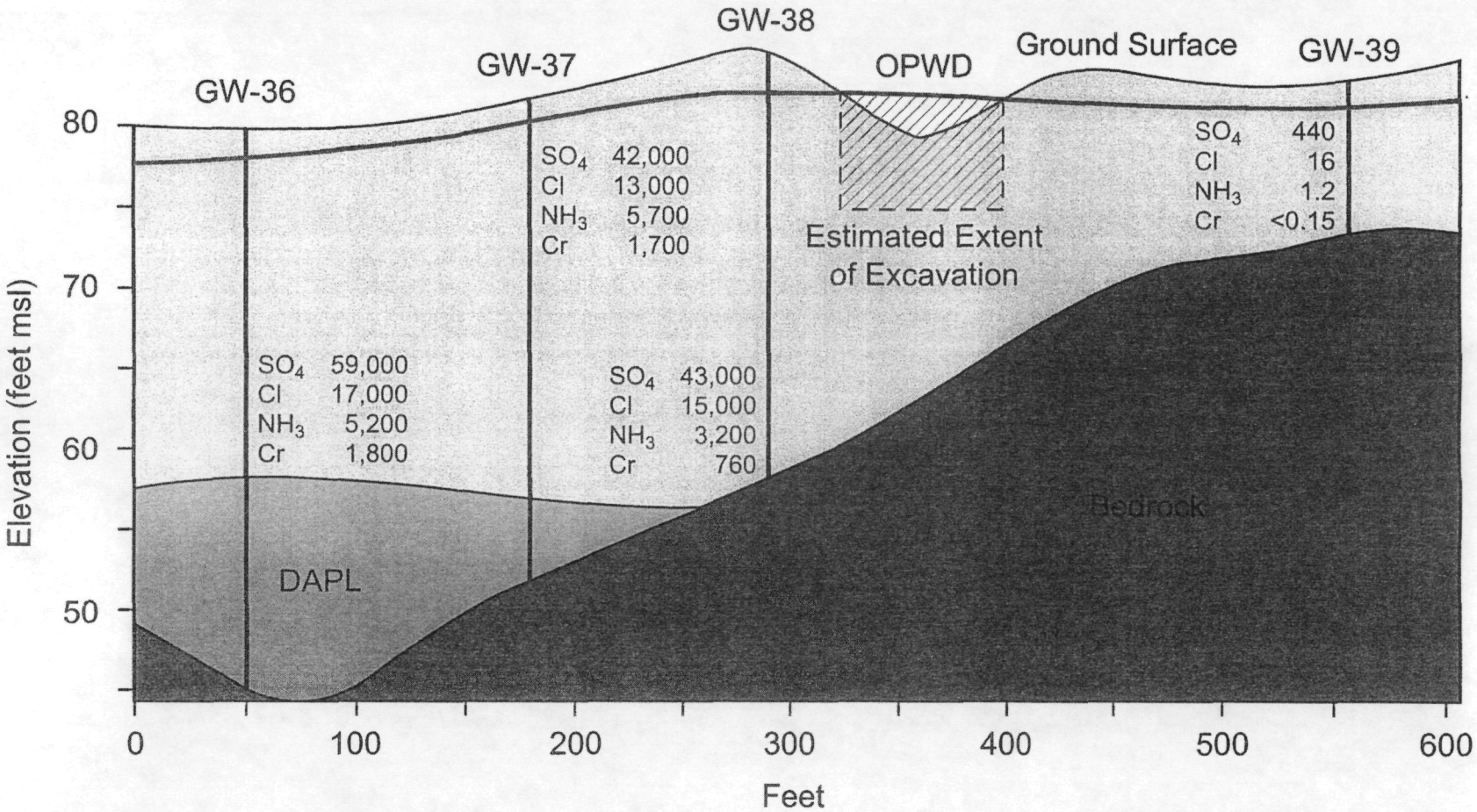
Table 2. Composition of Floc Collected in the South Ditch

Element	Elemental Floc Composition (%)			
	Floc -A #1	Floc -A #2	White	Green
Aluminum	30	50 4	28.5	39.1
Silicon	3 9	5.1	38.5	5.9
Chromium	1.6	5 7	3.1	3.6
Iron	58.6	28 8	21.0	42
Sulfur	5 9	10	3.8	8.4

Table 3. Relevant local groundwater analyses from surrounding wells from 1998 to present.

Groundwater Well Location	Date of Sample Collection	pH	Aluminum, Dissolved	Calcium, Dissolved	Chloride	Chromium, Dissolved	Iron, Dissolved	Magnesium, Dissolved	Nitrogen, Ammonia	Sodium, Dissolved	Specific Conductance	Sulfate as SO4
		pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	umhos/cm	mg/L
GW-78S	1/20/00	5.54	0.57	100	25	0 11	2 5	3.6	43	20	1410	430
GW-37	1/27/00	3.91	1200	380	8700	790	1400	830	4200	9300	465000	44000
GW-19S	1/21/00	6.52	ND	580	1 5	0.011	2.0	5 4	1 4	7.0	2190	1300
GW-19S	11/4/99		ND	650	1	0.01	7.2	5.6	1.8	7.4	257	1300
GW-19S	5/28/99	6.69	ND		3	0.017			ND		2000	1300
GW-19S	2/17/99	6.34	ND		50	0.018			2		2100	1200
GW-19S	12/15/98	6.17	ND		1.9	0.015			2.2		2300	1260
GW-19S	8/6/98	6.21	ND		32.6	0.007			1		2230	1350
GW-19S	2/20/98	6.38	ND		5.4	ND			ND			1130
GW-11	1/25/00	6.47	ND	57	33	0.0078	0.33	0.7	31	46	771	200
GW-11	11/4/99		ND	35	52	ND	ND	1.6	24	88	1130	270
GW-11	8/5/99	7.32	ND		3.5	ND			140		1300	380
GW-11	5/28/99	7.42	ND		51	ND			2.1		1100	300
GW-11	2/17/99	6.57	ND		50	0.0088			36		620	210
GW-11 DUP	2/17/99	6.66	ND		36	0.0075			8.8		650	200
GW-11	12/15/98	7.32	ND		66	0.0062			73		1200	290

Figures



Generation Date: 12/19/00	Figure 1. Conceptual cross section.	Geomega

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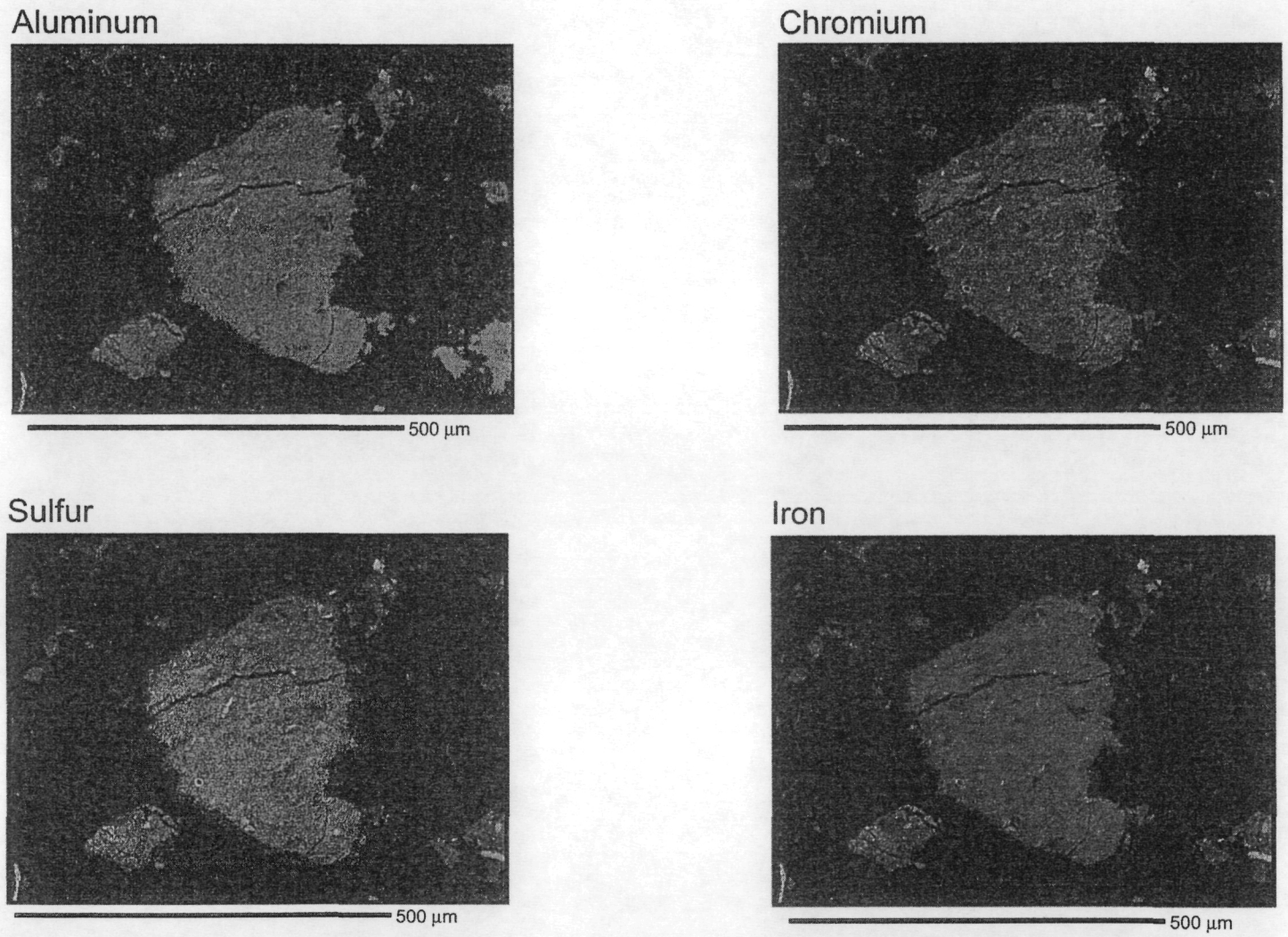

Generation Date: 12/19/00	Figure 2. Typical floc from the ditch system with overlain BEI image maps to illustrate concentration. Acutal concentration are presented in Table 2.	Geomega

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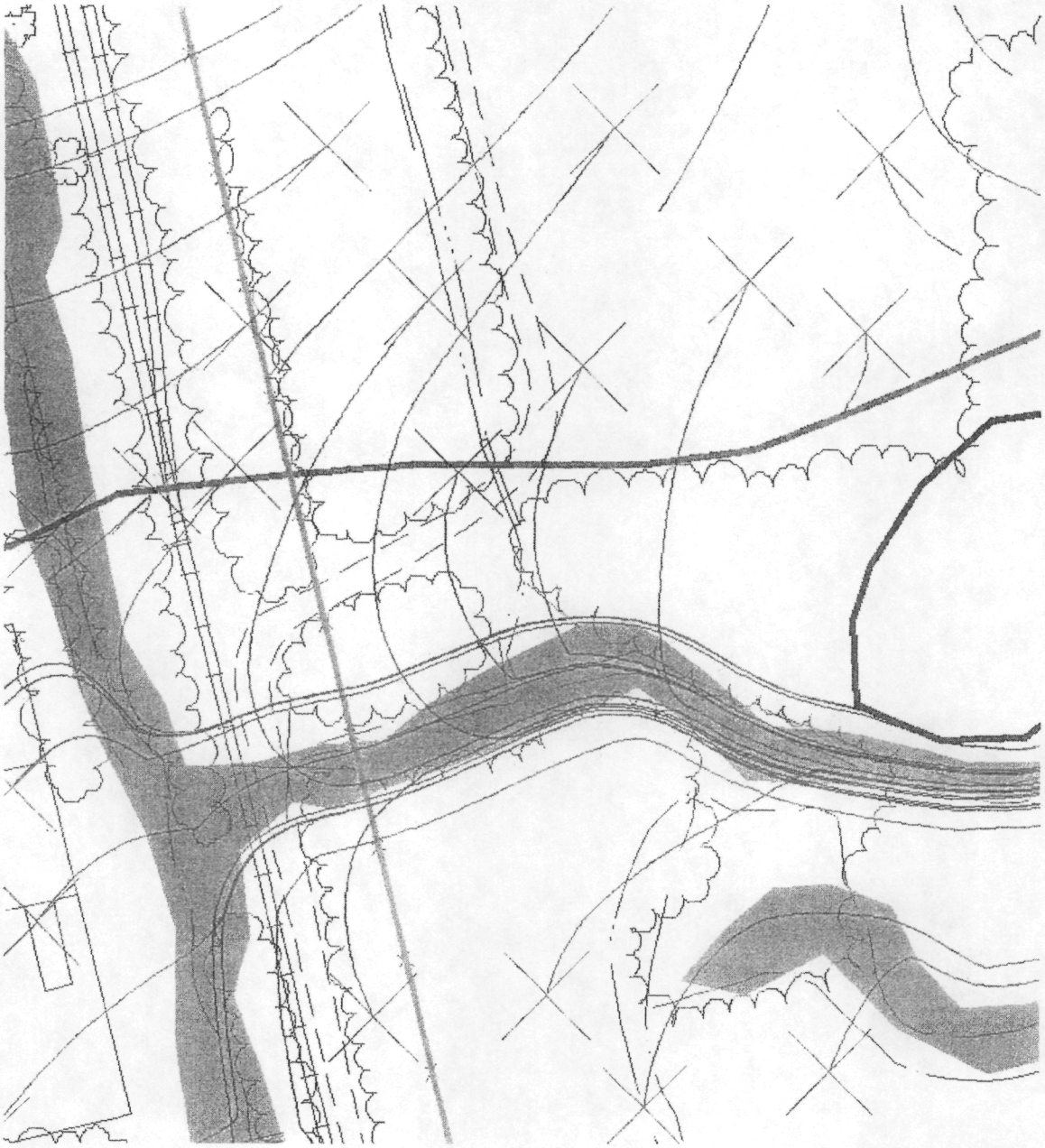

Generation Date: 12\4\00	Figure 3. Groundwater flow paths prior to dewatering box culvert excavation.	Geomega

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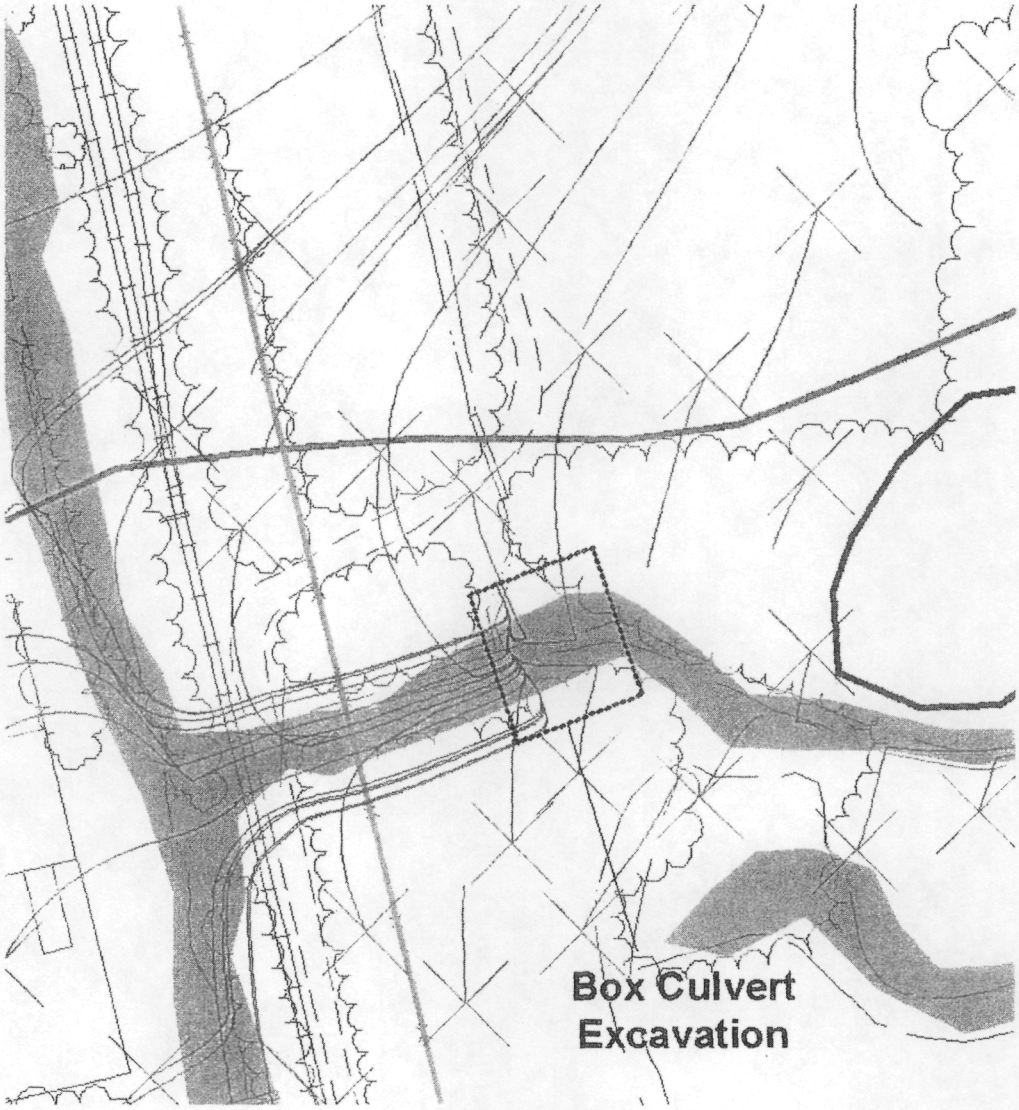

Generation Date: 12/19/00	Figure 4. Groundwater flow paths after pumping at 50 pgm for 10 hours to dewater box culvert excavation.	Geomega

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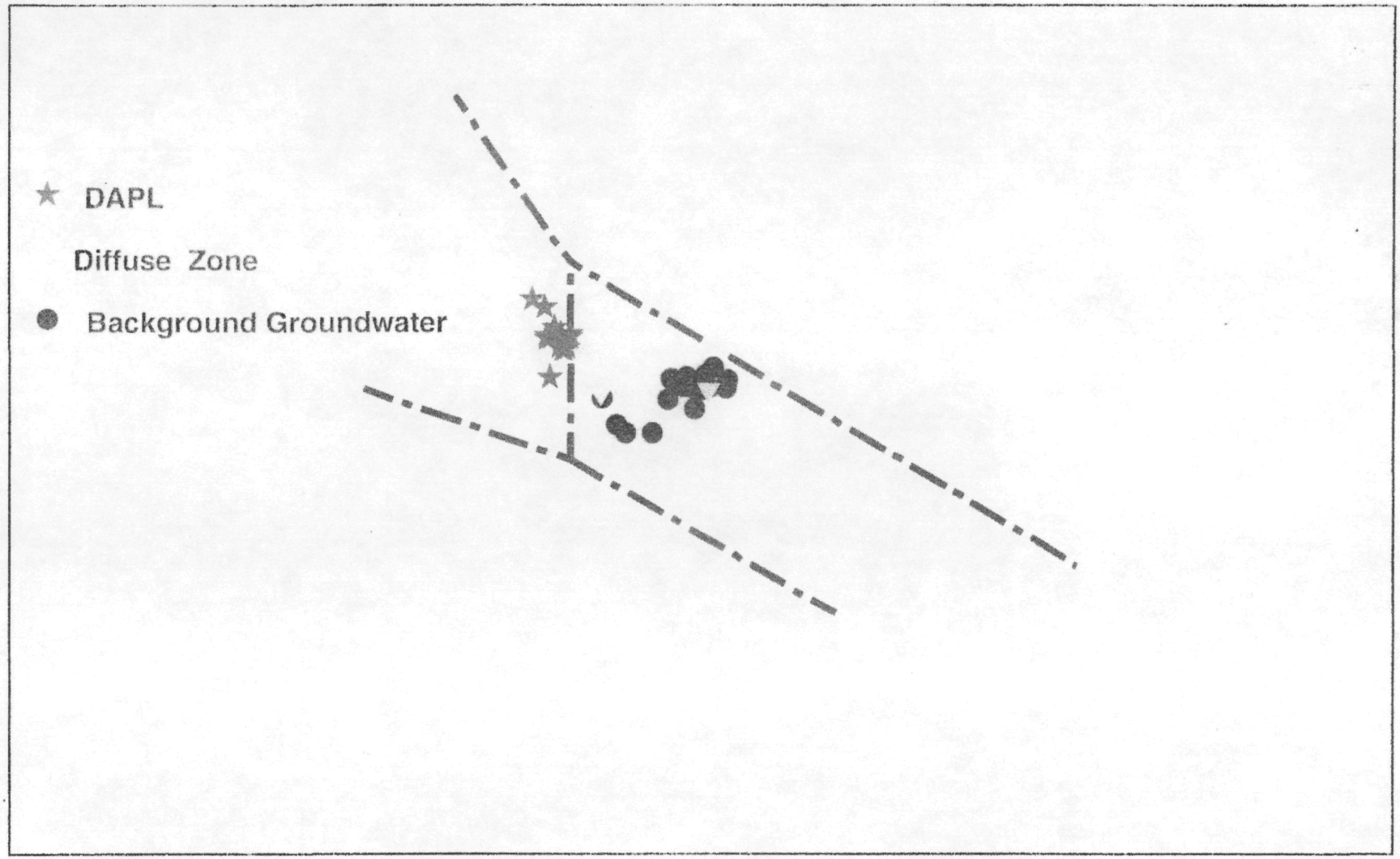
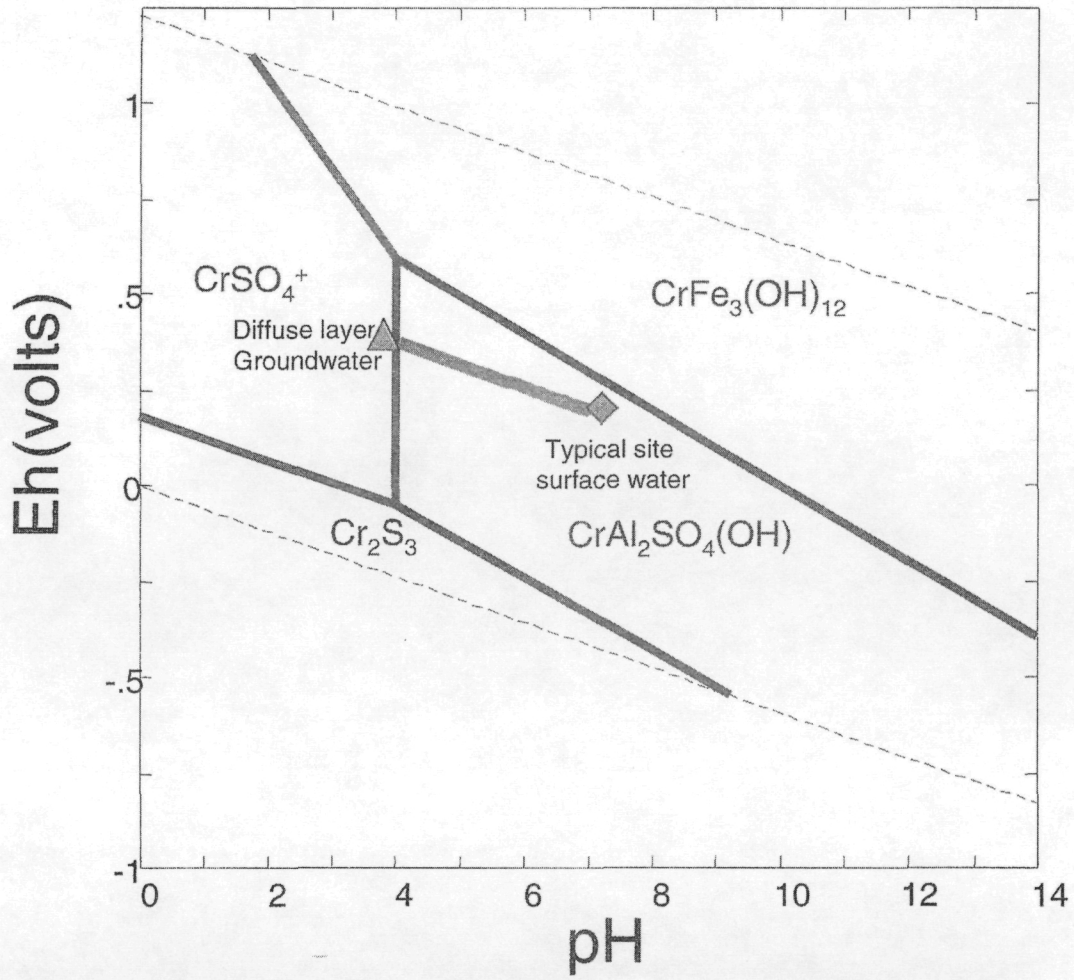
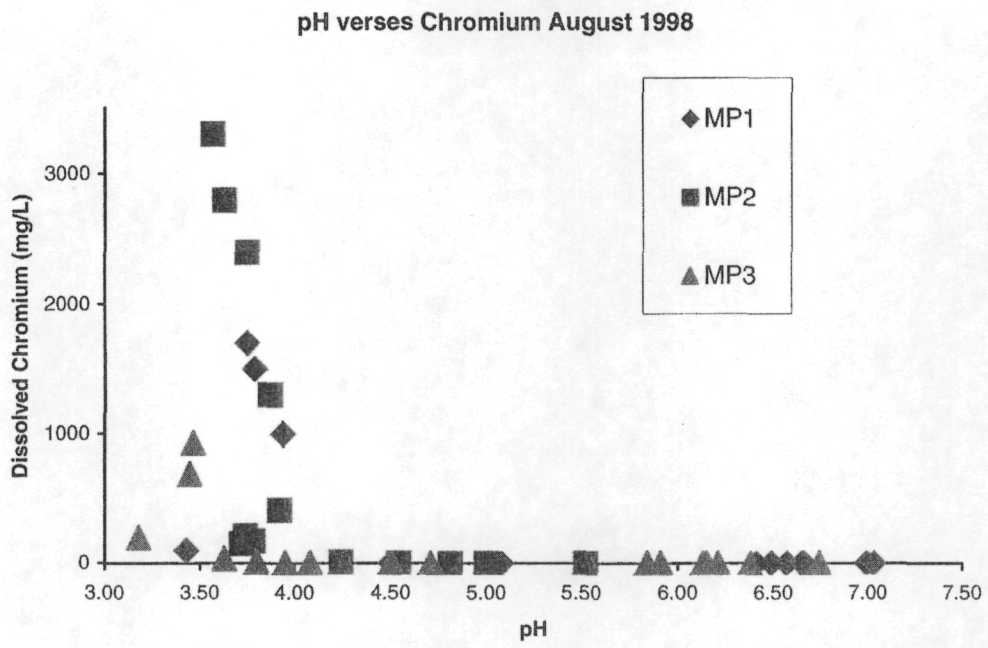
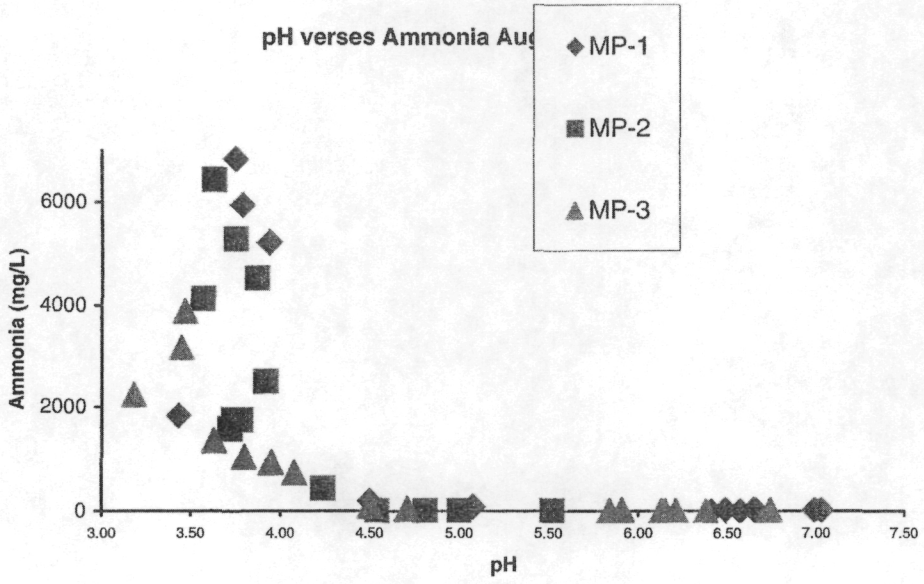


Generation Date: 12/4/00	Figure 5a. Eh-pH Conditions of Olin Site Groundwater from multiport piezometers.	Geomega



Generation Date: 12/4/00	Figure 5. Eh-pH Conditions of Olin Site Groundwater and surface water. The Green line represents a mixing trend between typical diffuse layer groundwater and surfacewater.	Geomega





Generation Date: 12/19/00	Figure 6. Local groundwater composition over time.	Geomega

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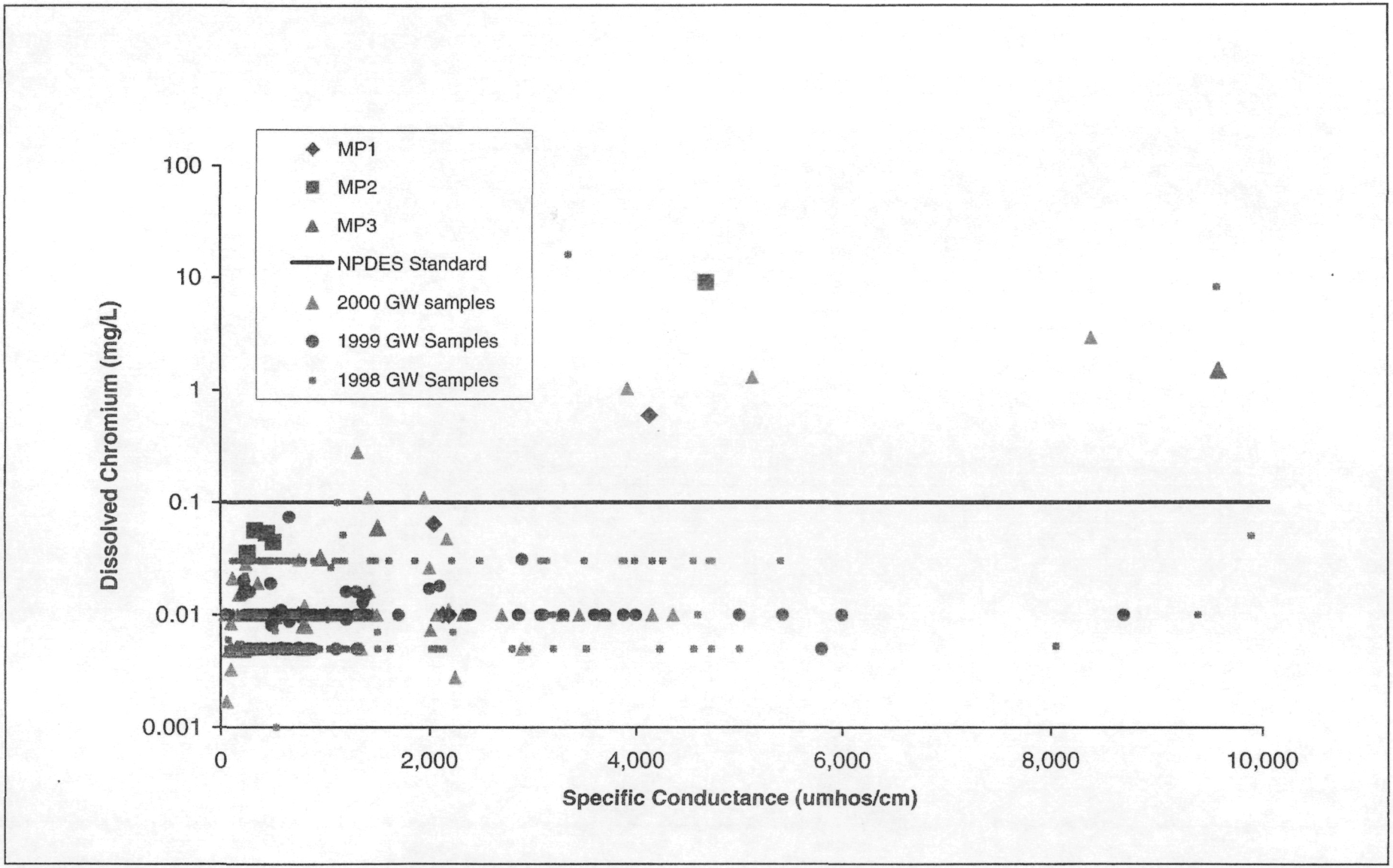

Generation Date: 12/19/00	Figure 7. Specific conductivity verses chromium. Groundwater samples across the site.	Geomega

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APPENDIX C

Imminent Hazard Evaluation
Prepared by Harding Lawson – ESE
December 2000

IMMINENT HAZARD EVALUATION FOR AMMONIA AND CHROMIUM IN SURFACE WATER

51 Eames Street Site, Wilmington, MA

Harding ESE (formerly Harding Lawson Associates) has conducted an Imminent Hazard (IH) evaluation on behalf of Olin Corporation in Wilmington, Massachusetts. This IH evaluation addresses surface water samples collected from the South Ditch in the fall of 2000, and is being provided to support the Immediate Response Action (IRA) initiated on or about October 5, 2000. On that date, Oil and Hazardous Materials (OHM) in groundwater were released to the South Ditch as a result of ongoing sediment remedial activities. These remedial activities have resulted in disturbed conditions and, consequently, higher levels of detectable OHM of Potential Concern (OHMPCs) (primarily ammonia and chromium) in surface water than had existed at the time the Supplemental Phase II Report (Smith, 1997) was completed. Although these disturbed conditions are temporary, it is necessary to determine if they pose a significant risk of harm to downstream environments.

A quantitative human health IH evaluation was not completed. An inspection of the South Ditch and East Ditch on December 5, 2000, by Harding ESE personnel indicates that there is no current human exposure to surface water in the South Ditch or East Ditch adjacent to the Site and downstream of the Site. Therefore, a significant risk of harm to health does not exist with respect to human exposure to surface water.

This IH evaluation was completed according to the regulations set forth in the Massachusetts Contingency Plan (MCP) (310 CMR 40.0950), which states that "the risk of harm to the environment shall be characterized based on the data collected pursuant to the response actions being performed at the site," considering the current use of the disposal site and an appropriate short period of time. Per 310 CMR 40.0955(3)(a) and (b), an Imminent Hazard to the environment exists if:

- there is evidence of stressed biota attributable to the release of OHM at the disposal site, or
- if the release produces immediate or acute adverse impacts to freshwater or saltwater fish populations.

Due to the widespread disturbance caused by the removal of sediment from the West and South Ditches and the lateness of the season, meaningful evidence of stressed biota is not readily apparent. In addition, the aquatic habitat is depauperate in near-downstream environments (i.e., the East Ditch down to the confluence with the Landfill Ditch) (Smith, 1997). Therefore, this evaluation focuses on the nearest portion of the East Ditch where an exposure to aquatic life exists, immediately above the confluence with Halls Brook (several thousand feet downstream of the Olin property). This area is outside of the area previously defined as potentially impacted by Olin.

The Imminent Hazard determination is based on a comparison of estimated surface water concentrations in the East Ditch immediately upstream of the confluence with Halls Brook with acute ambient water quality criteria (AWQC). Since there are no current surface water data for the East Ditch, concentrations of ammonia and chromium were estimated using South Ditch surface water data collected between September and November of 2000, multiplied by the following dilution factors:

Surface Water Body	Joining Surface Water Body	Approximate Dilution Ratio*	Dilution Factor
South Ditch	East Ditch**	1:1	0.5
East Ditch	Landfill Ditch	1:3	0.25

*The dilution ratios are estimated based on visual observations of the width and depth of these water bodies
**East Ditch is defined as the channels located on both sides of the railroad tracks.

Consequently, South Ditch surface water concentrations of ammonia and chromium were multiplied by 0.125 to estimate concentrations in East Ditch surface water immediately upstream of the confluence with Halls Brook. Other storm drains that periodically discharge to the East Ditch would further dilute surface water concentrations, but were not considered in the dilution factor.

Ammonia. Thirty-one surface water samples collected between September 20, 2000, and November 7, 2000, were analyzed for ammonia. These results were compared to the acute ambient water quality criteria (AWQC) for ammonia, which is calculated according to the 1999 revision of the national criteria for ammonia in freshwater. This criterion is the one-hour average concentration of total ammonia nitrogen (in mg N/L) that does not exceed, more than once every three years on the average, the acute criterion for freshwater bodies where salmonid species are *not* present. An acute criterion may also be calculated for freshwater bodies that do contain salmonid species; however, these coldwater fish species do not occur in the ditch system adjacent to and downgradient of the site.

The acute criterion for ammonia is pH dependent. As there are no pH data currently available for surface water at the Site, the pH is assumed to be 7.0. This assumption was made because the pH of surface water normally falls in the range of 6.0 and 7.0, and since the acute toxicity of ammonia to fish increases as the pH of surface water increases, the upper end of the range was selected. It is unlikely that the pH of East Ditch surface water would be higher than 7.0 given the amount of oaks and pines in the area, which contribute to lowering the pH of natural waters.

Table 1 presents the results of the Imminent Hazard evaluation of estimated downstream concentrations of ammonia in the East Ditch. As seen in Table 1, none of the estimated concentrations of ammonia in the East Ditch exceed the acute ammonia AWQC at a pH of 7.0. Therefore, Harding ESE concludes that an Imminent Hazard to fish does *not* exist in the East Ditch, based on current ammonia concentrations in the South Ditch. This is further supported by the fact that ammonia in surface water is likely to volatilize or degrade from denitrifying bacterial action by the time it reaches Halls Brook.

Chromium. Sixty-seven surface water samples collected between September 20, 2000, and November 7, 2000, were analyzed for total or dissolved chromium. These results were compared to the total and dissolved acute ambient water quality criteria (AWQC) for chromium III, which are calculated according to the 1998 Federal Register revision of the national criteria for chromium III in freshwater. These criteria are the one-hour average concentration of chromium III (in μ/L) that do not exceed, more than once every three years on the average, the acute criterion for freshwater bodies.

The acute criteria for total and dissolved chromium III are hardness dependent. Measured hardness concentrations for South Ditch surface water have ranged from 113 to 234 mg/L as $CaCO_3$ (Smith, 1997; Tables 58 and 59). Therefore, the total and dissolved chromium III AWQC used for this evaluation, calculated using 113 mg/L $CaCO_3$, are 1,990 and 629 μg/L, respectively. In general, as the hardness of surface water increases, the acute toxicity of chromium III to aquatic organisms decreases.

Table 2 presents the results of the Imminent Hazard evaluation of estimated downstream concentrations of chromium III in the East Ditch. As seen in Table 2, none of the total or dissolved estimated concentrations of chromium III in the East Ditch exceed the acute chromium III AWQC at a hardness level of 113 mg/L $CaCO_3$. Therefore, Harding ESE concludes that an Imminent Hazard to aquatic organisms does *not* exist in the East Ditch, based on current chromium concentrations in the South Ditch.

GEI Consultants, Inc.

MMH

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781•721•4073 Fax

June 1, 2001
Project 97598

Mr. Christopher Pyott
Environmental Analyst
Department of Environmental Protection
Northeast Regional Office
Bureau of Waste Site Cleanup
205A Lowell Street
Wilmington, MA 01887

Dear Mr. Pyott:

Re: Immediate Response Action (IRA) Status Report No. 1
South Ditch/Former Weir Area
Olin Corporation Property
51 Eames Street
Wilmington, MA
RTN 3-0471

The purpose of this submittal is to present a Status Report on the Immediate Response Action (IRA) Assessment of conditions in the South Ditch and Former Weir Area at the Olin Corporation (Olin) property (the Property) in Wilmington, Massachusetts. As a result of an incident at the Property on October 5, 2000, MADEP determined that an IRA condition existed or potentially existed as a result of surface water conditions in the South Ditch/Former Weir Area at the Property, and that additional assessment and abatement measures should be performed to address the condition.

An IRA Assessment and Plan for the South Ditch/Former Weir was submitted to MADEP on December 22, 2000. In the IRA Plan, Olin presented an Imminent Hazard (IH) Evaluation that demonstrated that an IH does not exist in the South or East Ditch as a result of the concentrations of chromium or ammonia observed in surface water during the Construction-Related Release Abatement Measure (RAM) in the fall of 2000. Additional monitoring during the winter and spring of 2001 was proposed to verify these findings. This IRA Status Report presents the results of surface water monitoring conducted during the period of December 11, 2001 through April 16, 2001.

This IRA Status Report was due in April 2001. However, due to numerous MCP submittals related to this IRA during the month of April and May, the preparation of this report was

inadvertently postponed. The delay in the submittal of this document was discussed with you during our telephone conversation on April 30, 2001.

An IRA Transmittal Form (BWSC –105) is attached.

1. CONTACT INFORMATION

Responsibility for the IRA:

Steve Morrow, P.E.
Olin Corporation
1186 Lower River Road
Charleston, TN 37310
(423) 336-4511

Licensed Site Professional:

M. Margret Hanley, LSP No. 8494
Sleeman, Hanley, and DiNitto
c/o GEI Consultants, Inc.
1021 Main Street
Winchester, MA 01890
(781) 721-4022

2. BACKGROUND

A Construction Related Release Abatement Measure (RAM) to remove contaminated sediments from portions of the On-Property Ditch System and to construct a subsurface containment wall around Dense Aqueous Phase Liquid (DAPL) and significantly contaminated groundwater was initiated in August 2000. The Construction related RAM was conditionally approved by MADEP in correspondence to Olin Corporation (Olin) dated June 26, and August 9, 2000. The locations of the remedial activities that are being performed as part of the RAM are depicted in Figure 1.

One aspect of the RAM was the installation of a box culvert, to replace the former Weir, just downstream of the confluence of the On-Property West Ditch and the South Ditch. The purpose of the box culvert is to control the elevation of surface water, and to create conditions that will permit the precipitation of chromium and iron floc from surface water in the area. The location of the box culvert is indicated on Figure 1. The base on the box culvert is several feet below the base elevation of the streambed of the South Ditch. To facilitate the installation of the box culvert, the site contractor diverted surface water from upstream of the box culvert to a sedimentation tank, which was then discharged to the "Delta Area" in the South Ditch, downstream of the work area. The pump that was used to divert surface water flow was inadvertently permitted to operate over night from a sump located at the base of the box culvert. This pumping resulted in a dewatering of the sump, and the eventual capture of shallow groundwater, which was discharged, untreated to the South Ditch. On the following morning, pumped groundwater in the sedimentation tank was observed to have a pH of about 4.6, indicating that DAPL influenced groundwater, and potentially the pumping of shallow groundwater at the box culvert had captured DAPL. Additionally, the release of low pH groundwater to the South Ditch resulted in the formation of white floc in the Delta Area, and elevated total and dissolved chromium concentrations in surface water leaving the Property.

MADEP was notified of the incident on October 5, 2000, within 2 hours of GEI's identification and initial assessment of the conditions in the South Ditch. GEI concluded that the inadvertent pumping of untreated groundwater in the vicinity of the box culvert, and the resulting increase in total chromium concentrations in surface water leaving the Property resulted in a violation of the terms of a National Pollution Discharge and Elimination System

by all agencies and work commenced after May 16, 2001. Completion of the Weir is expected before the end of June 2001.

3.2.3 Additional Excavation in the South Ditch

Although most of the sediment excavations in the South Ditch planned as part of the Part 2 Construction Related RAM Plan was completed in the fall of 2000, Olin elected to conduct limited additional excavation at some portions of the South Ditch to further achieve the remediation goals for the Property. This additional work was described in RAM Modification No. 7, dated May 11, 2001, which was verbally approved by MADEP on May 9, 2001. This work was performed at the Property during the month of May 2001. This work will be summarized in the RAM Status Report No. 2 for the Construction Related RAM, which will be submitted to MADEP in late June or early July 2001.

3.2.4 Wetland Restoration in South Ditch and Former Weir Area

The Construction Related RAM Plan calls for the restoration of the South Ditch/Former Weir Area to the original grade, and replanting of vegetation in accordance with the Order of Conditions issued by the Wilmington Conservation Commission. This restoration work required that clean granular fill, and loam is imported to the Property. The restoration work began in May, and is expected to be completed in July 2001. A summary of the restoration work will be presented in Status Report No. 2 for the Construction Related RAM, which will be submitted to MADEP in June 2001.

3.2.5 NPDES Monitoring

Groundwater that is pumped during excavation activities in the South Ditch and other areas of the property is subject to an NPDES Permit Exclusion (NPDES Permit Exclusion Reference No. 00-177) that was issued to Olin for the Part 2 Construction Related RAM Plan in September 2000. Under the Permit exclusion, Olin is required to treat pumped groundwater to meet project specific water quality standards prior to surface water discharge. During the months of January through March, no groundwater was pumped at the Property. Groundwater that was pumped during the months of April and May was treated in accordance with the NPDES permit requirements, and discharged to four locations in the Detention Pond and the South Ditch, as shown on Figure 1. Monthly monitoring reports presenting the testing results of treated groundwater are submitted to EPA in accordance with the NPDES Permit Exclusion.

4. FUTURE IRA RELATED ACTIVITIES AND REPORTING

The data presented in this Status Report is currently being evaluated by Olin to confirm our previous findings that the surface water conditions do not pose an IH, and to determine if additional monitoring data is required to support an Ecological Screening Assessment (ESA) of the South and East Ditch. The results of this evaluation will be submitted in an IRA Completion (IRAC) Statement, if appropriate, or the next IRA Status Report, which is due in October 2001.

LIMITATIONS

This Immediate Response Action Status Report No. 1 for the South Ditch/Former Weir Area was prepared for the use of Olin Corporation, exclusively. The findings provided by GEI in this report are based solely on the information reported in this document. Future investigations or information that was not available to GEI at the time of this Status Report may result in modification of this report. This report has been prepared in accordance with generally accepted engineering and geohydrological practices. No other warranty, expressed or implied, is made.

If you have any questions regarding the information presented in this letter report, please call Steve Morrow at Olin (423.336.4511) or me at (617.742.4447).

Very truly yours,

GEI CONSULTANTS, INC.

Marco Boscardin for MMH

M. Margret Hanley, LSP
LSP of Record

MMH:lek

Attachments:

- Figure 1. Site Plan, May 10, 2001
- Table 1. Chemical Testing Results, Surface water samples: South Ditch, ISCO-1/ OPWD
- Table 2. Chemical Testing Results, Surface water samples: South Ditch, NP-1/SD-SW
- Table 3. Chemical Testing Results, Surface water samples: South Ditch, ISCO-2
- Table 4. Chemical Testing Results, Surface water samples: East Ditch, ISCO-3

c: Marco Boscardin, GEI
Steve Morrow, Olin

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Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number: 3 - 0471

A. RELEASE OR THREAT OF RELEASE LOCATION:

Release Name: (optional) Olin Wilmington

Street: 51 Eames Street Location Aid:

City/Town: Wilmington ZIP Code: 01887

☐ Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.

☐ *Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114.*

Specify Program: ☐ CERCLA ☐ HSWA Corrective Action ☐ Solid Waste Management ☐ RCRA State Program (21C Facilities)

Related Release Tracking Numbers That This IRA Addresses:

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

☐ Submit an **IRA Plan** (complete Sections A, B, C, D, E, H, I, J and K).

☐ Check here if this IRA Plan is an update or modification of a previously approved written IRA Plan. Date Submitted:

☐ Submit an **Imminent Hazard Evaluation** (complete Sections A, B, C, F, H, I, J and K).

☑ Submit an **IRA Status Report** (complete Sections A, B, C, E, H, I, J and K). Status Report No. 1

☐ Submit a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** (complete Sections A, B, C, D, E, H, I, J and K).

☐ Submit an **IRA Completion Statement** (complete Sections A, B, C, D, E, G, H, I, J and K).

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.

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT IRA:

Identify Media and Receptors Affected: (check all that apply) ☐ Air ☐ Groundwater ☑ Surface Water ☐ Sediments ☐ Soil

☐ Wetland ☐ Storm Drain ☐ Paved Surface ☐ Private Well ☐ Public Water Supply ☐ Zone 2 ☐ Residence

☐ School ☐ Unknown ☐ Other Specify:

Identify Conditions That Require IRA, Pursuant to 310 CMR 40.0412: (check all that apply) ☐ 2 Hour Reporting Condition(s)

☐ 72 Hour Reporting Condition(s) ☑ Substantial Release Migration ☑ Other Condition(s)

Describe: Surface water conditions related to Surface Water Management incident on October 5, 2000.

Identify Oils and Hazardous Materials Released: (check all that apply) ☐ Oils ☐ Chlorinated Solvents ☑ Heavy Metals

☑ Others Specify: Chromium floc, low pH groundwater.

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☑ Assessment and/or Monitoring Only

☐ Excavation of Contaminated Soils

☐ Re-use, Recycling or Treatment

○ On Site ○ Off Site Est. Vol.: _____ cubic yards

Describe:

☐ Store ○ On Site ○ Off Site Est. Vol.: _____ cubic yards

☐ Landfill ○ Cover ○ Disposal Est. Vol.: _____ cubic yards

☐ Removal of Drums, Tanks or Containers

Describe:

☐ Deployment of Absorbent or Containment Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

☐ Groundwater Treatment Systems

☐ Air Sparging

☐ Temporary Water Supplies

SECTION D IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection **BWSC-105**

Bureau of Waste Site Cleanup

Release Tracking Number

3 - 0471

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

D. DESCRIPTION OF RESPONSE ACTIONS (continued):

☐ Removal of Other Contaminated Media

Specify Type and Volume: _____

☐ Temporary Evacuation or Relocation of Residents

☐ Fencing and Sign Posting

☐ Other Response Actions Describe: _____

☐ Check here if this IRA involves the use of Innovative Technologies (DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse).

Describe Technologies: _____

E. TRANSPORT OF REMEDIATION WASTE: (if Remediation Waste has been sent to an off-site facility, answer the following questions)

Name of Facility: _____

Town and State: _____

Quantity of Remediation Waste Transported to Date: _____

F. IMMINENT HAZARD EVALUATION SUMMARY: (check one of the following)

☐ Based upon an evaluation, an Imminent Hazard exists in connection with this Release or Threat of Release.

☑ Based upon an evaluation, an Imminent Hazard does not exist in connection with this Release or Threat of Release. See IRA Assessment and Plan Submittal, 12/20/00.

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

G. IRA COMPLETION STATEMENT:

☐ Check here if future response actions addressing this Release or Threat of Release will be conducted as part of the Response Actions planned for a Site that has already been Tier Classified under a different Release Tracking Number, or a Site that is identified on the Transition List as described in 310 CMR 40.0600 (i. e., a Transition Site, which includes Sites with approved Waivers). These additional response actions must occur according to the deadlines applicable to the earlier Release Tracking Number (i. e., Site ID Number).

State Release Tracking Number (i. e., Site ID Number) of Tier Classified Site or Transition Site: _____

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the IRA Completion Statement, you must submit either a Release Abatement Measure (RAM) Plan or a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the IRA Completion Statement.

H. 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 an **Immediate Response Action Plan** is being submitted*, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed 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;

> *if Section B of this form indicates that an **Imminent Hazard Evaluation** is being submitted*, this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation complies(y) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> *if Section B of this form indicates that an **Immediate Response Status Report** 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;

> *if Section B of this form indicates that an **Immediate Response Action Completion Statement** or a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** 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 H IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-105

Release Tracking Number
3 - 0471

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

H. LSP Opinion (continued):

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: M. Margret Hanley LSP #: 8494 Stamp:

Telephone: 781.721.4022 Ext.:

FAX: (optional) 781.721.4073

Signature: M Margret Hanley

Date: May 31, 2001

COMMONWEALTH OF MASSACHUSETTS
M. MARGRET HANLEY
No. 8494
REGISTERED
LICENSED SITE PROFESSIONAL

I. PERSON UNDERTAKING IRA:

Name of Organization: Olin Corporation

Name of Contact: Steve Morrow, P.E. Title: Principal Environmental Engineer

Street: 1186 Lower River Road

City/Town: Charleston State: TN ZIP Code: 37310-0248

Telephone: 423.336.4511 Ext.: FAX: (optional)

☐ Check here if there has been a change in the person undertaking the IRA.

J. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA: (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 Undertaking IRA Specify Relationship:

K. CERTIFICATION OF PERSON UNDERTAKING IRA:

I, STEVE MORROW, 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: Steve Morrow Title: PRINCIPLE ENV. SPECIALIST
(signature)

For: Date: May 29, 2001
(print name of person or entity recorded in Section I)

Enter address of the person providing certification, if different from address recorded in Section I:

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.

Table 4.
Chemical Testing Results
Surface Water Samples: East Ditch, ISCO-3
Olin Corporation Property
51 Eames Street
Wilmington, MA

Client ID	Date Collected	Time	Laboratory Parameters							Field Parameters			
			Ammonia Nitrogen as N mg/L	Total Nitrite/ Nitrate mg/L	Total Chromium ug/L	Chromium, dissolved ug/L	Aluminum, dissolved ug/L	Sulfate mg/L	Chloride mg/L	pH	Specific Conductivity (mS/m)	Stream Temperature (°C)	Dissolved Oxygen (mg/L)
1170-ISCO3-1	2/9/01	13:40	4.6	-	<10	<10	-	-	-	6.6	0.40	-	-
1170-ISCO3-5	3/9/01	14:25	4.9	1.7	< 10	< 10	-	-	-	6.4	0.40	5.6	8.86
1170-ISCO3-9	4/2/01	8:45	3.4	1.6	< 10	< 10	< 100	50	110	5.93	0.55	5.2	8.57

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytes and laboratory reporting limits see the laboratory data sheets.
2. mg/L = milligrams per liter
3. ug/L = micrograms per liter
4. mS/m = millisiemens per meter
5. °C = degrees Celsius
6. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
7. "-" = Parameter not measured.

X1000.

Table 1.
Chemical Testing Results
Surface Water Samples: South Ditch, 1-OPWD/ISCO
Olin Corporation Property
51 Eames Street
Wilmington, MA

Client ID	Date Collected	Time	Laboratory Parameters										Field Parameters			
			Ammonia Nitrogen as N mg/L	Total Nitrite/ Nitrate mg/L	Total Chromium ug/L	Chromium, dissolved ug/L	Total Aluminum ug/L	Aluminum, dissolved ug/L	Total Iron ug/L	Iron, dissolved ug/L	Sulfate mg/L	Chloride mg/L	pH	Specific Conductivity (mS/m)	Stream Temperature (°C)	Dissolved Oxygen (mg/L)
1150-OPWD-SWC37	12/11/00	10:50	10	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC38	12/12/00	11:00	22	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC39	12/13/00	10:50	55	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWD1	12/21/00	13:05	27	-	220	68	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWD2	12/29/00	10:40	66	-	500	<10	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWD3	1/4/01	13:30	61	-	480	24	-	-	-	-	-	-	-	-	-	-
1150-OPDW-SWD4	1/11/01	13:20	45	-	420	37	-	-	-	-	-	-	5.3	1.00	-	-
1150-OPDW-SWD5	1/18/01	14:50	32	-	260	87	-	-	-	-	-	-	5.4	1.10	-	-
1150-OPDW-SWD6	1/25/01	14:15	24	-	330	<10	-	-	-	-	-	-	5.8	0.80	-	-
1150-OPDW-SWD7	2/2/01	10:20	15	-	190	12	-	-	-	-	-	-	5.8	0.60	-	-
1170-ISCO1-1	2/9/01	13:00	12 ✓	-	200 2.4	<10	-	-	-	-	-	-	6.1	1.00	-	-
1170-ISCO1-2	2/15/01	10:45	11 ✓	-	170	36	-	-	-	-	-	-	6.0	0.50	-	-
1170-ISCO1-3	2/23/01	10:15	29 ✓	0.77 ✓	420	<10	-	-	-	-	-	-	5.8	0.80	3.6	-
1170-ISCO1-4	3/1/01	8:52	20 ✓	1.0 ✓	340	80	-	-	-	-	-	-	5.8	0.90	2.3	-
1170-ISCO1-5	3/9/01	14:00	19 ✓	0.46 ✓	300	120	-	-	-	-	-	-	6.0	0.60	3.5	6.67
1170-ISCO1-6	3/16/01	9:29	19 ✓	0.48 ✓	210	75	-	350	-	-	120 ✓	72 ✓	5.9	0.50	2.9	6.72
1170-ISCO1-7	3/23/01	8:47	8 ✓	0.73 ✓	30	21	-	290	-	-	55 ✓	47 ✓	5.4	0.30	3.2	8.46
1170-ISCO1-8	3/26/01	9:45	41 ✓	1.2 ✓	180	70	-	480	-	-	220 ✓	114 ✓	5.4	0.93	5.1	5.56
1170-ISCO1-9	4/2/01	9:09	35 ✓	1.1 ✓	260	120	-	570	-	-	300 ✓	120 ✓	5.3	0.94	4.9	5.74
1170-ISCO1-10	4/9/01	9:40	35 ✓	0.90 ✓	190	54	-	180	-	-	170 ✓	110 ✓	5.6	0.72	7.7	6.26
1170-ISCO1-11	4/16/01	7:45	22 ✓	0.78 ✓	200	110	-	380	-	-	180 ✓	120 ✓	6.0	0.88	-	-

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytes and laboratory reporting limits see the laboratory data sheets.
2. mg/L = milligrams per liter
3. ug/L = micrograms per liter
4. mS/m = millisiemens per meter
5. °C = degrees Celsius
6. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
7. "-" = Parameter not measured.

numbers correct x 1000

Table 2.
Chemical Testing Results
Surface Water Samples: South Ditch, NP-1/SD-SW
Olin Corporation Property
51 Eames Street
Wilmington, MA

Client ID	Date Collected	Time	Laboratory Parameters										Field Parameters	
			Ammonia Nitrogen as N mg/L	Total Nitrite/ Nitrate mg/L	Total Chromium ug/L	Chromium, dissolved ug/L	Total Aluminum ug/L	Aluminum, dissolved ug/L	Total Iron ug/L	Iron, dissolved ug/L	Fluoranthene ug/L	bis (2-Ethylhexyl) phthalate ug/L	pH	Specific Conductivity (mS/m)
1150-SD-SWC37	12/11/00	11:00	84	-	74	< 10	-	-	-	-	<10	< 10	-	-
1150-SD-SWC38	12/12/00	11:15	72	-	51	< 10	-	-	-	-	<10	< 10	-	-
1150-SD-SWC39	12/13/00	11:10	66	-	47	< 10	-	-	-	-	<10	< 10	-	-
1150-SD-SWD1	12/21/00	13:00	37	-	100	< 10	-	-	-	-	-		-	-
1150-SD-SWD2	12/29/00	10:40	96	-	160	< 10	-	-	-	-	-		-	-
1150-SD-SWD3	1/4/01	13:40	94	-	120	< 10	-	-	-	-	-		-	-
1150-SD-SWD4	1/11/01	13:30	80	-	98	< 10	-	-	-	-	-		6.3	1.80
1150-SD-SWD5	1/18/01	15:00	81	-	64	< 10	-	-	-	-	-		6.1	1.90
1150-SD-SWD6	1/25/01	14:30	89	-	72	<10	-	-	-	-	-		6.2	1.90
1150-SD-SWD7	2/2/01	10:40	37	-	76	< 10	-	-	-	-	-		6.2	1.00
1170-NP1-1	2/9/01	14:00	85	-	90	13	-	-	-	-	-		6.2	1.50
1170-NP1-2	2/15/01	11:15	34	-	110	<10	-	-	-	-	-		6.2	0.70
1170-NP1-3	2/23/01	12:06	74	1.8	120	27	-	-	-	-	-		6.2	1.40
1170-NP1-4	3/1/01	9:36	-	-	-	-	-	-	-	-	-		6.30	1.10

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytes and laboratory reporting limits see the laboratory data sheets.
2. mg/L = milligrams per liter
3. ug/L = micrograms per liter
4. mS/m = millisiemens per meter
5. °C = degrees Celsius
6. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
7. "-" = Parameter not measured.

Table 3.
Chemical Testing Results
Surface Water Samples: South Ditch, ISCO-2
Olin Corporation Property
51 Eames Street
Wilmington, MA

Client ID	Date Collected	Time	Laboratory Parameters							Field Parameters			
			Ammonia Nitrogen as N mg/L	Total Nitrite/ Nitrate mg/L	Total Chromium ug/L	Chromium, dissolved ug/L	Aluminum, dissolved ug/L	Sulfate mg/L	Chloride mg/L	pH	Specific Conductivity (mS/m)	Stream Temperature (°C)	Dissolved Oxygen (mg/L)
1170-ISCO2-1	2/9/01	13:20	76 ✓	-	100 ✓	13 ✓	-	-	-	6.3	1.50	-	-
1170-ISCO2-2	2/15/01	11:00	27 ✓	-	92 ✓	<10 ✓	-	-	-	6.2	0.70	-	-
1170-ISCO2-3	2/23/01	12:00	66 ✓	2.0 ✓	120 ✓	20 ✓	-	-	-	6.2	1.30	2.5	-
1170-ISCO2-4	3/1/01	9:25	48 ✓	2.4 ✓	71 ✓	<10 ✓	-	-	-	6.4	1.00	1.9	-
1170-ISCO2-5	3/9/01	14:15	59 ✓	2.0 ✓	110 ✓	23 ✓	-	-	-	6.1	1.20	1.0	8.58
1170-ISCO2-6	3/16/01	9:01	15 ✓	1.2 ✓	83 ✓	13 ✓	180 ✓	150 ✓	50 ✓	6.0	-	1.5	9.80
1170-ISCO2-7	3/23/01	9:52	9.3 ✓	0.87 ✓	36 ✓	11 ✓	230 ✓	79 ✓	37 ✓	5.6	0.33	2.5	9.41
1170-ISCO2-8	3/26/01	8:46	33 ✓	1.6 ✓	90 ✓	14 ✓	220 ✓	210 ✓	78 ✓	5.7	0.83	3.2	8.20
1170-ISCO2-9	4/2/01	8:32	47 ✓	1.6 ✓	110 ✓	32 ✓	320 ✓	400 ✓	83 ✓	5.5	0.88	3.2	8.59
1170-ISCO2-10	4/9/01	9:01	33 ✓	1.5 ✓	130 ✓	15 ✓	150 ✓	240 ✓	88 ✓	5.7	0.84	6.5	8.18
1170-ISCO2-11	4/16/01	8:17	57 ✓	840 ✓	36 ✓	< 10 ✓	150 ✓	410 ✓	110 ✓	6.3	1.31	-	-

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytes and laboratory reporting limits see the laboratory data sheets.
2. mg/L = milligrams per liter
3. ug/L = micrograms per liter
4. mS/m = millisiemens per meter
5. °C = degrees Celsius
6. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
7. "-" = Parameter not measured.

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DEP OCT 12 2001

GEI Consultants, Inc.

October 12, 2001
Project 97598

1021 Main Street
Winchester, MA 01890-1970
781•721•4000
781•721•4073 Fax

Mr. Christopher Pyott
Environmental Analyst
Department of Environmental Protection
Bureau of Waste Site Cleanup
205A Lowell Street
Wilmington, MA 01887

Dear Mr. Pyott:

Re: Interim Status Report - Former Lake Poly Area Assessment
Part 2 Construction-Related Release Abatement Measure Plan
Olin Corporation Property
51 Eames Street
Wilmington, MA
RTN 3-0471

The purpose of this letter is to summarize the recent field investigations and focused risk assessment of the Former Lake Poly Area located at the above-referenced site. These activities were proposed in Modification No. 8 to the Part 2 Construction-Related Release Abatement Measure (RAM) Plan (*Modification No. 8*), dated June 12, 2001. On June 19, 2001, the Massachusetts Department of Environmental Protection (MADEP) verbally approved *Modification No. 8*. A copy of the RAM transmittal form BWSC-106 is contained in Appendix A. A copy of *Modification No. 8* is contained in Appendix B.

Olin is currently conducting a Focused Feasibility Study (FFS) pursuant to MADEP Policy No. WSC-00-425, Construction of Buildings in Contaminated Areas, to identify feasible remedial alternatives for the Former Lake Poly Area. The findings of the FFS will be submitted to MADEP under separate cover.

Background

During previous investigations at the property, a "Hot Spot" for chromium was detected in the Former Lake Poly Area (Figure 1). Excavation of the estimated Hot Spot location was performed on November 17, 2000, as part of the Part 2 Construction-Related RAM, and described in *Modification No. 8*. One sidewall sample from the Hot Spot excavation exhibited concentrations of chromium that exceeded the Upper Concentration Limits (UCLs) and elevated concentrations of semivolatile organic compounds (SVOCs). Additionally, a 1- to 2-foot-thick seam of yellow material, identified as Kempore, was observed along the southern and western walls of the excavation. The results of the chemical analysis of samples collected during the Hot Spot Excavation in November 2000 as well as previous analysis of samples collected in the Former Lake Poly Area were presented in *Modification No. 8*. The location of the Hot Spot excavation is shown in Figure 2.

Additional excavation was performed on May 8, 2001 to determine the extent of the Kempore seam and to assess subsurface conditions in the Former Lake Poly Area that may contribute to the presence of

chromium at concentrations greater than the UCL. Two trenches were excavated as described in *Modification No. 8* and two soil samples were collected from the terminal sidewall of each trench. The approximate location of the trenches and samples are shown in Figure 2. The results of the chemical analysis of samples collected during the trench excavations were presented in *Modification No. 8.* Based on the observations made during the excavation, the historical southern and western limits of Former Lake Poly Area may have been intercepted by the trenches.

Following the trench excavations of May 2001, the approximate historical limits of the Former Lake Poly Area were estimated based on a review of historical aerial photographs, the extent to which historical data could be used to characterize the soil in the Former Lake Poly Area was assessed, and the extent of potentially affected soil adjacent to the Former Lake Poly Area was estimated. The estimated extent of the Former Lake Poly Area is depicted on Figure 1.

Based on the distribution of historical samples collected within the Former Lake Poly Area, additional data were required to estimate the horizontal and vertical extent, characterize the potentially impacted soil, and to identify feasible remedial alternatives for the Former Lake Poly Area. As part of *Modification No. 8*, Olin proposed additional assessment, and excavation of contaminated soil if necessary. The status of these proposed activities are summarized below.

1. Field Investigations

Soil Investigation

Soil borings were performed from July 9 through July 12, 2001, to estimate the historical limits of the Former Lake Poly Area and to determine if the soil conditions required remedial action. Borings were advanced using either a truck-mounted auger rig or a Geoprobe rig, as noted on Figure 2. The investigation was conducted in general accordance with the scope of work presented in *Modification No. 8.* Field activities were performed in accordance with the methods and procedures presented in Appendix C.

Initially, boring locations were established on a grid spacing of approximately 30 by 40 feet within the area estimated to represent the historical limits of the Former Lake Poly Area. Thirteen additional borings were conducted based on initial field observations and preliminary laboratory data. These additional borings were added to the original scope to define the perimeter of the Former Lake Poly Area and to refine the vertical and horizontal extent of discrete areas of potentially affected soil within the perimeter. The investigation perimeter was expanded until borings revealed no visual evidence of contamination. Boring locations are shown on Figure 2. Boring logs with soil descriptions and sample intervals are contained in Appendix D.

Soil samples for potential laboratory analysis were collected from each of the primary stratum encountered in each boring. Based on visual identification, three primary strata were identified in the Former Lake Poly Area: potentially unaffected surficial granular fill; potentially affected soil, sediment, or disposal material; and potentially unaffected soil underlying or bordering other strata. A total of 83 soil samples were collected from the 32 borings. Each sample was screened in the field for volatile organic compounds by jar headspace analysis using a photo-ionization detector (PID) and submitted to Severn-Trent Laboratory (STL) of Westfield, Massachusetts for expedited analysis of chromium and, in selected cases, ammonia. These initial field and laboratory results are summarized in Table 1.

The initial data from field observations, jar headspace screening results, and chromium/ammonia results were used to subdivide the Former Lake Poly Area into three zones: Zone A (borings where little or no data suggested affected soil or disposal materials), Zone B (borings located close to proposed redevelopment areas), and Zone C (borings with data suggesting affected soil or disposal materials). Each of these zones was further subdivided both horizontally and vertically into smaller units, based on

the initial data results and the estimated volume of each unit. The horizontal limit of each zone is shown on Figure 1 and details of each unit are presented in Table 2. A total of nineteen soil samples were selected and submitted for laboratory analysis, with each sample representing a unit with an estimated soil volume ranging from approximately 120 to 480 cubic yards. The samples were analyzed for a suite of either confirmatory or disposal parameters, based on the estimated degree of contamination and the potential for future off-site disposal. In addition, some Former Lake Poly Area samples with elevated chromium concentrations were selected for analysis of toxicity characteristic leaching procedure (TCLP) for chromium. The samples selected for laboratory analysis and the analysis performed on each sample are show in Table 2. A summary of the laboratory results for these selected samples is presented in Table 3.

To assess the potential structural constraints (bearing capacity and settlement) that in-situ soil and potential disposal materials in the Former Lake Poly Area may pose to future development, GEI collected geotechnical information during the installation of six of the borings. These borings were advanced using an auger drill rig and 2-inch split-spoon sampler. Standard penetration test (SPT) N-values were recorded continuously to the bottom of the boring. N-values and soil description information presented in the boring logs (Appendix D). Two geologic cross-sections of the Former Lake Poly Area are shown in Figure 3.

Groundwater Investigation

On July 9, 2001, LPB-11 of the Lake Poly investigation was completed and a 2-inch PVC monitoring well was installed (GW-LPB11). A well installation log is presented in Appendix D. GEI developed the well on July 18, 2001, in accordance with GEI standard procedure SS-005 (Appendix B) and the Quality Assurance Project Plan (QAPP) for the Olin site [August 1999].

On July 27, 2001, GEI collected groundwater samples from monitoring wells GW-29D, GW-29S, GW-34D, and GW-LPB11. Samples were collected in general accordance with the U.S. Environmental Protection Agency Low Stress Purging and Sampling Procedure (Appendix B) and submitted to STL for analysis of volatile organic compounds (VOCs), SVOCs, total metals, pesticides, ammonia, and pH. A sample from each well was submitted to Lancaster Laboratories of Lancaster, Pennsylvania for analysis of Kempore and Opex. A summary of laboratory results for the groundwater samples is presented in Table 4.

2. Excavation/Disposal

No excavation of soil from the Former Lake Poly Area has been conducted since the Hot Spot excavation of November 17, 2000. This excavated soil (approximately 40 cubic yards) remains stockpiled at the property on a cement slab in covered stockpiles, pending disposal characterization and off-site disposal.

Debris collected during the trench excavations of May 2001 is currently stored in two 55-gallon steel drums located in the West Warehouse at the property, pending disposal characterization and off-site disposal.

Purge water from monitoring well development and sampling was placed in four 55-gallon steel drums and stored in the East Warehouse pending off-site disposal. GEI sampled the purge water drums on October 8, 2001 for disposal characterization. The drums will be scheduled for off-site disposal following review of the sample results.

3. Permits and Certifications

The field investigations covered under this Interim Status Report were outside the work areas subject to the MADEP 401 Water Quality Certification, U.S. Army Corp of Engineers 404 dredging permit, and the town of Wilmington Order of Conditions (OOC) that were obtained for the Part 2 Construction-Related RAM. However, some of the proposed work was within the 100-foot-wide buffer zone to the mapped wetland. On June 8, 2001, a Request for a Determination of Applicability (DOA) was submitted to the Wilmington Conservation Commission (WCC). On June 20, 2001, the WCC issued a negative DOA to Olin for work proposed within the buffer zone. A copy of the correspondence from the WCC granting the negative DOA is contained in Appendix B.

4. Update of Focused Risk Assessment

Based on the information collected in the Former Lake Poly Area since November 2000, as described herein, an interim human health and public welfare risk assessment (Risk Assessment) was performed. The risk assessment was prepared by Harding ESE on behalf of Olin and serves to update the previous Focused Risk Assessment (FRA) [HLA, 2000] for the Olin Property. This Risk Assessment is considered an interim update with respect to the entire MCP disposal site because investigations of the nature and extent of contamination are on-going.

Harding ESE's report summarizing the Risk Assessment is presented in Appendix B of this Interim Status Report.

5. Geotechnical Assessment

Geotechnical data collected during the subsurface investigations are presented on Figure 3 and in Appendix D. The data suggest that, with certain restrictions, the soil in the Former Lake Poly Area will be suitable for the support of typical parking lots, roadways, and building foundations associated with redevelopment of the Property. GEI presents the following minimum restrictions for the suitability of soil within the Former Lake Poly Area:

a. A layer of soft disposal material (Kempore), with a thickness ranging from 4 inches to 26 inches, was observed in borings LPB-11, LPB-12, and LPB-29. This material is not suitable for support of building foundations. The material may be suitable for support of typical roadways and parking lots, provided the material is overlain with at least four feet of compacted Ordinary Fill meeting the gradation and compaction criteria presented in Appendix B. Note that for the current site conditions, the disposal material layer observed in LPB-12 is less than four feet from ground surface.

b. If more than two feet of fill is required for the redevelopment design in the vicinity of the Former Lake Poly Area, the fill should be placed a minimum of one month before start of pavement or building construction to expedite settlement of in-situ soils.

c. Prior to construction, the Former Lake Poly Area should be proof compacted with at least six coverages using a vibratory roller imparting an impact load of at least 10 tons. Soft areas should be excavated and replaced with Ordinary Fill meeting the gradation and compaction criteria presented in Appendix B.

6. Focused Feasibility Study

On behalf of Olin, GEI is conducting a Focused Feasibility Study (FFS) to identify feasible remedial alternatives for the Former Lake Poly Area. The FFS will serve to update the FFS completed by GEI in

April 2000, and will be submitted to MADEP either as part of RAM Status Report No. 3, which will be submitted to MADEP in January 2002, or as a separate Phase II Submittal.

This preliminary assessment is based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

If you have any questions regarding this report, please call me at 617.529.6770, or Steve Morrow at 423.336.4511.

Very truly yours,

GEI CONSULTANTS, INC.

M. Margret Hanley, LSP
LSP of Record

LJW/MMH:lek
Attachments
c: G. Andrews, WPI
M. Boscardin, GEI
S. Morrow, Olin
M. Murphy, HLA

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Table 1.
Boring Information and Preliminary Data
Olin Chemical Property
51 Eames Street, Wilmington, MA

Date	Boring No.	Sample No.	Location			Sample Depth Interval		Potential Contaminant Observations		Screening Results/ Jar Headspace (ppm)	Laboratory Analysis	
			Northing (ft)	Easting (ft)	Surface Elev. (ft)	Top (ft bgs)	Bottom (ft bgs)	Visual (Y/N)	Olfactory (Y/N)		Cr (mg/kg)	Ammonia (mg/kg)
Soil Unit A1												
07/12/01	31	S1	556787.9584	693004.6218	85.55	0.0	6.0	N	N	0.5	16	
07/12/01	31	S2	556787.9584	693004.6218	85.55	6.0	8.0	N	N	0.5	1800	
07/12/01	32	S1	556765.2101	693022.3317	85.55	0.0	2.0	N	N	0.5	27	
07/12/01	32	S2	556765.2101	693022.3317	85.55	2.0	8.0	N	Y	2.0	450	
07/10/01	7	S1	556748.4559	693034.5017	85.95	0.0	3.0	N	N	0	14	13
07/10/01	7	S2	556748.4559	693034.5017	85.95	3.0	8.0	N	N	0	480	10
7/11/01	23	S1	556717.7866	693016.2474	86.35	0.0	3.0	N	N	0	12 J_1	
7/11/01	23	S2	556717.7866	693016.2474	86.35	3.0	8.0	N	N	0	16 J_1	
07/09/01	9	S1	556751.4148	692982.272	85.35	0.0	4.5	N	N	0	270	
07/09/01	9	S2	556751.4148	692982.272	85.35	4.5	6.0	N	Y	0	64	
07/09/01	9	S3	556751.4148	692982.272	85.35	6.0	8.0	N	N	NM	230	
07/12/01	34	S1	556774.7024	692991.0996	85.45	0.0	6.0	N	N	0.5	39	
07/12/01	34	S2	556774.7024	692991.0996	85.45	6.0	8.0	N	N	0.5	4000	
Soil Unit A2												
7/11/01	27	S1	556856.9491	692920.2985	87.15	0.0	5.0	N	N	0.5	140	
7/11/01	27	S2	556856.9491	692920.2985	87.15	5.0	7.5	N	Y	4	6.0	
7/11/01	27	S3	556856.9491	692920.2985	87.15	7.5	12.0	N	N	0.5	13	
7/11/01	26	S1	556822.2637	692934.5898	85.55	0.0	3.5	N	N	1	62	
7/11/01	26	S2	556822.2637	692934.5898	85.55	3.5	7.0	N	Y	2.5	14 J_1	
7/11/01	26	S3	556822.2637	692934.5898	85.55	1.0	8.0	N	N	0.5	31 J_1	
7/11/01	24	S1	556758.1093	692959.7697	85.45	0.0	2.0	N	N	0.5	18 J_1	
7/11/01	24	S2	556758.1093	692959.7697	85.45	2.0	2.5	N	Y	3	7 J_1	
7/11/01	24	S3	556758.1093	692959.7697	85.45	2.5	8.0	N	N	3	17 J_1	
7/11/01	28	S1	556785.16	692927.86	88.89	0.0	5.0	N	N	0	720	17
7/11/01	28	S2	556785.16	692927.86	88.89	5.0	9.0	N	Y	1.5	780	77 / 130
7/11/01	28	S3	556785.16	692927.86	88.89	9.0	10.0	N	Y	1	18	
Soil Unit A3												
07/09/01	13	S1	556874.5018	692938.9425	85.75	0.0	4.5	N	N	0	200	
07/09/01	13	S2	556874.5018	692938.9425	85.75	4.5	6.0	N	Y	0.5	700	
07/09/01	13	S3	556874.5018	692938.9425	85.75	6.0	7.0	N	Y	0	920	
7/11/01	2	S1	556901.4755	692987.6325	87.95	0.0	6.0	N	N	0	130	
7/11/01	2	S2	556901.4755	692987.6325	87.95	6.0	8.0	N	N	0	580	
7/11/01	1	S1	556916.258	692958.5619	88.25	0.0	4.0	N	N	0	32	
7/11/01	1	S2	556916.258	692958.5619	88.25	4.0	8.0	N	N	0	21	
7/11/01	14	S1	556901.4434	692927.9143	86.55	0.0	2.5	N	N	0	690	37
7/11/01	14	S2	556901.4434	692927.9143	86.55	2.5	4.5	N	Y	0	530	62
Soil Unit B1												
7/11/01	22	S1	556887.9114	693022.2261	89.05	0.0	4.2	N	N	0	6.5 J_1	
7/11/01	22	S2	556887.9114	693022.2261	89.05	4.2	9.0	N	N	0	8.4 J_1	
07/09/01	3	S1	556875.0376	693006.7627	88.05	0.0	2.5	N	N	0	78	
07/09/01	3	S2	556875.0376	693006.7627	88.05	2.5	6.0	Y	Y	7	19	
07/09/01	3	S3	556875.0376	693006.7627	88.05	6.0	6.5	N	Y	0	12	
07/10/01	4	S1	556848.37	693017.0382	87.75	0.0	1.0	N	N	0	27	
07/10/01	4	S2	556848.37	693017.0382	87.75	1.0	4.0	N	Y	0	14	
07/10/01	4	S3	556848.37	693017.0382	87.75	4.0	6.0	N	Y	0	32	
07/10/01	5	S1	556813.0112	693026.7167	86.45	0.0	2.5	N	N	0	140	11
07/10/01	5	S2	556813.0112	693026.7167	86.45	2.5	8.0	N	Y	0.5	<11	14
07/10/01	6	S1	556780.9514	693032.6407	85.65	0.0	1.0	N	N	0	11	
07/10/01	6	S2	556780.9514	693032.6407	85.65	1.0	8.0	N	Y	0.5	720	
Soil Unit B2												
07/10/01	16	S1	556860.331	692978.6614	87.25	0.0	7.5	N	N	0	37	15
07/10/01	16	S2	556860.331	692978.6614	87.25	7.5	8.5	N	Y	56	2900	55
07/09/01	17	S1	556828.6271	692987.5814	85.85	0.0	5.5	N	N	1.3	86	
07/09/01	17	S2	556828.6271	692987.5814	85.85	5.5	8.5	N	Y	0	1000	
Soil Unit C1												
07/10/01	8	S1	556735.7254	693007.5415	85.95	0.0	5.0	N	N	0	17	17
07/10/01	8	S2	556735.7254	693007.5415	85.95	5.0	7.0	Y	Y	126	460	130
07/10/01	8	S3	556735.7254	693007.5415	85.95	7.0	8.0	N	Y	3	11	
07/12/01	33	S1	556752.729	693007.7857	85.55	0.0	6.0	N	N	0.0	18	
07/12/01	33	S2	556752.729	693007.7857	85.55	6.0	7.0	Y	Y	8.5	2100	
07/12/01	33	S3	556752.729	693007.7857	85.55	7.0	8.0	N	Y	3.5	76	
07/09/01	19	S1	556767.5425	693006.5525	85.45	0.0	3.5	N	N	0	13	
07/09/01	19	S2	556767.5425	693006.5525	85.45	3.5	4.5	Y	Y	1.5	660	
07/09/01	19	S3	556767.5425	693006.5525	85.45	6.0	12.0	N	N	0	780	

Table 1.
Boring Information and Preliminary Data
Olin Chemical Property
51 Eames Street, Wilmington, MA

Date	Boring No.	Sample No.	Location			Sample Depth Interval		Potential Contaminant Observations		Screening Results/ Jar Headspace (ppm)	Laboratory Analysis	
			Northing (ft)	Easting (ft)	Surface Elev. (ft)	Top (ft bgs)	Bottom (ft bgs)	Visual (Y/N)	Olfactory (Y/N)		Cr (mg/kg)	Ammonia (mg/kg)
Soil Unit C2												
07/10/01	10	S1	556782.6231	692970.0102	85.55	0.0	5.5	N	Y	7	1300	610
07/10/01	10	S2	556782.6231	692970.0102	85.55	5.5	7.5	Y	Y	123	2700	660 F / 340
07/10/01	10	S3	556782.6231	692970.0102	85.55	7.5	8.5	N	Y	17	920	
07/10/01	18	S1	556797.7543	692998.218	85.45	0.0	8.0	N	N	0	33	
07/10/01	18	S2	556797.7543	692998.218	85.45	8.0	10.0	Y	Y	27	7900	
07/10/01	18	S3	556797.7543	692998.218	85.45	10.0	10.5	N	Y	7	1200	
07/12/01	30	S1	556807.2579	692979.4622	85.65	0.0	8.0	N	Y	33	38	
07/12/01	30	S2	556807.2579	692979.4622	85.65	8.0	9.0	Y	Y	151	3000	2500
07/12/01	30	S3	556807.2579	692979.4622	85.65	9.0	11	N	Y	18	740	
Soil Unit C3												
7/11/01	25	S1	556791.508	692946.4536	85.95	0.0	2.5	N	Y	3	40 J_1	
7/11/01	25	S2	556791.508	692946.4536	85.95	2.5	3.0	N	N	271	8 J_1	320
7/11/01	25	S3	556791.508	692946.4536	85.95	3.0	8.0	N	N	12	34 J_1	
07/09/01	11	S1	556811.195	692961.4466	85.75	0.0	4.0	N	Y	1.5	120	
07/09/01	11	S2	556811.195	692961.4466	85.75	4.0	6.0	Y	Y	165	2400 F	29000
07/09/01	11	S3	556811.195	692961.4466	85.75	6.0	9.0	N	Y	33	1100	
07/10/01	12	S1	556844.7386	692950.1232	86.25	0.0	3.5	N	Y	2.5	62	60
07/10/01	12	S2	556844.7386	692950.1232	86.25	3.5	6.5	Y	Y	90	4600	44000 / 71000
07/10/01	12	S3	556844.7386	692950.1232	86.25	6.5	10.0	N	Y	49	1300 J_1	80
Soil Unit C4												
07/12/01	29	S1	556867.3892	692958.0197	86.55	0.0	7.0	N	N	1	120	
07/12/01	29	S2	556867.3892	692958.0197	86.55	7.0	8.0	Y	Y	340	5900	40000
07/12/01	29	S3	556867.3892	692958.0197	86.55	8.0	10.5	N	Y	15	2700	
07/10/01	15	S1	556888.2334	692963.777	87.45	0.0	6.5	N	N	0	150	21
07/10/01	15	S2	556888.2334	692963.777	87.45	6.5	8.5	Y	Y	2	460	
07/10/01	15	S3	556888.2334	692963.777	87.45	8.5	11.0	N	N	0	2700	12

General Notes:
1 Boring locations surveyed by Dana F. Perkins, Tewksbury, Massachusetts.
2 Laboratory data for chromium and ammonia provided by Severn Trent Laboratory (Westfield, Massachusetts)
3 Jar headspace measured with photo-ionization detector, calibrated daily in accordance with GEI SOP No TE-001
4 bgs = below ground surface
5 ppm = parts per million
6 mg/kg = milligrams per kilogram

Qualifying Notes:
F The result is estimated due to matrix spike recovery outside of control limits.
J_1 The result is estimated due to lack of associated batch method blank.

Table 2.
Soil Units, Range of Preliminary Data, and Samples Submitted for Laboratory Analysis
Olin Chemical Property
51 Eames Street, Wilmington, MA

Soil Unit	Associated Boring Numbers	Area (sf)	Soil Sub-unit (layer)	Average Thickness (ft)	Estimated Volume (cy)	Potential Visual Contamination (Y/N)	Maximum Jar Headspace (ppm)	Chromium Range (mg/kg)	Ammonia Range (mg/kg)	Soil Samples Submitted for Laboratory Analysis		
										Confirmatory Suite	Disposal Suite	Chromium TCLP
A1	7, 9, 23, 31, 32, 34	2083	Top	4.3	332	N	0.5	12 - 270	13	LPB7-S1		
			Bottom	3.7	285	N	2	16 - 4000	10	LPB7-S2		
A2	24, 26, 27, 28	1882	Top	4	279	N	3	7 - 720	17	LPB28-S1		
			Bottom	5.5	383	N	4	6 - 780	130	LPB28-S2		
A3	1, 2, 13, 14	1539	Top	4.6	262	N	0.5	32 - 700	37	LPB14-S1		
			Bottom	2.4	137	N	0	21 - 920	62	LPB14-S2		
B1	3, 4, 5, 6, 22	2066	Top	3.5	268	N	7	6.5 - 140	11	LPB5-S1		LPB5-S1
			Bottom	4	306	N	0.5	< 11 - 720	14		LPB5-S2	LPB5-S2, LPB6-S2
B2	16, 17	1615	Top	6.5	389	N	1.6	37 - 86	15	LPB16-S1		
			Bottom	2	120	N	56	1000 - 2900	55		LPB16-S2	LPB16-S2
C1	8, 19, 33	806	Top	4.8	143	N	0	13 - 18	17	LPB8-S1		
			Bottom	4.4	131	Y	126	11 - 2100	130		LPB8-S2	LPB33-S2
C2	10, 18, 30	1811	Top	7.2	483	N	33	33 - 1300	610	LPB10-S1		LPB10-S1
			Bottom	2.8	188	Y	151	740 - 7900	340 - 2500		LPB10-S2	LPB10-S2, LPB18-S2
C3	11, 12, 25	1747	Top	3.3	214	N	3	4.0 - 120	60	LPB12-S1		
			Middle	1.8	116	Y	271	8.0 - 4600	320 - 71000		LPB12-S2	LPB12-S2
			Bottom	3.8	246	N	49	34 - 1300	8		LPB12-S3	LPB12-S3
C4	15, 29	1188	Top	6.75	297	N	1	120 - 150	21	LPB15-S1		LPB15-S1
			Bottom	4	176	Y	340	460 - 5900	12 - 40000		LPB15-S3	LPB15-S3, LPB29-S2

General Notes:

1. Extents of soil units and boring locations are shown on Figure 2. Depth intervals for soil samples submitted for laboratory analysis are presented in Table 1. Results for these analyses presented in Table 3.
2. Laboratory data for chromium and ammonia provided by Severn Trent Laboratory (Westfield, Massachusetts).
3. Jar headspace measured with photo-ionization detector, calibrated daily, in accordance with GEI SOP No. TE-001.
4. ppm = parts per million.
5. mg/kg = milligrams per kilogram.
6. Confirmatory Suite = Volatile Organic Compounds, Semivolatile Organic Compounds, Pesticides, Arsenic, Cadmium, Chromium, Lead, Extractable Petroleum Hydrocarbons, Volatile Petroleum Hydrocarbons.
7. Disposal Suite = Confirmatory Suite, plus: Polychlorinated Biphenyls, Barium, Mercury, Silenium, Silver, Reactivity, Ignitability, Corrosivity.
8. TCLP = Toxicity Characteristic Leaching Procedure.
9. cy = cubic yards.

Table 3.
Summary of Laboratory Results - Soil Samples
Olin Chemical Property
51 Eames Street, Wilmington, MA

Parameter	Method	Units	Soil UCLs mg/kg	1160-LPB5-S1 7/10/01	1160-LPB5-S2 7/10/01	1160-LPB6-S2 7/10/01	1160-LPB7-S1 7/10/01	1160-LPB7-S2 7/10/01	1160-LPB8-S1 7/10/01	1160-LPB8-S2 7/10/01	1160-LPB10-S1 7/10/01	1160-LPB10-S2 7/10/01	1160-LPB12-S1 7/10/01	1160-LPB12-S2 7/10/01
Volatile Organic Compounds (VOCs)	SW8468260B	mg/kg				NT								
1,2,3-Trichlorobenzene			10,000[2]	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	< 0.082	< 0.12	0.44	< 0.12	1.2
1,2,4-Trimethylbenzene			10,000[2]	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	< 0.082	< 0.12	0.39	< 0.12	< 0.15
1,2-Dichlorobenzene			5,000	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	< 0.082	< 0.12	< 0.11	< 0.12	5.9
1,3,5-Trimethylbenzene			10,000[2]	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	< 0.082	< 0.12	0.11 J	< 0.12	< 0.15
1,3-Dichlorobenzene			5,000	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	< 0.082	< 0.12	< 0.11	< 0.12	0.74
1,4-Dichlorobenzene			2,000	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	< 0.082	< 0.12	< 0.11	< 0.12	8.6
2,4,4-Trimethyl-1-pentene			10,000[2]	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	20	12	103	< 0.12	15
2,4,4-Trimethyl-2-pentene			10,000[2]	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	9.2	3.4	43	< 0.12	58
Ethylbenzene			10,000	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	6.7	< 0.12	0.72	< 0.12	< 0.15
m+p-Xylene			1,000	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	< 0.082	< 0.12	0.2	< 0.12	< 0.15
p-Isopropyltoluene			10,000[2]	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	0.46	< 0.12	5.2	< 0.12	0.53
Toluene			10,000	< 0.099	< 0.11		< 0.11	< 0.09	< 0.12	0.11	< 0.12	< 0.11	< 0.12	< 0.15
Semivolatile Organic Compounds (SVOCs)	SW8468270C	mg/kg				NT								
bis(2-Ethylhexyl)phthalate			10,000	0.2 B, J	< 0.36		0.29 B, J	0.35 B, J	0.53 B	699 C	54 C	1218 C (1081 C)	33 C	692 C
N-Nitrosodiphenylamine			10,000[2]	< 0.36	< 0.36		< 0.36	< 0.37	< 0.36	203 C	4.9 C	682 C (1201 C)	< 7.4	60 C
Metals	SW8466010B	mg/kg												
Arsenic			300	< 11	< 11		< 6	12	< 5	< 6	< 12	< 13 (<3)	< 11	< 18
Barium			10,000		< 11					22		52		640
Cadmium			800	< 2	< 2		< 1	< 1	< 1	< 1	< 2	< 3 (<0.6)	< 2	< 4
Chromium			10,000	140	< 11	720	14	480	17	460	1300	2700	62	4600
Lead			6,000	< 11	< 11		< 6	< 6	< 5	< 6	< 12	< 13 (8)	< 11	19
Mercury	SW8467471A		600		< 0.04					< 0.05		7		0.36
Selenium			10,000		< 11					< 6		< 13		< 18
Silver			2,000		< 11					< 6		< 13		< 18
Polychlorinated Biphenyls (PCBs)	SW8468082	mg/kg	100	NT	ND	NT	NT	NT	NT	ND	NT	ND	NT	ND
Pesticides	SW8468081A	mg/kg	NS	ND	ND	NT	ND	ND	ND	ND	ND	ND	ND	ND
Characteristics							*NT*	*NT*	*NT*				*NT*	
TCLP Chromium	SW8466010B	ug/L	NS	< 50	63	190				< 50	80	190		350
Corrosivity	SW846 9045	pH	NS		5.35					7.04		6.53		6.01
Flashpoint	SW846 1010	degrees F	NS		> 200					> 200		> 200		> 200
Specific Conductivity	SM18 2510B	umhos/cm	NS		31					32		33		97
Reactive Cyanide	SW846 HCN	mg/kg	NS		< 50					< 50		< 50		< 50
Reactive Sulfide	SW846 H2S	mg/kg	NS		< 100					< 100		< 100		< 100
Volatile Petroleum Hydrocarbons (VPH)	MADEP VPH	mg/kg				NT								
C5-C8 Aliphatic (FID)			5,000	< 2	< 2.3		< 2.3	< 1.8	< 2.4	20	9.8	88	< 2.3	44
C9-C10 Aromatics (PID)			5,000	< 2	< 2.3		< 2.3	< 1.8	< 2.4	< 8.2	15	12	< 2.3	45
C9-C12 Aliphatics (FID)			20,000	< 2	< 2.3		< 2.3	< 1.8	< 2.4	< 8.2	13	8.9	< 2.3	46
Ethylbenzene			10,000	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	5.3	< 0.2	0.65	< 0.2	< 0.3
VPH Concentration (Total)			NS	< 2	< 2.3		< 2.3	< 1.8	< 2.4	20	38	110	< 2.3	130
Xylene (total) (C9-C12)			10,000	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	4.6	< 0.2	0.24	< 0.2	< 0.3
Extractable Petroleum Hydrocarbons (EPH)	MADEP EPH	mg/kg				NT								
Benzo(g,h,i)perylene			10,000	< 0.4	< 0.4		< 0.4	< 0.4	< 0.4	0.66	< 0.4	< 0.8	< 0.4	< 5.7
C11-C22 Aromatics			10,000	< 3.6	< 3.6		5.7	< 3.7	17	500	620	2100	120	5100 C
C19-C36 Aliphatics			20,000	< 3.6	< 3.6		< 3.6	< 3.7	10	160	570	1300	43	3200 C
C9-C18 Aliphatics			20,000	< 3.6 K	< 3.6 K		< 3.6 K	< 3.7 K	< 3.6 K	9.1 K	160 F, K	380 K	8.4 K	1100 C, K
EPH Concentration (Total)			NS	< 3.6	< 3.6		5.7	< 3.7	27	1300	1300	3800	170	9300 C
Fluoranthene			10,000	< 0.4	< 0.4		< 0.4	< 0.4	< 0.4	5.7	< 0.4	< 0.8	< 0.4	< 5.7
Indeno(1,2,3-cd)pyrene			100	< 0.4	< 0.4		< 0.4	< 0.4	< 0.4	10	< 0.4	< 0.8	< 0.4	< 5.7
Ammonia Nitrogen as N	LAC107061A	mg/kg	10,000[2]	11	14	NT	13	10	17	130	610	660 F [340]	60	44000 [71000]
Solids, percent	EPA 160.3	%	NS	92.8	93.5	91.3	93.3	90.4	91.5	90.4	90.1	82.4	89.9	58.8

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. Results for samples analyzed only for chromium and ammonia are presented in Table 1.
3. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
4. Upper Concentration Limits (UCLs), where identified, are cited from the Massachusetts Contingency Plan, October 1999.
5. Date shown with sample ID is collection date.
6. ( ) = field duplicate sample results.
7. [ ] = result from analysis on a later date.
8. mg/kg = milligrams per kilogram.
9. ug/L = micrograms per liter.
10. umhos/cm = micromhos per centimeter.
11. NS = No applicable Massachusetts Contingency Plan Standard.
12. ND = analyte not detected above laboratory detection limits.
13. NT = sample not tested for this analyte.
14. Due to a field labelling error, sample containers for soil samples collected from boring 14 were labelled as 1160-LPB14-S1 and 1160-LPB14A-S1; and 1160-LPB14-S2 and 1160-LPB14A-S2. In this table results for soil samples collected from boring 14 are reported as 1160-LPB14-S1 or 1160-LPB14-S2.

Footnotes:

1. The results shown for SVOCs are from the re-extract analysis, due to very low surrogate recoveries of the original extract.
2. For chemicals not listed in the MA Contingency Plan, the Upper Concentration Limit presented is the default value as stated in 310 CMR 40.0996(8).

Qualifying notes:

A The result is estimated due to exceedance of holding times.
B The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
C The result is estimated due to surrogate recovery outside of control limits.
F The result is estimated due to matrix spike recovery outside of control limits.
J The reported result is below the laboratory reporting limit and is therefore estimated.
J_1 The result is estimated due to lack of associated batch method blank.
K The result is estimated due to blank spike compound recovery outside of control limits.

Table 3.
Summary of Laboratory Results - Soil Samples
Olin Chemical Property
51 Eames Street, Wilmington, MA

Parameter	Method	Units	Soil UCLs mg/kg	1160-LPB12-S3[1] 7/10/01	1160-LPB14-S1[1] 7/11/01	1160-LPB14-S2 7/11/01	1160-LPB15-S1 7/10/01	1160-LPB15-S3 7/10/01	1160-LPB16-S1[1] 7/10/01	1160-LPB16-S2 7/10/01	1160-LPB18-S2 7/10/01	1160-LPB28-S1 7/11/01	1160-LPB28-S2 7/11/01	1160-LPB29-S2 7/12/01	1160-LPB 33-S2 7/12/01
Volatile Organic Compounds (VOCs)	SW8468260B	mg/kg									NT			NT	NT
1,2,3-Trichlorobenzene			10,000[2]	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
1,2,4-Trimethylbenzene			10,000[2]	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
1,2-Dichlorobenzene			5,000	0.16	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
1,3,5-Trimethylbenzene			10,000[2]	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
1,3-Dichlorobenzene			5,000	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
1,4-Dichlorobenzene			2,000	0.27	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
2,4,4-Trimethyl-1-pentene			10,000[2]	3.4	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
2,4,4-Trimethyl-2-pentene			10,000[2]	2.8	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
Ethylbenzene			10,000	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
m+p-Xylene			1,000	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
p-Isopropyltoluene			10,000[2]	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
Toluene			10,000	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12		< 0.12	< 0.13		
Semivolatile Organic Compounds (SVOCs)	SW8468270C	mg/kg									NT			NT	NT
bis(2-Ethylhexyl)phthalate			10,000	6.4 A	2 A, J	0.35 B, J	1	1.3	0.54 A, B	157 C		1.8	< 0.41		
N-Nitrosodiphenylamine			10,000[2]	0.27 A, J	< 0.38 A	< 0.43	< 0.36	< 0.37	< 0.38 A	< 15		< 0.36	< 0.41		
Metals	SW8466010B	mg/kg													
Arsenic			300	< 6	< 6	< 7	< 11	< 12	< 11	< 12		< 12	< 13		
Barium			10,000	50				43		28					
Cadmium			800	< 1	< 1	< 1	< 2	< 2	< 2	< 2		< 2	< 2		
Chromium			10,000	1300 J_1	690	530	150	2700	37	2900	7900	720	780	5900	2100
Lead			6,000	7	19	21	< 11	< 12	< 11	< 12		< 10	< 13		
Mercury	SW8467471A		600	< 0.05				0.06		< 0.05					
Selenium			10,000	< 6				< 12		< 12					
Silver			2,000	< 6				< 12		< 12					
Polychlorinated Biphenyls (PCBs)	SW8468082	mg/kg	100	ND	NT	NT	NT	ND	NT	ND	NT	NT	NT	NT	NT
Pesticides	SW8468081A	mg/kg	NS	ND	ND	ND	ND	ND	ND	ND	NT	ND	ND	NT	NT
Characteristics					NT	NT			NT			NT	NT		
TCLP Chromium	SW8466010B	ug/L	NS	500			< 50	720		280	840			420	170
Corrosivity	SW846 9045	pH	NS	6.65				6.51		6.67					
Flashpoint	SW846 1010	degrees F	NS	> 200				> 200		> 200					
Specific Conductivity	SM18 2510B	umhos/cm	NS	29				16		20					
Reactive Cyanide	SW846 HCN	mg/kg	NS	< 50				< 50		< 50					
Reactive Sulfide	SW846 H2S	mg/kg	NS	< 100				< 100		< 100					
Volatile Petroleum Hydrocarbons (VPH)	MADEP VPH	mg/kg									NT			NT	NT
C5-C8 Aliphatic (FID)			5,000	4.9	< 2.4	< 2.7	< 2.5	< 2.2	< 2.4	< 2.4		< 2.3	< 2.5		
C9-C10 Aromatics (PID)			5,000	< 2.1	< 2.4	< 2.7	< 2.5	< 2.2	< 2.4	< 2.4		< 2.3	< 2.5		
C9-C12 Aliphatics (FID)			20,000	2.7	< 2.4	< 2.7	< 2.5	< 2.2	< 2.4	< 2.4		< 2.3	< 2.5		
Ethylbenzene			10,000	< 0.2	< 0.2	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.3		
VPH Concentration (Total)			NS	7.6	< 2.4	< 2.7	< 2.5	< 2.2	< 2.4	< 2.4		< 2.3	< 2.5		
Xylene (total) (C9-C12)			10,000	< 0.2	< 0.2	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2		< 0.2	< 0.3		
Extractable Petroleum Hydrocarbons (EPH)	MADEP EPH	mg/kg									NT			NT	NT
Benzo(g,h,i)perylene			10,000	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4		< 0.4	< 0.4		
C11-C22 Aromatics			10,000	19	210	5.2	31	6.1	9.8	330		14	96		
C19-C36 Aliphatics			20,000	20	13	< 4.2	6.5	< 3.6	< 3.8	390		25	82		
C9-C18 Aliphatics			20,000	5.5 K	< 3.8 K	< 4.2 K	< 3.6 K	< 3.6 K	< 3.8 K	110 K		< 3.6 K	21 K		
EPH Concentration (Total)			NS	45	220	5.2	37	6.1	9.8	830		39	200		
Fluoranthene			10,000	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4		< 0.4	< 0.4		
Indeno(1,2,3-cd)pyrene			100	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4		< 0.4	< 0.4		
Ammonia Nitrogen as N	LAC107061A	mg/kg	10,000[2]	80	37	62	21	12	15	55	NT	17	77 [130]	40000	NT
Solids, percent	EPA 160.3	%	NS	90.9	87.5	78	91.7	91	87.9	88.4	65	92.8	80	55.5	88.9

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. Results for samples analyzed only for chromium and ammonia are presented in Table 1.
3. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
4. Upper Concentration Limits (UCLs), where identified, are cited from the Massachusetts Contingency Plan, October 1999.
5. Date shown with sample ID is collection date
6. ( ) = field duplicate sample results.
7. [ ] = result from analysis on a later date
8. mg/kg = milligrams per kilogram.
9. ug/L = micrograms per liter.
10. umhos/cm = micromhos per centimeter
11. NS = No applicable Massachusetts Contingency Plan Standard.
12. ND = analyte not detected above laboratory detection limits.
13. NT = sample not tested for this analyte.
14. Due to a field labelling error, sample containers for soil samples collected from boring 14 were labelled as 1160-LPB14-S1 and 1160-LPB14A-S1; and 1160-LPB14-S2 and 1160-LPB14A-S2. In this table results for soil samples collected from boring 14 are reported as 1160-LPB14-S1 or 1160-LPB14-S2.

Footnotes:

1. The results shown for SVOCs are from the re-extract analysis, due to very low surrogate recoveries of the original extract.
2. For chemicals not listed in the MA Contingency Plan, the Upper Concentration Limit presented is the default value as stated in 310 CMR 40 0996(8).

Qualifying notes:

A The result is estimated due to exceedance of holding times
B The reported result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
C The result is estimated due to surrogate recovery outside of control limits.
F The result is estimated due to matrix spike recovery outside of control limits
J The reported result is below the laboratory reporting limit and is therefore estimated.
J_1 The result is estimated due to lack of associated batch method blank.
K The result is estimated due to blank spike compound recovery outside of control limits.

Table 4.
Summary of Laboratory Results - Groundwater Samples
Olin Chemical Property
51 Eames Street, Wilmington, MA

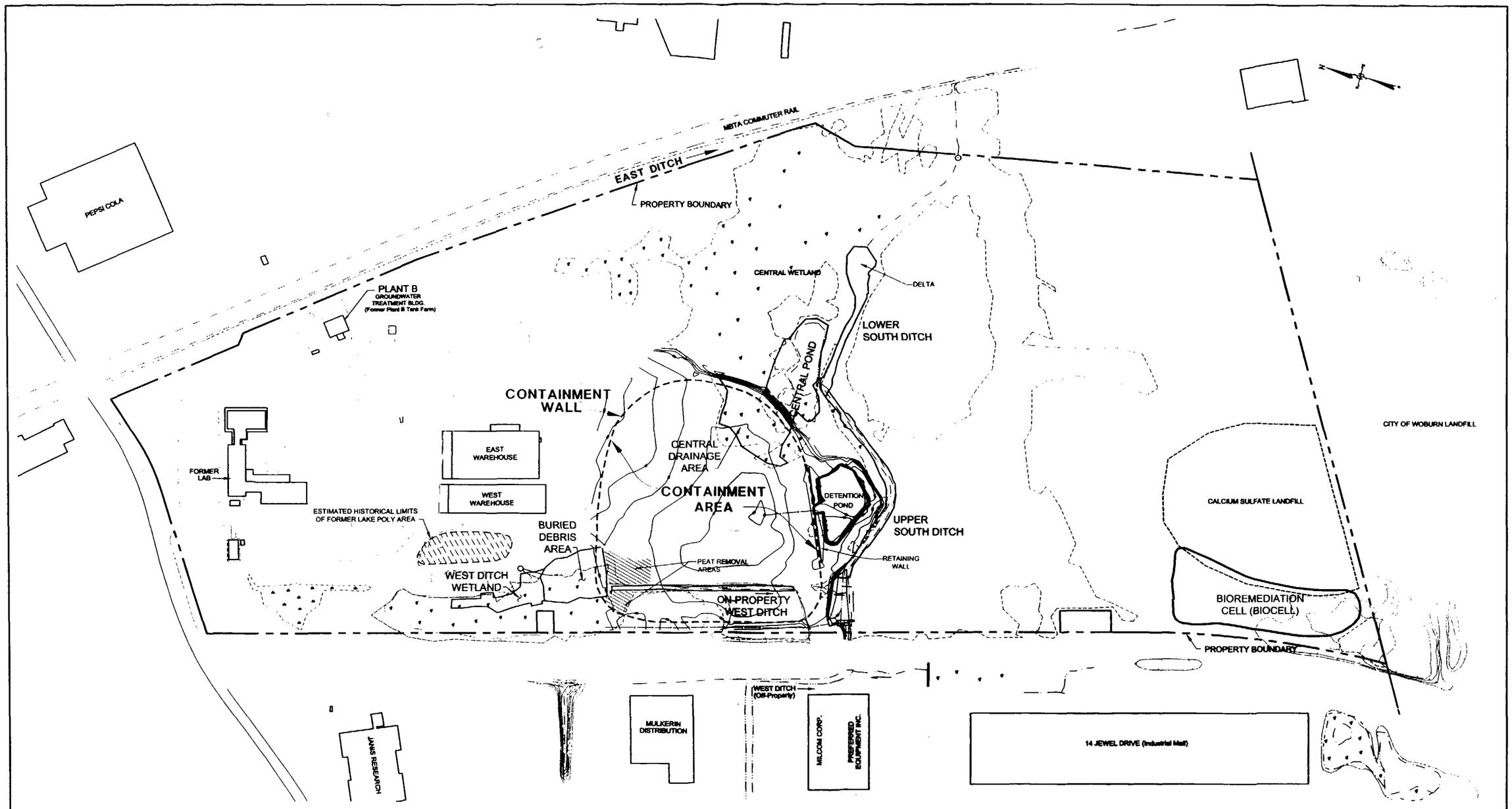
Parameter	Method	Units	Groundwater UCLs (ug/L)	1140-GW-29D 7/27/01	1140-GW-29S 7/27/01	1140-GW-34D 7/27/01	1140-GW-LPB-11 7/27/01
Volatile Organic Compounds (VOCs)	SW8468260B	ug/L					
1,2-Dichlorobenzene			100,000	3	< 1	< 10	< 1
1,3-Dichlorobenzene			100,000	0.55 J	< 1	< 10	< 1
1,4-Dichlorobenzene			100,000	3.1	< 1	< 10	0.64 J
2,4,4-Trimethyl 1-pentene			100,000[1]	22	< 1	520	30
2,4,4-Trimethyl 2-pentene			100,000[1]	6.5	< 1	100	12
Benzene			70,000	< 1	< 1	< 10	3.1
Chloromethane			100,000[1]	1.4 J	< 2	< 20	< 2
Ethylbenzene			100,000	< 1	< 1	< 10	3.4
m+p-Xylene			100,000	< 1	< 1	< 10	1.4
p-Isopropyltoluene			100,000[1]	< 1	< 1	< 10	1.1
Toluene			100,000	< 1	< 1	< 10	1.7
Semivolatile Organic Compounds (SVOCs)	SW8468270C	ug/L					
N-Nitrosodiphenylamine			100,000[1]	150	< 10	< 10	1000 C
Pesticides	SW8468081A	ug/L					
alpha-BHC			100,000[1]	0.26 (0.32)	< 0.05 C	< 0.05	< 0.05
Methoxychlor			400	< 0.05	< 0.05 C	< 0.05	0.3
Kempore	SW8468000B	ug/L	100,000[1]	< 200 K	< 4000 K	< 200 K	3500 K
Opex	SW8468000B	ug/L	100,000[1]	< 20	< 400	< 20	< 20
Metals	SW8466010B	ug/L					
Arsenic			4,000	< 10	< 10	< 10	< 10
Barium			100,000	< 10	30	27	54
Cadmium			100	< 1	< 1	< 1	< 1
Chromium			20,000	92	48	< 10	< 10
Lead			300	< 10	< 10	< 10	< 10
Selenium			800	< 10	< 10	< 10	< 10
Silver			400	< 5	< 5	< 5	< 5
Mercury	SW8467471A		20	< 0.2	< 0.4	< 0.2	< 0.2
Ammonia Nitrogen as N	LAC107061A	mg/L	100,000[1]	28	8.8	< 0.1	16

General Notes:
1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
3. Upper Concentration Limits (UCLs), where identified, are cited from the Massachusetts Contingency Plan, October 1999.
4. Laboratory results provided by Severn Trent Laboratory (Westfield, Massachusetts), except Kempore and Opex by Lancaster Laboratories (Lancaster, Pennsylvania).
5. Date shown with sample ID is collection date.
6. ( ) = result from re-extract analysis.
7. ug/L = micrograms per liter.
8. mg/L = milligram per liter.

Footnote:
1. For chemicals not listed in the Massachusetts Contingency Plan, the Upper Concentration Limit presented is the default value as stated in 310 CMR 40.0996(8).

Qualifying Notes:
C The result is estimated due to surrogate recovery outside of control limits.
J The reported result is below the laboratory reporting limit and is therefore estimated.
K The result is estimated due to blank spike compound recovery outside of control limits.

Φ



LEGEND:

- APPROXIMATE EXISTING WETLANDS BOUNDARY
- STREAM
- ACTUAL LIMITS OF SEDIMENT EXCAVATION

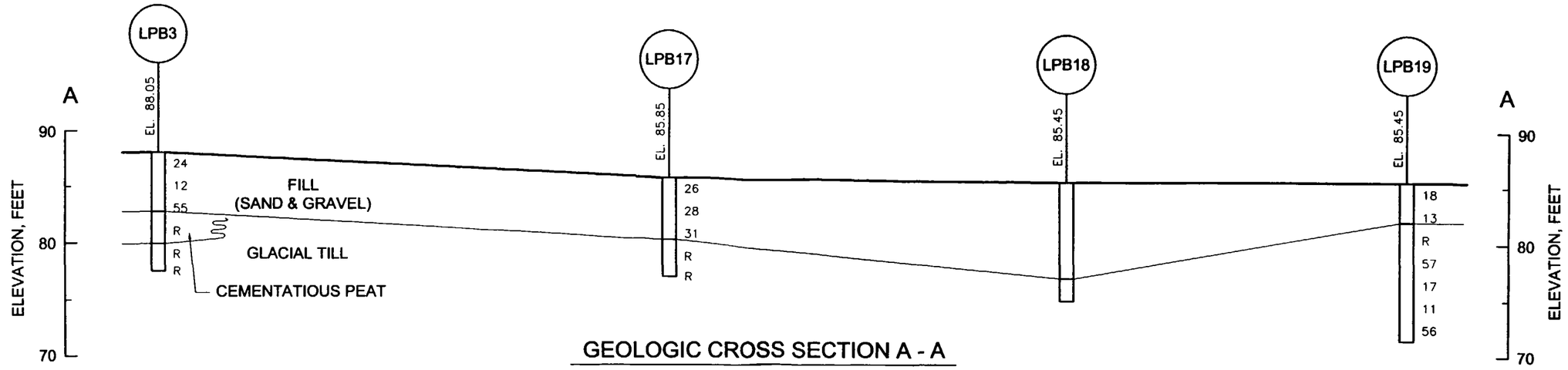
NOTES:

1. BASE PLAN PROVIDED BY DANA F. PERKINS, INC

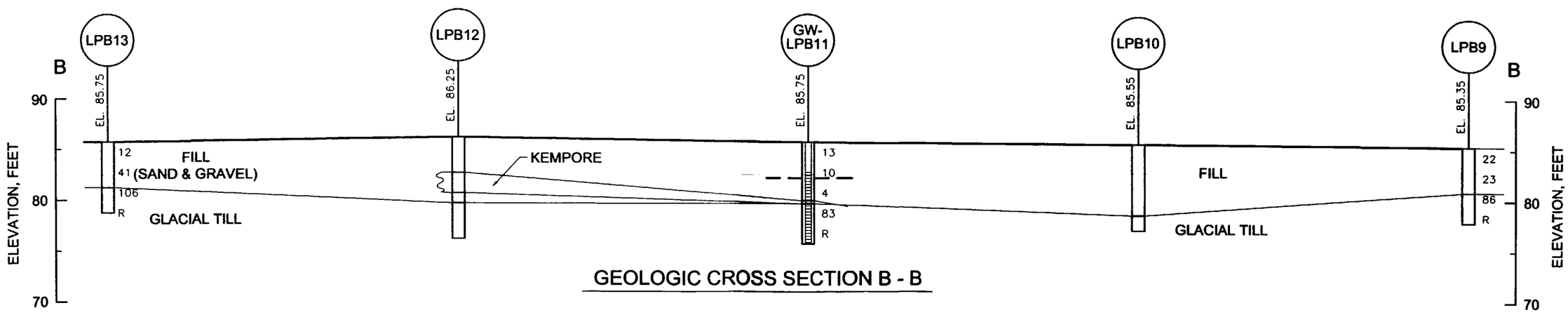
0 100 200
SCALE, FEET

Olin Corporation Charleston, Tennessee	Part 2 Construction Related RAM Interim Status Report: Former Lake Poly Area Assessment 51 Eames Street, Wilmington, MA	SITE PLAN
GEI Consultants, Inc.	Project 97598	October 2001 Fig. 1

97598-AB-217 djm 10/10/01

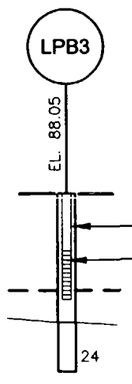


GEOLOGIC CROSS SECTION A - A



GEOLOGIC CROSS SECTION B - B

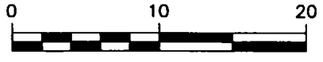
LEGEND



- LPB3 — BORING NUMBER
- EL. 88.05 — ELEVATION OF GROUND SURFACE
- EXISTING GROUND SURFACE
- 2-IN. DIAMETER PVC RISER PIPE
- SCREENED SECTION OF OBSERVATION WELL
- GROUNDWATER ELEVATION MEASURED ON AUGUST 6, 2001
- STRATUM BOUNDARY
- 24 — N-VALUE FROM STANDARD PENETRATION TEST, BLOWS PER FOOT

NOTES

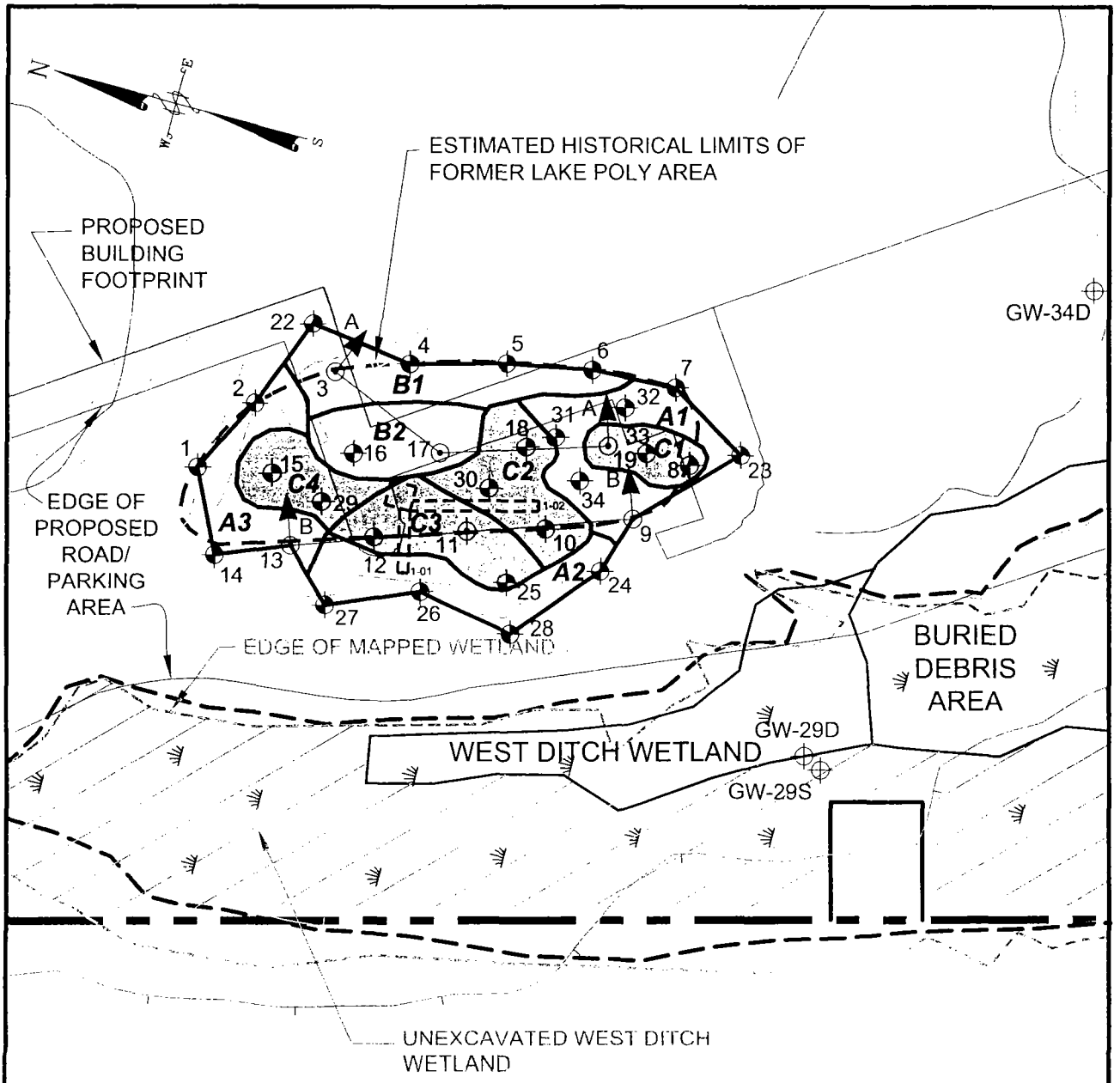
1. PROFILES AND BORING LOCATIONS ARE SHOWN IN FIG. 2.
2. LPB10, LPB12, AND LPB18 WERE ADVANCED USING GEOPROBE; THEREFORE NO N-VALUES.
3. R = SPOON REFUSAL BEFORE PENETRATING 18".
4. THE SOIL CONDITIONS ARE KNOWN ONLY AT THE BORING LOCATIONS. CONDITIONS BETWEEN BORINGS MAY VARY SIGNIFICANTLY FROM THE INTERPOLATIONS SHOWN.



SCALE, FEET

Olin Corporation Charleston, Tennessee	PART 2 – Construction-Related RAM Interim Status Report Former Lake Poly Area Assessment 51 Eames Street Wilmington, Massachusetts	GEOLOGIC CROSS SECTIONS A–A AND B–B
GEI Consultants, Inc.	Project 97598	October 2001 Fig. 3

97598-AB-216 djm 10/12/01



Legend:

- LOCATION OF HOTSPOT EXCAVATION (11/17/00) AND TRENCH EXCAVATION (5/8/01)
- MONITORING WELL (Boring 11)
- BORING (Geoprobe)
- BORING (Auger w/ Split Spoon)
- ZONE A: LITTLE OR ***NO*** EVIDENCE OF CONTAMINATION
- ZONE B: ASSOCIATED WITH DEVELOPMENT
- ZONE C: EVIDENCE OF CONTAMINATION
- A — A: GEOLOGIC CROSS SECTION LOCATION AND ALIGNMENT

0 60 120
SCALE, FEET

Olin Corporation Charleston, Tennessee	PART 2 – Construction-Related RAM Interim Status Report Former Lake Poly Area Assessment 51 Eames Street Wilmington, Massachusetts	FIELD INVESTIGATIONS
GEI Consultants, Inc.	Project 97598	October 2001 Fig. 2

97598-AB-215 djm/ptc 10/09/01

Φ

Appendix A

Appendix A

RAM Transmittal Form

Massachusetts Department of Environmental Protection **BWSC-106**
Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

A. SITE LOCATION:

Site Name: Olin Wilmington

Street: 51 Eames Street Location Aid:

City/Town: Wilmington ZIP Code: 01887

☐ Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.

Related Release Tracking Numbers That This RAM or URAM Addresses:

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

☐ Submit a **RAM Plan** (complete Sections A, B, C, D, E, F, J, K, L and M).

☐ *Check here if this RAM Plan is an update or modification of a previously approved written RAM Plan.* Date Submitted: 7/24/00

☑ Submit a **RAM Status Report** (complete Sections A, B, C, E, J, K, L and M). (Interim) (Former Lake Poly)

☐ Submit a **RAM Completion Statement** (complete Sections A, B, C, D, E, G, J, K, L and M).

☐ Confirm or Provide **URAM Notification** (complete Sections A, B, H, K, L and M).

☐ Submit a **URAM Status Report** (complete Sections A, B, C, E, J, K, L and M).

☐ Submit a **URAM Completion Statement** (complete Sections A, B, C, D, E, I, J, K, L and M).

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.

C. SITE CONDITIONS:

☐ Check here if the source of the Release or Threat of Release is known.

If yes, check all sources that apply: ☐ UST ☐ Pipe/Hose/Line ☐ AST ☐ Drums ☐ Transformer ☐ Boat ☐ Tanker Truck ☐ Vehicle ☐ Other Specify: Historical releases

Identify Media and Receptors Affected: (check all that apply) ☐ Air ☑ Groundwater ☑ Surface Water ☑ Sediments ☑ Soil ☑ Wetlands ☐ Storm Drain ☐ Paved Surface ☐ Private Well ☑ Public Water Supply ☐ Zone 2 ☐ Residence ☐ School ☐ Unknown ☐ Other Specify:

Identify Release and/or Threat of Release Conditions at Site: (check all that apply)

☐ 2 and 72 Hour Reporting Condition(s) ☐ 120 Day Reporting Condition(s) ☐ Other Condition(s)

Describe:

RAMs may be conducted concurrently with an IRA only with written DEP approval
URAMs may not be conducted if any 2 or 72 Hour conditions exist at the site.

Identify Oils and Hazardous Materials Released: (check all that apply) ☑ Oils ☐ Chlorinated Solvents ☑ Heavy Metals ☐ Others Specify: Phthalates, ammonia.

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☐ Assessment and/or Monitoring Only

☐ Excavation of Contaminated Soils

☐ Re-use, Recycling or Treatment

○ On Site ○ Off Site Est. Vol.: _____ cubic yards

Describe:

☐ Store ○ On Site ○ Off Site Est. Vol.: _____ cubic yards

☐ Deployment of Absorbant or Containment Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

SECTION D IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection **BWSC-106**
Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

D. DESCRIPTION OF RESPONSE ACTIONS (continued):

☐ Landfill ○ Cover ○ Disposal Est. Vol.: _____ cubic yards

☐ Removal of Drums, Tanks or Containers

Describe: _____

☑ Removal of Other Contaminated Media

Specify Type and Volume: See RAM Status Report No. 2

☑ Other Response Actions Describe: Additional assessment of Lake Poly

☐ Groundwater Treatment Systems

☐ Air Sparging

☐ Temporary Water Supplies

☐ Temporary Evacuation or Relocation of Residents

☐ Fencing and Sign Posting

See 310 CMR 40.0442 for limitations on the scope and type of RAMs.
See 310 CMR 40.0464 for performance standards for URAMs.

☐ Check here if this RAM or URAM involves the use of Innovative Technologies. DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse.

Describe Technologies: _____

E. TRANSPORT OF REMEDIATION WASTE: (if Remediation Waste has been sent to an off-site facility, answer the following questions)

Name of Facility: N/A

Town and State: _____

Quantity of Remediation Waste Transported to Date: _____

F. RAM PLAN:

☐ Check here if this RAM Plan received previous oral approval from DEP as a continuation of a Limited Removal Action (LRA).

Date of Oral Approval: _____

☐ If a RAM Compliance Fee is required, check here to certify that the fee has been submitted. You **MUST** attach a photocopy of the payment. See 310 CMR 40.0444(2) to learn when a fee is not required.

☐ Check here if the RAM Plan is proposed for a Transition Site. If this is the case, you may need to attach an LSP Evaluation Opinion prior to undertaking the RAM, if not previously provided. See 310 CMR 40.0600 for further information about Transition Sites.

G. RAM COMPLETION STATEMENT:

☐ If a RAM Compliance Fee is required in connection with submission of the RAM Completion Statement, check here to certify that the fee has been submitted. You **MUST** attach a photocopy of the payment. You owe this fee when submitting a RAM Completion Statement if you received oral approval of a RAM that continued an LRA, and have NOT previously submitted a RAM Plan and accompanying fee.

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the RAM Completion Statement, you must submit a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the RAM Completion Statement.

H. URAM NOTIFICATION:

Identify Location Type: (check all that apply) ☐ Public Right of Way ☐ Utility Easement ☐ Private Property

Identify Utility Type: (check all that apply) ☐ Sanitary/Combined Sewerage ☐ Water ☐ Drainage ☐ Natural Gas

☐ Telephone ☐ Steam Lines ☐ Telecommunications ☐ Electric ☐ Other Specify: _____

☐ Check here if you provided DEP with previous oral notification of this URAM. Date of Oral Notice: _____

☐ Check here if the property owner was NOT contacted prior to initiation of the URAM. If this is the case, you must attach an explanation of why the owner was not contacted, including the date and time when contact ultimately occurred.

☐ Check here if this URAM will occur in connection with the construction of new public utilities. If this is the case, document the nature and extent of encountered contamination, the scope and expense of necessary mitigation and the benefits and limitations of project alternatives.

With the exception stated below, the person undertaking the URAM must provide the name and license number of an LSP engaged or employed in connection with the URAM:

LSP Name: _____ LSP License Number: _____

LSP information is not required if the URAM is limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated either by a Hazardous Material or a mixture of a Hazardous Material and Oil.

Massachusetts Department of Environmental Protection **BWSC-106**
Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

I. URAM COMPLETION STATEMENT:

☐ Check here if this URAM was limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated by either a Hazardous Material or a mixture of a Hazardous Material and Oil.

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the URAM Completion Statement, you must submit either a Release Abatement Measure (RAM) Plan or a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the URAM Completion Statement.

J. 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 **Release Abatement Measure Plan** is being submitted*, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed 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;

> *if Section B of this form indicates that a **Release Abatement Measure Status Report** or a **Utility-Related Abatement Measure Status Report** 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;

> *if Section B of this form indicates that a **Release Abatement Measure Completion Statement** or a **Utility-Related Abatement Measure 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;

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: M. Margret Hanley LSP #: 8494 Stamp:

Telephone: 781.721.4022 Ext.:

FAX: (optional)

Signature: Margret Hanley

Date: October 12, 2001

COMMONWEALTH OF MASSACHUSETTS M. MARGRET HANLEY No. 8494 LICENSED SITE PROFESSIONAL

An LSP Opinion is not required for a Utility-Related Abatement Measure Notification.

An LSP Opinion is not required for a URAM Completion Statement if the URAM is limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated either by Hazardous Material or a mixture of Hazardous Material and Oil.

K. PERSON UNDERTAKING RAM OR URAM:

Name of Organization: Olin Corporation

Name of Contact: Steve Morrow Title: Principal Environmental Specialist

Street: 1186 Lower River Road, P.O. Box 248

City/Town: Charleston State: TN ZIP Code: 37310-0248

Telephone: 423.336.4511 Ext.: FAX:

☐ Check here if there has been a change in person undertaking the RAM or URAM.

Massachusetts Department of Environmental Protection **BWSC-106**

Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

L. RELATIONSHIP TO SITE OF PERSON UNDERTAKING RAM or URAM: (check one)

[X] RP or PRP Specify: (X) 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 Undertaking RAM or URAM Specify Relationship: _____

M. CERTIFICATION OF PERSON UNDERTAKING RAM OR URAM:

I, STEVE MORROW, 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: Steve Morrow (signature) Title: PRINCIPLE ENV. SPECIALIST

For: _____ Date: October 11, 2001

(print name of person or entity recorded in Section K)

Enter address of person providing certification, if different from address recorded in Section K:

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.

Φ

Appendix B

Appendix B

Supporting Documents

GEI Consultants, Inc.

June 12, 2001
Project 97598

1021 Main Street
Winchester, MA 01890-1970
781•721•4000
781•721•4073 Fax

Mr. Christopher Pyott
Environmental Analyst
Department of Environmental Protection
Bureau of Waste Site Cleanup
205A Lowell Street
Wilmington, MA 01887

Dear Mr. Pyott:

Re: **Modification No. 8 of Part 2 Construction-Related Release Abatement Measure (RAM) Plan**
Olin Corporation Property
51 Eames Street
Wilmington, MA
RTN 3-0471

The purpose of this letter is to summarize Modification No. 8 to the Part 2 Construction-Related Release Abatement Measure (RAM) Plan for the above-referenced site, dated July 24, 2000, which was conditionally approved by the Massachusetts Department of Environmental Protection (MADEP) on August 9, 2000. A RAM transmittal form BWSC-106 is attached to this letter. Based on my conversation with you on June 5, 2001, we understand that MADEP will not be providing written approval of this RAM Modification, and that upon your verbal authorization to proceed, Olin may conduct the additional investigations and potential excavations described herein.

Background

During previous investigations at the Property, a "Hot Spot" for chromium was detected in the Former Lake Poly Area. Excavation of the estimated Hot Spot location was performed on November 17, 2000, by Sevenson, and observed by GEI as part of the Part 2 Construction Related RAM. One sidewall sample from the 7-foot-deep excavation exhibited concentrations of Chromium that exceeded the Upper Concentration Limits (UCLs), and elevated concentrations of semivolatile organic compounds (SVOCs). Additionally, a 1- to 2-foot-thick seam of yellow material, identified as Kempore, was observed along the southern and western walls of the excavation. The results of the chemical analysis of sidewall samples collected during the Hot Spot Excavation in November 2000, as well as previous analysis of samples collected in the Former Lake Poly Area are presented in Tables 1 through 3. All sample locations are depicted on Figure 1.

Additional excavation was performed on May 8, 2001 to determine the extent of the Kempore seam, and to assess subsurface conditions in the Former Lake Poly Area that may contribute to the presence of Chromium at concentrations greater than the UCL. The additional excavation was performed by Sevenson, and was observed by Margret Hanley, Licensed Site Professional (LSP), and Jamie Vallee of GEI Consultants, Inc. (GEI).

Two trenches were excavated. Trench No. 1 was excavated from the southwest corner of the original "Hot Spot" excavation to the west toward the On-Property West Ditch wetlands. The trench was

approximately 27 feet long, and ranged in depth from 6½ to 7 feet at the eastern end, to approximately 4½ feet deep at the western end. Groundwater entered the excavation at an elevation of about 6½ feet at the eastern end.

Trench No. 2 was excavated on a north south axis, extending approximately 50 feet from the original "Hot Spot" excavation to the south toward the buried debris area. The depth of the trench ranged from about 4 feet at the southern end to 6½ feet at the northern end. Groundwater was observed entering the southern end of Trench No. 2. The approximate location of the trenches is shown on the attached Figure 1.

Soil profiles observed in both trenches were similar. Approximately 1 to 2 feet of sandy fill was underlain by 2 to 4 feet of stratified material composed of a fine-grained orange material (Kempore), a gray-blue to blue-green, fine- to medium-grained material, and a fine-grained, dark brown material. A compact, till-like material underlay the stratified sediments at depths ranging from 4½ feet to about 6 feet. Kempore was observed to be present as very fine layers (less than 0.5 inches thick), layered with other materials, and as horizontal seams ranging up to 2 feet thick. In Trench No. 2, clumps of Kempore appeared to cut across the stratification, suggesting that some discrete loads of solid Kempore were deposited in the Former Lake Poly Area during or following the discharge of more aqueous materials.

The gray-blue to blue-green material was most pronounced in a layer above the Kempore in the southern half of Trench No. 2. However, this material was also interbedded with the Kempore in both trenches.

Some debris was encountered during excavation. A small pail, containing a moist, white powdery material, and a fine-grained, bluish-gray crystalline material was observed near the western end of Trench No. 1. Remnants of a metal drum were removed from the southern end of Trench No. 2. The debris noted above was placed on polyethelene sheeting, for further characterization and off-site disposal.

During the test pit excavations, ambient air was screened for volatile organic compounds (VOCs) using a photoionization detector (PID). VOCs in ambient air during the excavation were observed to be consistent with background. Headspace screening of soil samples was not performed.

During the test pit excavation on May 8, 2000, soil samples were collected for chemical analysis. These samples are:

Sample Number	Location	Depth	Analytical Parameters	Comments
1160-Lake Poly-1-01	Western End of Trench No. 1, approx. 27 feet west of western sidewall of Former Lake Poly Area Hot Spot Excavation	4.5 feet	VOCs SVOCs Cadmium Chromium Lead Ammonia	Undisturbed oily granular soil, in contact with stratified sediments.
1160-Lake Poly-1-02	Southern end of Trench No. 2, approx. 48 feet southwest of southern sidewall of Former Lake Poly Area Hot Spot Excavation	4.5 feet		Undisturbed oily material in contact with stratified sediments.

The results of the chemical analysis are summarized in the attached Table 3. Samples of the blue-green crystalline material and Kempore were collected in drillers' jars. These samples were not submitted for laboratory analysis.

Based on the observations made during the excavation, the historical southern and western limits of Former Lake Poly Area may have been intercepted by the trenches. In both test trenches, the horizontal

limits of soft stratified sediments composed of/or interbedded with Kempore appeared to terminate abruptly, in contact with relatively shallow, compact, soil resembling till. The till-like material was dark brown, and oily. Material resembling peat was noted overlying the till-like material at the southern end of Trench No. 2. Both soil samples collected for laboratory analysis were collected from undisturbed soil in contact with what appeared to be the horizontal edge of stratified sediments.

Excavated materials were used to backfill the trenches and restore the grades. The locations of the ends of each trench were marked in the field, and have been surveyed. Water samples were not collected from the trenches.

Following the excavations on May 8, 2001, Olin asked Geomega to determine the approximate historical limits of the Former Lake Poly Area, based on aerial photographs, assess the extent that data collected to date could be used to characterize the sediments in the Former Lake Poly Area, and the extent of affected soil adjacent to Former Lake Poly Area. Geomega's estimate of the aerial extent of the Former Lake Poly Area is depicted on Figure 1.

Based on the distribution of samples collected to date within the within the Former Lake Poly Area, it is Olin's opinion that additional data are required to define the horizontal and vertical extent of the Former Lake Poly Area, and to characterize the volume of sediments that remain in place.

Additional field observations made during the Hot Spot excavation in November 2000 and during the test pit excavation described above supplement soil boring data previously developed for the Former Lake Poly Area and reported in the Supplemental Phase II Report (Smith, 1997). The new information challenges Smith's conclusion that there is no significant amount of residual waste in the Former Lake Poly Area. The presence of stratified sediments suggests that solids suspended in aqueous wastewater released to the Former Lake Poly Area either settled or precipitated in place, and were covered with several feet of granular fill. Moreover, field observations to date do not provide a sufficient basis to determine when to terminate the Hot Spot excavation and collect confirmatory samples, with the possible exception of the horizontal and vertical limits of Lake Poly.

Summary of RAM Modification No. 8

RAM Modification No. 8 addresses additional assessment and excavation in the vicinity of Former Lake Poly Area, as described below:

1. Additional Assessment

Olin proposes additional investigations to delineate the historical limits of the Former Lake Poly Area sediments, and to determine if the sediments require remediation in order to achieve a condition of No Significant Risk at the Property or to permit the cost-effective development of the Property.

Olin proposes to collect samples on a grid in the Former Lake Poly Area and install approximately 20 soil borings to bedrock in the area. Continuous soil samples will be collected throughout each boring to document the stratigraphy at each boring location. Based on field observations to date, we anticipate that up to three soil samples from each boring location will be submitted for chemical analyses to characterize surficial granular fill, residual buried sediments that remain in place, and the undisturbed soil that underlies or borders the Former Lake Poly Area sediments. Selected soil and sediment samples will be analyzed for the parameters listed below. Additionally, selected samples of waste and undisturbed soil will be collected for waste profiling. The actual number of samples submitted for laboratory analysis will be based on field observations and our estimates regarding the volume and aerial extent of Former Lake Poly Area sediments.

Sample Type	Estimated Depth Below Ground Surface (ft)	Test Parameters
Surficial Soil	0 to 2	VOCs (including trimethyl pentenes) SVOCs Metals (RCRA 8) VPH/EPH Compounds Pesticides and Herbicides
Undisturbed Soil	2 to 10	
Sediments in the Former Lake Poly Area	2 to 7	All of the above, and: PCBs TCLP (as necessary) Reactivity pH Ignitability

To assess the potential structural constraints (bearing capacity and settlement) that residual in-place sediments may pose to future development, GEI will collect geotechnical information during the installation of the borings.

Finally, GEI will collect groundwater samples at GW-29D and GW-29S, and GW-34D, which are located downgradient of the Former Lake Poly Area, and from a soil boring location determined to be within the footprint of the Former Lake Poly Area. Groundwater samples will be analyzed for VOCs, SVOCs, Metals, Pesticides and Herbicides, ammonia, pH, Kempore, and Opex.

Testing data collected by Olin to date and recent field observations at the Former Lake Poly Area will be evaluated to determine the following:

a. Range and mean of contaminant of concern (COC) concentrations in Former Lake Poly Area sediments.

b. Volume of Former Lake Poly Area sediments.

c. Presence or absence of UCL exceedances or Hot Spots within the Study Area.

d. Potential Risk to Human Health and the Environment.

e. COC concentrations in soil beneath and abutting the Former Lake Poly Area sediments.

f. Impact on groundwater quality in vicinity.

g. Assessment of the Feasibility of Remedial Actions, such as capping in place, limited excavation, or complete excavation of the Former Lake Poly Area sediments that may be required to achieve a condition of NSR, in accordance with 310 CMR 40.0000.

The results of the additional assessments of the Former Lake Poly Area will be summarized in an interim Status Report and submitted to MADEP review.

2. Additional Excavation and Proposed Schedule

Based on the additional investigations and assessment described above, Olin may propose to leave the Former Lake Poly Area sediments in place, with or without a cap, and subject to an Activity and Use Limitation (AUL). Olin understands that this response action would require MADEP approval.

Olin may also expedite the removal of some or all of the Former Lake Poly Area sediments if it is determined to be cost effective and beneficial for the planned future uses of the Property. It would be most cost effective for Olin to perform the additional excavation during the month of July 2001, following the completion of the Ditch System Restoration, while Olin's general contractor for the Part 2 RAM is still mobilized at the Property.

As part of this RAM Modification, Olin proactively seeks MADEP's approval of limited additional excavation in the Lake Poly Area. This approval is sought prior to the completion of the additional investigations described above. The additional excavation would be subject to the procedures set forth in the Part 2 Ram Plan and previous requests for modification, and the following conditions:

a. The total volume of soil and/or sediments that would be removed from the Former Lake Poly Area would be limited to 2,600 cubic yards.

b. Soil and sediment excavations would be conducted at distances of at least 25 feet from the boundary of the mapped On-Property West Ditch Wetland.

c. To the extent feasible, soil and sediment will be characterized in place and approved for disposal at an appropriate licensed disposal facility prior to the commencement of excavation.

d. Clean or minimally affected surficial soils that were previously placed above the Former Lake Poly Area sediments will be stockpiled for confirmatory analysis.

e. To the extent possible, the Former Lake Poly Area sediments will be loaded directly into roll-off containers or trucks for immediate off-site disposal. Soil or sediments that require temporary staging prior to off-Property disposal will be placed on the Storage Pad, and covered.

f. Groundwater that is pumped during the excavation of sediment or soil in the Former Lake Poly Area will be subject to the requirements of Olin's National Pollutant Discharge Elimination Systems (NPDES) Permit Exclusion for the Construction-Related RAM.

g. Prior to the shipping of any additional excavate from the Property, Olin will contact the Wilmington Fire Department and confirm the acceptable transportation routes for wastes from the Property.

h. The excavation will be backfilled with the stockpiled clean or minimally-impacted surficial soil, imported granular fill, or if determined to be acceptable, recovered sand previously used as a drainage course in the bioremediation cell.[1]

i. Perimeter Air Monitoring will be performed continuously during soil and sediment excavation for dust and VOCs.

j. To the extent necessary, confirmatory samples will be collected following the completion of excavation activities, in accordance with the Part 2 RAM Plan.

Permits and Certifications. Additional assessment and excavations described herein will be performed in accordance with the procedures and specifications described in the Part 2 RAM Plan. We anticipate that all additional excavated material that is not suitable for re-use at the Property will be disposed of off-Property at a licensed disposal facility. All assessment and excavation covered under this RAM Modification are outside the work areas subject to the MADEP 401 Water Quality Certification, U.S. Army Corp of Engineers 404 dredging permit, and the town of Wilmington Order of Conditions (OOC) that were obtained for the Part 2 RAM. However, some of the proposed work is within the 100-foot-wide buffer zone to the mapped wetland. Therefore, we anticipate that a Request for a Determination

[1] The reuse of sand from the bioremediation cell will be addressed in a RAM Modification submittal, prior to additional excavation at the Property. The reuse of the sand at developed portions of the Property will be subject to MADEP approval of the RAM modification request.

of Applicability (DOA) from the Conservation Commission will be required for all work located within the buffer zone. Groundwater management that is required to conduct additional excavations will be subject to the NPDES Permit Exclusion issued by the U.S. Environmental Protection Agency (EPA) for the project. The additional work described herein is subject to the representations presented in Olin's Certification of Financial Ability for the Part 2 RAM Plan that was submitted to MADEP on August 22, 2000.

Impact of Proposed Modifications to Part 2 RAM Plan

This RAM Modification is not expected to have a material impact on the ongoing *Part 2* Construction-Related RAM. Risk to human health or the environment at the Property will not be affected by these proposed amendments.

This RAM Modification does not result in a change in surface water or groundwater management procedures, waste treatment systems, or confirmatory sampling procedures. No additional permits are required as a result of this modification. This RAM modification is being submitted to document Olin's compliance with the MCP requirements for RAMs (310 CMR 40.0405(3).

If you have any questions regarding this request, please call me at 617.529.6770, or Steve Morrow at 423.336.4511.

Very truly yours,

GEI CONSULTANTS, INC.

M. Margret Hanley, LSP
LSP of Record

MMH:lek
Attachments
c: Geoffrey Andrews, WPI
Marco Boscardin, GEI
Steve Morrow, Olin
Mike Murphy, HLA
M:\PROJECT\1997\9759\CORRESP\01\RAM Mod #8 061201.doc

Table 1.
Details of Lake Poly Soil Borings

Location	Ownership	Northing	Easting	Depth (feet bgs)	Date Sampled	2nd Date Sampled
BH12	CRA	556735.0	692986.5	4-6	6/10/91	NA
BH14	CRA	556767.9	692991.2	4-6	6/10/91	NA
BH16	CRA	556790.7	692965.9	4-6	6/10/91	NA
BH17	CRA	556837.3	692974.2	8-10	6/10/91	NA
BH18	CRA	556849.2	692936.7	4-6	6/10/91	NA
BH36	CRA	556783.9	692910.4	4-6	2/6/92	NA
BH37	CRA	556815.9	692901.0	4-6	2/6/92	NA
BH38	CRA	556847.4	692893.8	3-5	2/6/92	NA
LAKE POLY-1 [1]	SMITH	556845.6	692985.4	0-1	12/15/96	NA
LAKE POLY-2	SMITH	556808.2	693000.6	0-1	12/15/96	NA
LAKE POLY-3	SMITH	556767.6	693011.4	0-1	12/15/96	NA
LP-1	LAW	556820.5	692993.9	SS	11/4/99	NA
LP-2	LAW	556682.2	693032.3	SS	11/4/99	NA
LP-101	HLA	556853.0	692974.0	0-2 & 6-8	11/24/98	11/30/98
LP-102	HLA	556812.0	692939.0	0-2 & 6-8	11/24/98	11/30/98
LP-103	HLA	556799.0	693011.0	0-2 & 6-8	11/24/98	NA
LP-104	HLA	556815.0	692978.0	0-2 & 6-8	11/24/98	11/30/94
LP-105	HLA	556796.0	692985.0	0-2 & 6-8	11/24/98	NA
LPB-1 [1]	SMITH	556810.3	692975.7	4-6 & 6-8	1/18/95	NA
LPB-2	SMITH	556773.0	692989.7	7-8 & 8-9	1/18/95	NA
1160-Lake Poly 1_B	GEI	556839.4	692967.5	10	11/17/00	NA
1160-Lake Poly 1_E	GEI	556839.0	692972.5	6 - 8	11/17/00	NA
1160-Lake Poly 1_N	GEI	556844.0	692968.0	6 - 8	11/17/00	NA
1160-Lake Poly 1_S	GEI	556834.0	692968.0	6 - 8	11/17/00	NA
1160-Lake Poly 1_W	GEI	556839.0	692963.0	6 - 8	11/17/00	NA
1160-Lake Poly1-01	GEI	556830.5	692940.0	4.5	5/8/01	NA
1160-Lake Poly1-02	GEI	556787.4	692977.8	4.5	5/8/01	NA

General Notes:
[1] Coordinates for this sample location as estimated.
SS = surface soil, actual depth not known.
NA = Not applicable.

Table 2.
Lake Poly Soil Borings (Surface Samples, 0-2 ft)

Location	VOCs										SVOCs		Inorganics					
	1,2-Dichlorobenzene	1,4-Dichlorobenzene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	p-Isopropyltoluene	1,2,4-Trimethylbenzene	2,4,4-Trimethyl-1-pentene	2,4,4-Trimethyl-2-pentene	Ethylbenzene	Methylene chloride	bis(2-Ethylhexyl)phthalate	N-Nitrosodiphenylamine	Cadmium	Chromium	Lead	Ammonia (as Nitrogen)	Sulfate	Vanadium
LAKE POLY-1 [1]	<37	<37	NT	<37	NT	NT	<0.005	<0.005	<0.005	<0.005	5.1JB	210	<0.18	203*N	15	66.6	<110	9
LAKE POLY-2	<0.35 - <0.39	<0.35 - <0.39	NT	<0.35 - <0.39	NT	NT	<0.005	<0.005	<0.005	<0.005	0.028JB - 0.65B	0.097J - <0.35	<0.19 - <0.2	23.3 E - 54.8*N	4.3 - 183	21.8 - 25.8	<110	5.5B - 10.9
LAKE POLY-3	<0.35	<0.35	NT	<0.35	NT	NT	<0.005	<0.005	<0.005	0.002J	0.18 JB	<0.35	<0.2	28.9*N	4.8	42.4	<110	7.2B
LP-1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LP-2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LP-101	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
LP-102	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	41 - 101	NT	NT	NT	NT
LP-103	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	13.2 - 14.6	NT	NT	NT	NT
LP-104	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	27.6	NT	NT	NT	NT
LP-105	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	29.8	NT	NT	NT	NT

General Notes:
[1] Coordinates for this sample location is in question. The exact location is not known per June 5, 2001 e-mail from Larry Welch.
Concentration ranges derived from duplicate samples and samples collected at different depths.
All concentrations in mg/kg.
Numbers in bold denote detected analytes.
"<" = analyte not detected at a concentration above the specified laboratory reporting limit.
NT = sample not tested for analyte.

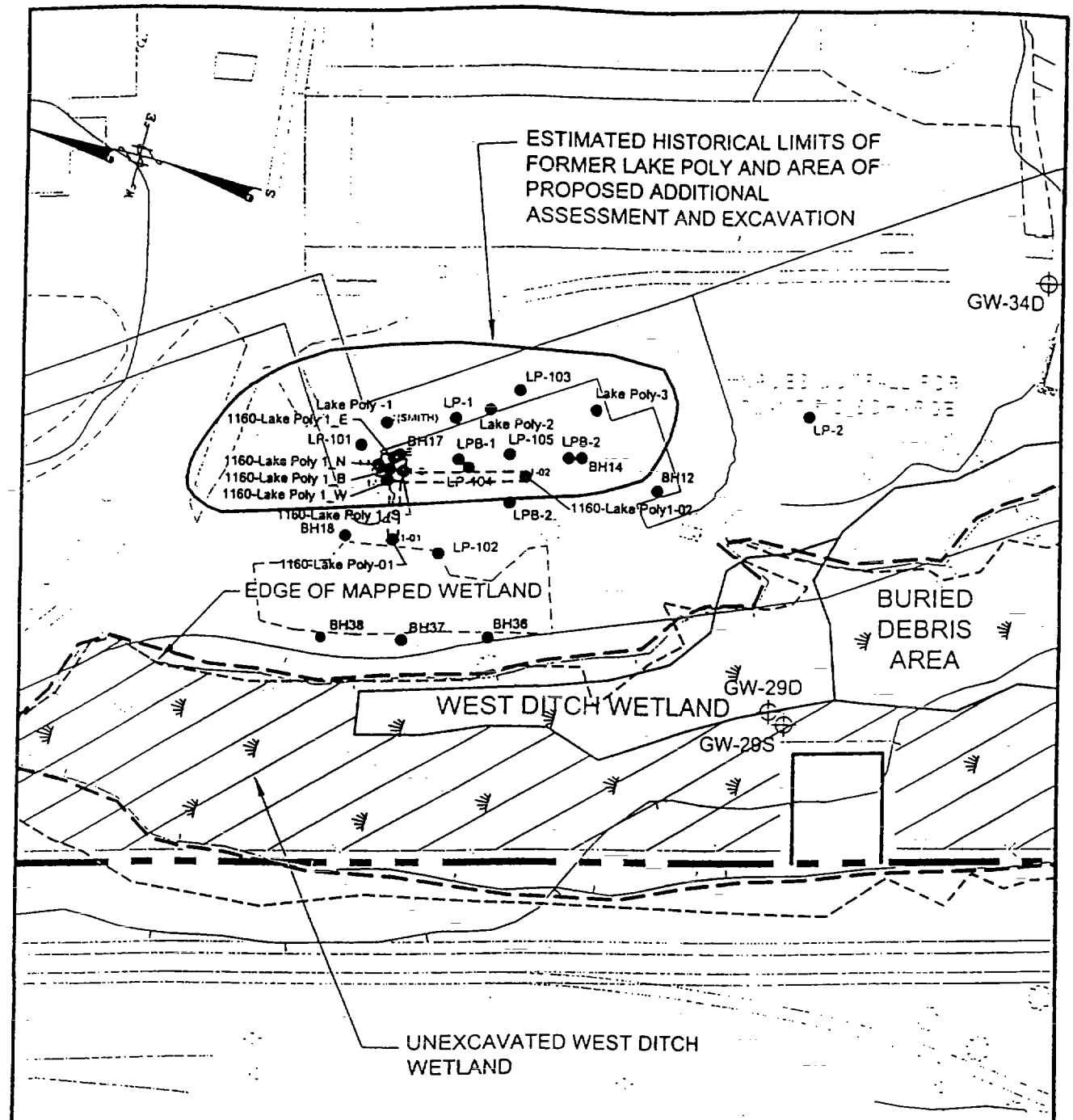
Qualifying Notes:
B = The result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
E =
J = The result is estimated due to ??.
*N =

Table 3.
Lake Poly Soil Borings (Subsurface Samples, 3-10 ft)

Location	VOCs										SVOCs		Inorganics					
	1,2-Dichlorobenzene	1,4-Dichlorobenzene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	p-Isopropyltoluene	1,2,4-Trimethylbenzene	2,4,4-Trimethyl-1-pentene	2,4,4-Trimethyl-2-pentene	Ethylbenzene	Methylene chloride	bis(2-Ethylhexyl)phthalate	N-Nitrosodiphenylamine	Cadmium	Chromium	Lead	Ammonia (as Nitrogen)	Sulfate	Vandium
BH12	<0.73	<0.73	NT	<0.73	NT	NT	0.01J	<0.011	<0.0055	<0.011	1100	3400	<1	2400	<10	59J	87J	24
BH14	<0.76	<0.76	NT	<0.76	NT	NT	0.006J	0.002J	<0.0055	<0.011	70	20	1J	1300	40	28J	110J	12
BH16	<0.73	<0.73	NT	<0.73	NT	NT	<0.011	<0.011	<0.0055	<0.011	4.9	3	<1	610	<10	28J	40J	10
BH17	<0.79	<0.79	NT	<0.79	NT	NT	0.64J	0.57J	<0.006	<0.012	36	14	<1	1200	<10	360J	<20	13
BH18	<0.92	<0.92	NT	<0.92	NT	NT	0.075	0.039J	0.011J	<0.07	<0.92	<0.92	<1	5.9	<10	70J	<20	2.6
BH36	<0.76	<0.76	NT	<0.76	NT	NT	0.039J	<0.017	<0.006	<0.012	240J	<0.76	<1	610	11	10	<20	13
BH37	<0.79	<0.79	NT	<0.79	NT	NT	0.013J	0.005J	<0.006	<0.012	120	<0.79	<1	410	14	140	<40	14
BH38	<0.82	<0.82	NT	<0.82	NT	NT	0.19J	0.059J	<0.006	<0.012	6700	11	<1	500	11	41	<80	19
LP-101	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	1270 - 2130	NT	NT	NT	NT
LP-102	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	117 - 624	NT	NT	NT	NT
LP-103	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	407	NT	NT	NT	NT
LP-104	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	33.3 - 2610	NT	NT	NT	NT
LP-105	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	9.4	NT	NT	NT	NT
LPB-1 [1]	<0.43 - 2.1	<0.43 - 2.6	NT	<0.43 - 1.8	NT	NT	3.8 - 340	6.8 - 210	0.1 - 0.61	0.004JB - 0.02JB	0.97 - 1400	0.15J - 230	<1 - <1.1	79 - 17000	8.9	89 - 10000	<20 - 260	6.5 - 23
LPB-2	<0.4 - 0.17J	<0.4 - 0.23J	NT	<0.4 - 0.088J	NT	NT	0.93 - 10	0.28 - 3.3	0.015 - 0.057	0.002JB - 0.004JB	1.8 - 260	140 - 300	<1	68 - 1300	5.7 - 13	170 - 390	44 - 85	4.8 - 6.8
1160-Lake Poly 1_B	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.27B	1.2	<0.37	<0.3	3400	11	NT	BDL	BDL
1160-Lake Poly 1_E	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.29B	0.57	<0.39	<0.2	6.4	2.6	NT	BDL	BDL
1160-Lake Poly 1_N	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.81	0.15	<0.14	0.3B	390C	37C	<0.3	21	1.4	NT	BDL	BDL
1160-Lake Poly 1_S	7.1	9	1.7	3	<0.45	<0.45	41	72	0.5	0.93B	890C	62C	0.62	11000F	27	NT	BDL	BDL
1160-Lake Poly 1_W	<1	<1	<1	<1	<1	<1	33	24	<1	<2B	875C	205C	0.63	5300	33	NT	BDL	BDL
1160-Lake Poly1-01	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.92	1.40	<0.14	<0.28	<0.42	<0.42	<0.63	11	4.0	81	BDL	BDL
1160-Lake Poly1-02	<1	<1	<1	<1	4.4	0.68	97	45	<1	<2.1	600	2800	<1	1500	21	2775	BDL	BDL

General Notes:
[1] Coordinates for this sample location are in question. The exact location is estimated.
Concentration ranges derived from duplicate samples and samples collected at different depths.
All concentrations in mg/kg.
Numbers in bold denote detected analytes.
"<" = analyte not detected at a concentration above the specified laboratory reporting limit.
NT = sample not tested for analyte.

Qualifying Notes:
B = The result is attributed to laboratory contamination due to the presence of the chemical in the associated laboratory blank.
C = The result is estimated due to surrogate recovery outside of control limits.
F = The result is estimated due to matrix spike recovery outside of control limits.
J = The result is estimated due to ??.



Legend:

- ● SOIL/SEDIMENT SAMPLE LOCATION (See Table 1)
- APPROXIMATE LOCATION OF TRENCH EXCAVATED ON MAY 8, 2001
- ⊕ MONITORING WELL

0 60 120

SCALE, FEET

Olin Corporation Charleston, Tennessee	PART 2 – Construction–Related RAM 51 Eames Street Wilmington, Massachusetts RAM Modification #8	PROPOSED LAKE POLY INVESTIGATION AND POTENTIAL EXCAVATION AREA
GEI Consultants, Inc.	Project 97598	June 2001 Fig. 1

97598-AB-167 djm/ptc 6/12/01

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-106

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

A. SITE LOCATION:

Site Name: Olin Wilmington

Street: 51 Eames Stree Location Aid:

City/Town: Wilmington ZIP Code: 01887

☐ Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.

Related Release Tracking Numbers That This RAM or URAM Addresses:

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

☑ Submit a RAM Plan (complete Sections A, B, C, D, E, F, J, K, L and M).

☑ Check here if this RAM Plan is an update or modification of a previously approved written RAM Plan. Date Submitted: 7/24/00

RAM Modification #8

☐ Submit a RAM Status Report (complete Sections A, B, C, E, J, K, L and M).

☐ Submit a RAM Completion Statement (complete Sections A, B, C, D, E, G, J, K, L and M).

☐ Confirm or Provide URAM Notification (complete Sections A, B, H, K, L and M).

☐ Submit a URAM Status Report (complete Sections A, B, C, E, J, K, L and M).

☐ Submit a URAM Completion Statement (complete Sections A, B, C, D, E, I, J, K, L and M).

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.

C. SITE CONDITIONS:

☐ Check here if the source of the Release or Threat of Release is known.

If yes, check all sources that apply: ☐ UST ☐ Pipe/Hose/Line ☐ AST ☐ Drums ☐ Transformer ☐ Boat ☐ Tanker Truck ☐ Vehicle ☑ Other Specify: historical operations and onsite waste disposal

Identify Media and Receptors Affected: (check all that apply) ☐ Air ☑ Groundwater ☑ Surface Water ☑ Sediments ☑ Soil ☑ Wetlands ☐ Storm Drain ☐ Paved Surface ☐ Private Well ☐ Public Water Supply ☐ Zone 2 ☐ Residence ☐ School ☐ Unknown ☐ Other Specify:

Identify Release and/or Threat of Release Conditions at Site: (check all that apply)

☐ 2 and 72 Hour Reporting Condition(s) ☐ 120 Day Reporting Condition(s) ☑ Other Condition(s)

Describe: See RAM plan dated July 24, 2000

RAMs may be conducted concurrently with an IRA only with written DEP approval
URAMs may not be conducted if any 2 or 72 Hour conditions exist at the site.

Identify Oils and Hazardous Materials Released: (check all that apply) ☐ Oils ☐ Chlorinated Solvents ☐ Heavy Metals ☐ Others Specify: pthalates, inorganic compounds, VPH, EPH

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☐ Assessment and/or Monitoring Only

☑ Excavation of Contaminated Soils

☐ Re-use, Recycling or Treatment

○ On Site ○ Off Site Est. Vol.: 2,600 (additional) cubic yards

Describe:

☐ Store ○ On Site ○ Off Site Est. Vol.: _____ cubic yards

☐ Deployment of Absorbant or Containment Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

SECTION D IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-106

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

D. DESCRIPTION OF RESPONSE ACTIONS (continued):

☐ Landfill ○ Cover ○ Disposal Est. Vol.: _____ cubic yards

☐ Removal of Drums, Tanks or Containers

Describe: _____

☑ Removal of Other Contaminated Media

Specify Type and Volume: Fromer Lake Poly Sediments

☐ Groundwater Treatment Systems

☐ Air Sparging

☐ Temporary Water Supplies

☐ Temporary Evacuation or Relocation of Residents

☐ Fencing and Sign Posting

☐ Other Response Actions Describe: _____

See 310 CMR 40.0442 for limitations on the scope and type of RAMs.
See 310 CMR 40.0464 for performance standards for URAMs.

☐ Check here if this RAM or URAM involves the use of Innovative Technologies. DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse.

Describe Technologies: _____

E. TRANSPORT OF REMEDIATION WASTE: (if Remediation Waste has been sent to an off-site facility, answer the following questions)

Name of Facility: _____

Town and State: _____

Quantity of Remediation Waste Transported to Date: _____

F. RAM PLAN:

☐ Check here if this RAM Plan received previous oral approval from DEP as a continuation of a Limited Removal Action (LRA).

Date of Oral Approval: _____

☐ If a RAM Compliance Fee is required, check here to certify that the fee has been submitted. You MUST attach a photocopy of the payment. See 310 CMR 40.0444(2) to learn when a fee is not required.

☐ Check here if the RAM Plan is proposed for a Transition Site. If this is the case, you may need to attach an LSP Evaluation Opinion prior to undertaking the RAM, if not previously provided. See 310 CMR 40.0600 for further information about Transition Sites.

G. RAM COMPLETION STATEMENT:

☐ If a RAM Compliance Fee is required in connection with submission of the RAM Completion Statement, check here to certify that the fee has been submitted. You MUST attach a photocopy of the payment. You owe this fee when submitting a RAM Completion Statement if you received oral approval of a RAM that continued an LRA, and have NOT previously submitted a RAM Plan and accompanying fee.

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the RAM Completion Statement, you must submit a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the RAM Completion Statement.

H. URAM NOTIFICATION:

Identify Location Type: (check all that apply) ☐ Public Right of Way ☐ Utility Easement ☐ Private Property

Identify Utility Type: (check all that apply) ☐ Sanitary/Combined Sewerage ☐ Water ☐ Drainage ☐ Natural Gas

☐ Telephone ☐ Steam Lines ☐ Telecommunications ☐ Electric ☐ Other Specify: _____

☐ Check here if you provided DEP with previous oral notification of this URAM. Date of Oral Notice: _____

☐ Check here if the property owner was NOT contacted prior to initiation of the URAM. If this is the case, you must attach an explanation of why the owner was not contacted, including the date and time when contact ultimately occurred.

☐ Check here if this URAM will occur in connection with the construction of new public utilities. If this is the case, document the nature and extent of encountered contamination, the scope and expense of necessary mitigation and the benefits amd limitations of project alternatives.

With the exception stated below, the person undertaking the URAM must provide the name and license number of an LSP engaged or employed in connection with the URAM:

LSP Name: _____ LSP License Number: _____

LSP information is not required if the URAM is limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated either by a Hazardous Material or a mixture of a Hazardous Material and Oil.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-106

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

I. URAM COMPLETION STATEMENT:

☐ Check here if this URAM was limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated by either a Hazardous Material or a mixture of a Hazardous Material and Oil.

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the URAM Completion Statement, you must submit either a Release Abatement Measure (RAM) Plan or a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the URAM Completion Statement.

J. 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 Release Abatement Measure Plan is being submitted*, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed 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;

> *if Section B of this form indicates that a Release Abatement Measure Status Report or a Utility-Related Abatement Measure Status Report 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;

> *if Section B of this form indicates that a Release Abatement Measure Completion Statement or a Utility-Related Abatement Measure 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;

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: M. Margret Hanley LSP #: 8494 Stamp:

Telephone: 617.742.4447 Ext.:

FAX: (optional)

Signature: M Margret Hanley

Date: June 7, 2001

COMMONWEALTH OF MASSACHUSETTS
M. MARGRET HANLEY
No. 8494
REGISTERED LICENSED SITE PROFESSIONAL

An LSP Opinion is not required for a Utility-Related Abatement Measure Notification.

An LSP Opinion is not required for a URAM Completion Statement if the URAM is limited to the excavation and/or handling of not more than 100 cubic yards of soil contaminated by Oil, or not more than 20 cubic yards of soil contaminated either by Hazardous Material or a mixture of Hazardous Material and Oil.

K. PERSON UNDERTAKING RAM OR URAM:

Name of Organization: Olin Corporation

Name of Contact: Steve Morrow Title: Principal Environmental Specialist

Street: 1186 Lower River Road

City/Town: Chrleston State: TN ZIP Code: 37310-0248

Telephone: 923.336.4511 Ext.: FAX:

☐ Check here if there has been a change in person undertaking the RAM or URAM.

Massachusetts Department of Environmental Protection **BWSC-106**
Bureau of Waste Site Cleanup

RELEASE & UTILITY-RELATED ABATEMENT MEASURE (RAM & URAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 and 310 CMR 40.0462 - 0465 (Subpart D)

Release Tracking Number: 3 - 0471

L. RELATIONSHIP TO SITE OF PERSON UNDERTAKING RAM or URAM: (check one)

[X] RP or PRP Specify: (X) 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 Undertaking RAM or URAM Specify Relationship: _____

M. CERTIFICATION OF PERSON UNDERTAKING RAM OR URAM:

I, STEVE MORROW, 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: Steve Morrow (signature) Title: PRINCIPLE ENV. SPECIALIST

For: _____ (print name of person or entity recorded in Section K) Date: June 6, 2001

Enter address of person providing certification, if different from address recorded in Section K:

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.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

From:

Wilmington
Conservation Commission

To: Applicant

Olin Chemicals
Name

P.O. Box 248
Mailing Address

Charleston | TN | 37310
City/Town | State | Zip Code

Property Owner (if different from applicant):

SAME
Name

Mailing Address

MA
City/Town | State | Zip Code

1. Title and Date of Final Plans and Other Documents:

See attached
Title | Final Date (or Revised Date if applicable)

2. Date Request Filed:

June 8, 2001

B. Determination

Pursuant to the authority of M.G.L. c. 131, § 40, the Conservation Commission considered your Request for Determination of Applicability, with its supporting documentation, and made the following Determination.

Project Description (if applicable):

Excavation for assessment of contamination

Project Location:

51 Eames Street | Wilmington
Street Address | City/Town

Map 37 | 10
Assessors Map/Plat Number | Parcel/Lot Number

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Determination (cont.)

The following Determination(s) is/are applicable to the proposed site and/or project relative to the Wetlands Protection Act and regulations:

Positive Determination
Note: No work within the jurisdiction of the Wetlands Protection Act may proceed until a final Order of Conditions (issued following submittal of a Notice of Intent or Abbreviated Notice of Intent) has been received from the issuing authority (i.e., Conservation Commission or the Department of Environmental Protection).

☐ 1. The area described on the referenced plan(s) is an area subject to protection under the Act. *Removing, filling, dredging, or altering of the area requires the filing of a Notice of Intent.*

☐ 2a. The boundary delineation of the following resource areas described on the referenced plan(s) are confirmed as accurate. Therefore, the resource area boundaries confirmed in this Determination are binding as to all decisions rendered pursuant to the Wetlands Protection Act and its regulations regarding such boundaries for as long as this Determination is valid.

Attached

☐ 2b. The boundaries of resource areas listed below are not confirmed by this Determination, regardless of whether such boundaries are contained on the plans attached to this Determination or to the Request for Determination.

☐ 3. The work described on referenced plan(s) and document(s) is within an area subject to protection under the Act and will remove, fill, dredge, or alter that area. Therefore, said work requires the filing of a Notice of Intent.

☐ 4. The work described on referenced plan(s) and document(s) is within the Buffer Zone and will alter an Area subject to protection under the Act. Therefore, said work requires the filing of a Notice of Intent.

☐ 5. The area and/or work described on referenced plan(s) and document(s) is subject to review and approval by:

Name of Municipality

Pursuant to the following municipal wetland ordinance or bylaw:

Name | Ordinance or Bylaw Citation

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 2 – Determination of Applicability
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Determination (cont.)

☐ 6. The following area and/or work, if any, is subject to a municipal ordinance or bylaw but not subject to the Massachusetts Wetlands Protection Act:

☐ 7. If a Notice of Intent is filed for the work in the Riverfront Area described on referenced plan(s) and document(s), which includes all or part of the work described in the Request, the applicant must consider the following alternatives. (Refer to the wetland regulations at 10.58(4)c. for more information about the scope of alternatives requirements):

☐ Alternatives limited to the lot on which the project is located.

☐ Alternatives limited to the lot on which the project is located, the subdivided lots, and any adjacent lots formerly or presently owned by the same owner.

☐ Alternatives limited to the original parcel on which the project is located, the subdivided parcels, any adjacent parcels, and any other land which can reasonably be obtained within the municipality.

☐ Alternatives extend to any sites which can reasonably be obtained within the appropriate region of the state.

Negative Determination
Note: No further action under the Wetlands Protection Act is required by the applicant. However, if the Department is requested to issue a Superseding Determination of Applicability, work may not proceed on this project unless the Department fails to act on such request within 35 days of the date the request is post-marked for certified mail or hand delivered to the Department. Work may then proceed at the owner's risk only upon notice to the Department and to the Conservation Commission. Requirements for requests for Superseding Determinations are listed at the end of this document.

☐ 1. The area described in the Request is not an area subject to protection under the Act or the Buffer Zone.

☐ 2. The work described in the Request is within an area subject to protection under the Act, but will not remove, fill, dredge, or alter that area. Therefore, said work does not require the filing of a Notice of Intent.

☒ 3. The work described in the Request is within the Buffer Zone, as defined in the regulations, but will not alter an Area subject to protection under the Act. Therefore, said work does not require the filing of a Notice of Intent, subject to the following conditions (if any).

See attached

☐ 4. The work described in the Request is not within an Area subject to protection under the Act (including the Buffer Zone). Therefore, said work does not require the filing of a Notice of Intent, unless and until said work alters an Area subject to protection under the Act.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Determination (cont.)

☐ 5. The area described in the Request is subject to protection under the Act. Since the work described therein meets the requirements for the following exemption, as specified in the Act and the regulations, no Notice of Intent is required:

Exempt Activity (site applicable statutory/regulatory provisions)

☐ 6. The area and/or work described in the Request is not subject to review and approval by:

Name of Municipality

Pursuant to a municipal wetlands ordinance or bylaw.

Name | Ordinance or Bylaw Citation

C. Authorization

This Determination is issued to the applicant and delivered as follows:

☐ by hand delivery on _____ Date

☒ by certified mail, return receipt requested on 6/21/01 Date

This Determination is valid for three years from the date of issuance (except Determinations for Vegetation Management Plans, which are valid for the duration of the Plan). This Determination does not relieve the applicant from complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.

This Determination must be signed by a majority of the Conservation Commission. A copy must be sent to the appropriate DEP Regional Office (see Appendix A) and the property owner (if different from the applicant).

Signatures:

Lisa A Brothers | Judy Waterhouse

On this 20th day of June 2001, before me personally appeared all of the above members of the Wilmington Conservation Commission, to me known to be the person described in, and who executed, the foregoing instrument, and acknowledged that he/she executed the same as his/her free act and deed.

Joann V. Roberts
Notary Public

April 19, 2002
My Commission Expires

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 2 – Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

D. Appeals

The applicant, owner, any person aggrieved by this Determination, any owner of land abutting the land upon which the proposed work is to be done, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate Department of Environmental Protection Regional Office (see Appendix A) to issue a Superseding Determination of Applicability. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and Fee Transmittal Form (see Appendix E: Request for Departmental Action Fee Transmittal Form) as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Determination. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant if he/she is not the appellant. The request shall state clearly and concisely the objections to the Determination which is being appealed. To the extent that the Determination is based on a municipal ordinance or bylaw and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

[redacted]

Assessors Map 37 Parcel 10
Project Location: 51 Eames Street
Wilmington, MA

[redacted]

The Wilmington Conservation Commission, subject to the following Special Conditions, issues the above-referenced Determination of Applicability:

1. All work shall conform to the plan submitted with Request for Determination of Applicability.
2. This Determination of Applicability shall apply to any successor in control or successor in interest of the property described in the Request for Determination and the plan referenced in Condition #1 of this Determination.
3. A summary of assessment findings/results shall be submitted to the Conservation Commission, along with a description of the mitigation/remediation to be undertaken, prior to any mitigation/remediation activities in this area.
4. Erosion fencing shall be set and staked in a permanent manner prior to any construction or earth-disturbing activity and shall be inspected and approved by an agent of the Conservation Commission (or an approved wetland scientist) before any land-disturbing activity may commence. The Conservation Commission or its Agent may require other controls, as field conditions warrant. Erosion and sediment controls shall not be removed until the Conservation Commission or its Agent has reviewed and found the stabilization of all disturbed areas to be satisfactory.
5. All erosion control fencing shall serve as the limit of construction, beyond which no equipment or earth-disturbance shall be allowed.
6. The Applicant, or his representative, prior to the start of work shall record this Determination of Applicability at the Middlesex North Registry of Deeds. Notification of the instrument number, on the enclosed form, shall be submitted to the Wilmington Conservation Commission prior to the commencement of any work for this project. Failure to record this document shall result in enforcement action by the Wilmington Conservation Commission.
7. No bordering vegetated wetlands, or any other wetland resource area, shall be impacted, altered, dredged, filled, removed or otherwise disturbed under this Determination before, during or after this project for any reason.
8. This Determination of Applicability does not relieve the Permittee or any other person, of the necessity of complying with all other applicable federal, state or local statutes, ordinances, by-laws or regulations.
9. Any change in the plan referenced in Condition #1 of this Determination shall be submitted to the Wilmington Conservation Commission for review and approval prior to implementation.

LAKE POLY UPDATE TO THE FOCUSED RISK ASSESSMENT REPORT

51 EAMES STREET SITE
WILMINGTON, MA

DEP RELEASE TRACKING NUMBER: 3-0471

Prepared for:

Olin Corporation
P.O. Box 248
1186 Lower River Road
Charleston, TN

Prepared by:

Harding ESE
107 Audubon Road
Wakefield, MA 01880

PN: 44842/0733116

October 11, 2001

LAKE POLY UPDATE TO THE FOCUSED RISK ASSESSMENT REPORT

51 EAMES STREET SITE
WILMINGTON, MA

DEP RELEASE TRACKING NUMBER: 3-0471

October 11, 2001

LAKE POLY UPDATE TO THE FOCUSED RISK ASSESSMENT REPORT

51 EAMES STREET SITE
WILMINGTON, MA

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REFERENCES *See the list of references in the Focused Risk Assessment*

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51 EAMES STREET SITE
WILMINGTON, MA

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1.0 INTRODUCTION

This interim human health and public welfare risk assessment for the 51 Eames Street Site in Wilmington Massachusetts (RTN 3-0471) has been prepared on behalf of Olin by Harding ESE as an update to the previous Massachusetts Contingency plan (MCP) Focused Risk Assessment (FRA) (HLA, 2000). This update incorporates soil and groundwater data collected in July 2001 within the Lake Poly area (as represented in Figure 1). This risk assessment should be considered an interim update with respect to the entire MCP disposal site because investigations of nature and extent of oil and hazardous materials (OHM) are on-going.

The specific purpose of this interim update is to re-evaluate the Lake Poly area, including the identification of hot spots and UCL exceedances and the recalculation of human health risks. Results of this re-evaluation of the Lake Poly area will be used to determine if any additional remedial activities are required per the MCP for the Lake Poly area. This report is an interim update and focuses *only* on Lake Poly. A comprehensive addendum to the entire FRA will be completed at a later date.

Introductory information (e.g., site history, conceptual site model, risk assessment process and methodologies) is provided in detail in the FRA and will not be repeated here. Section 1 of the FRA contains detailed discussions of the following:

- Plans for redevelopment and for certain remedial actions (FRA Section 1.1)
- Risk Assessment Process (FRA Section 1.2)
- Regulatory Context and Requirements (FRA Section 1.3)
- Brief Site History (FRA Section 1.4)
- Conceptual Site Model (FRA Section 1.5)
- Selection of Method for Conducting This Risk Assessment (FRA Section 1.6)

The risk assessment technical approach used for this Lake Poly area update is consistent with the approach used in the FRA (HLA, 2000). In order to avoid redundancy, throughout this report, sections of the FRA will be referenced, but information will not be repeated.

2.0 HAZARD IDENTIFICATION

The following section provides a discussion of the Lake Poly area data used for the purposes of this document. The Lake Poly area is located on the western portion of the Olin property, to the west of the warehouses and east of the west ditch wetland. GEI Consultants collected soil and groundwater samples in the Lake Poly area in July 2001 to further delineate nature and extent of contamination in that area. A detailed account of GEI's investigation and results is provided in the Former Lake Poly Area Investigation (GEI, 2001). New data for the Lake Poly area are available for soil and groundwater only. No other media are addressed in this report.

2.1 SOIL DATA

Figure 1 identifies the soil sample location within the Lake Poly area at the site. A comprehensive soil sample list for the Lake Poly area is presented in Table 1. In addition to sample collection, soils represented by LPB-1 were excavated and removed from the site. Therefore, results for LPB-1 will not be used for this or any other additional risk assessment update.

The summary statistics and raw results for the July 2001 soil samples are presented in Table 2. The frequency of detection, range of sample quantitation limits (SQLs), range of detected concentrations, and arithmetic mean of all samples with one-half the SQL assigned to non-detects are presented for each OHM.

The July 2001 soil samples were collected at varying depths up to 12 feet bgs at 32 locations (LPB1 through LPB14; LPB14A; LPB15 through LPB19; LPB22 through LPB34) for a total of 85 samples. No pesticides or PCBs were detected in the 2001 data. Samples at all locations (with the exception of 14A) were analyzed for total chromium. In addition to chromium, at selected locations (including LPB5, LPB7, LPB8, LPB10, LPB12, LPB14/14A, LPB15, LPB16, and LPB28), VOCs, SVOCs, pesticides/PCBs, petroleum parameters, and/or other inorganics were also analyzed (see Table 2).

This FRA interim update includes all analytical data collected to date for soil within the Lake Poly area (as represented in Figure 1). Raw soil analytical results for the entire Lake Poly area are presented in Appendix A, Table A-1.

OHM of potential concern detected in site soils are not formally re-identified for the purposes of this FRA update. To be conservative, all OHM detected in soils within the Lake Poly area are identified as OHM of potential concern, except those identified as consistent with background in the FRA that are still consistent with background given the new data (i.e., arsenic and magnesium). Any additional OHM that were not previously detected/analyzed will be considered OHM of potential concern. These include 1,2,3-trichlorobenzene, 1,2,4-trimethylbenzene, p-isopropyl toluene, extractable petroleum hydrocarbon (EPH) fractions, and volatile petroleum hydrocarbon (VPH) fractions.

Overall, the list of OHM detected in the most recent Lake Poly soil samples is generally consistent with what has previously been detected. The most recent data indicate that the higher OHM concentrations occur at depth. However, ammonia concentrations in subsurface soil detected in the area of LPB-11, LPB-12, and LPB-29 are substantially higher than previously detected concentrations. The maximum concentration of ammonia for the July 2001 data is 71,000 mg/kg. The maximum concentration previously detected in the Lake Poly area (at LPB-2) was 390 mg/kg.

2.2 GROUNDWATER DATA

Figure 2 identifies the three locations within or downgradient of the Lake Poly area where additional groundwater samples were collected in July 2001. The new groundwater samples are also listed in Table 1. A comprehensive groundwater sample list for the Lake Poly area is not presented in Table 1. As discussed in Section 4 of this report, a re-evaluation of risks associated with groundwater (that includes historical and the recently collected groundwater data) will not be necessary.

GEI Consultants collected one groundwater sample within Lake Poly at 1140-GW-LPB-11 (new location) and additional samples downgradient of the Lake Poly area at GW-29D, GW-29S, and GW-34D. The summary statistics and raw results for the July 2001 groundwater samples are presented in Table 3. The frequency of detection, range of sample quantitation limits (SQLs), range of detected concentrations, and arithmetic mean of all samples with one-half the SQL assigned to non-detects are presented for each OHM.

Overall, the concentrations of OHM detected in the most recent Lake Poly groundwater samples do not appear to differ significantly from concentrations previously been detected at those locations. The most notable differences were as follows:

- Trimethylpentenes were not detected in GW-34D from January 2000, but were detected in the July 2001 samples.

- The nitrogen, ammonia concentration in GW-34D was 410 mg/L in January 2000, but was non-detect in July 2001.

  The nitrogen, ammonia concentration in GW-29S was 0.84 mg/L in January 2000, but was 8.8 mg/L in July 2001.

  The nitrogen, ammonia concentration in GW-29D was 66 mg/L in January 2000, but was 28 mg/L in July 2001.

3.0 TOXICITY ASSESSMENT

A dose-response assessment was conducted to characterize and quantify the relationship between intake, or dose, of an OHM and the likelihood or severity of a toxic effect, or response. There are two major types of toxic effects that will be evaluated in the risk assessment: carcinogenic and noncarcinogenic. Following MADEP guidance (MADEP, 1995), these two endpoints are evaluated separately. The toxicity assessment for carcinogenic and noncarcinogenic effects and sources of toxicity values are discussed in Appendix A to the FRA (HLA, 2000). See Section 3 of the FRA and Appendix C to the FRA for toxicity values for OHM of potential concern.

Tables in Appendix C to the FRA contain toxicity values for an expanded list of compounds in addition to those detected at the 51 Eames Street site. Toxicity values for the "new" OHM detected in the Lake Poly area during the July 2001 sampling event are provided in these FRA Appendix C tables. Appendix B to this report provides toxicity profiles for a selected list of these new OHM (i.e., the EPH and VPH fractions).

4.0 EXPOSURE ASSESSMENT

The exposure assessment consists of several components, including identification of: current and future land use and limitations on land use; potential human receptors; exposure points; exposure routes; soil and groundwater MCP categories; exposure point concentrations; and daily doses or average exposure concentrations.

Current and future land use and limitations on land use are discussed in Section 4.1 of the FRA (HLA, 2000). The potential human receptors and potential exposure routes associated with the Lake Poly area are identified below. Soil and groundwater categories identified in the FRA are still applicable (see Section 4.3 of the FRA). Exposure points (including hot spots) are delineated in a manner consistent with Section 4.4 of the FRA. Sections 4.5, 4.6, and 4.7 of the FRA provide information regarding exposure assumptions/parameters. Equations for computing daily doses or average exposure concentrations are provided in Section 4.8 of the FRA.

4.1 POTENTIAL HUMAN RECEPTORS AND EXPOSURE ROUTES ASSOCIATED WITH THE LAKE POLY AREA

The following receptors are re-evaluated per the recently collected Lake Poly data. The only human receptors that could be potentially exposed to OHM at or resulting from contact with Lake Poly area soils and groundwater (considering the excavation of LPB-1 and the newly collected data) under both the **planned redevelopment scenario** and the **unspecified future use scenario** are listed below:

- Construction worker
  - potential exposure to OHM in soil 0-15 feet bgs within the Lake Poly area via ingestion, dermal, and dust and vapor inhalation
- Offsite downwind resident (0-6 years)
  - potential exposure to OHM in soil 0-15 feet bgs within the Lake Poly area via inhalation of dusts and vapors that may migrate in wind to off-property locations.

For the FRA, an on-property worker was evaluated under the unspecified future use scenario associated with the potential exposure to OHM in on-property surface soil (i.e., surface soil both within and outside of the planned redevelopment area) via ingestion and dermal contact. The potential exposure point identified for surface soil for the Lake Poly area under this scenario was represented by sample Lake Poly-1 in the Lake Poly region. This EP represented the surface soil portion of the Lake Poly hot spots that an on-property worker may be exposed to if planned redevelopment does not occur and the soils in that area are accessible (i.e., not covered by building or pavement). Lake Poly-1 remains the only surface soil portion of the Lake Poly hot spot region. Therefore, re-evaluation assuming unspecified future use for any potential surface soil receptor is not necessary for this Lake Poly update.

For the building occupant (i.e., office worker or other commercial/industrial worker in the planned building), potential exposure to volatile OHM in vapors that may migrate from soil and

groundwater beneath and within 30 feet of the warehouse building to indoor air is not evaluated in this update. No new groundwater data were collected beneath or within 30 feet of the warehouse building. Lake Poly volatiles data for soil locations beneath and within 30 feet of the building are summarized in Table 10. No new volatiles data are available for the Lake Poly soil samples within the area likely to impact the building. Therefore, no change to the analysis performed in the FRA for this pathway is required.

4.2 LAKE POLY EXPOSURE POINTS

As discussed in the following subsections, the soil hot spot analysis for the Lake Poly area was conducted to incorporate the soil data collected in July 2001 and to account for the excavation of LPB-1. Following the hot spot re-analysis, soil exposure points to represent the Lake Poly area will be identified.

There are no potable or non-potable uses of groundwater at the property. However, building occupants in the planned building could potentially be exposed to OHM in groundwater that may migrate to indoor air. Therefore, one groundwater exposure point was identified in the FRA (HLA, 2000). The exposure point included all monitoring wells located beneath and within 30 feet of the planned building. Since no new groundwater data were collected from any wells located beneath and within 30 feet of the planned building, a re-evaluation of the FRA risks for the building occupant is not necessary.

4.2.1 Hot Spot Re-Analysis for Lake Poly

Soil

The hot spot re-analysis for soils within the Lake Poly area was performed in accordance with the MCP (310 CMR 40.0924(2)) and the Guidance For Disposal Site Risk Characterization (MADEP, 1995). Refer to Section 4 of the FRA for specific details of that methodology.

Consistent with the FRA, potential hot spot analytes were identified for the Lake Poly area. To identify the list of potential hot spot analytes, maximum concentrations of OHM are first compared to the appropriate Method 1 Standards (the lesser of the S-3/GW-1, S-3/GW-2, and S-3/GW-3 standard for surface and subsurface soils 0-15 feet). Comparisons of maximum detected concentrations to Method 1 standards are provided in Table 4.

Analytes with concentrations above Method 1 standards (or which have no standards) were retained as potential hot spot analytes. Data summaries for soils 0-15 feet bgs were reviewed to identify analytes with wide ranges of analytical results. Analytes with wide ranges of analytical results, identified as potential hot spot analytes, were carried through the remainder of the hot spot analysis. Potential hot spot analytes are identified in Table 4.

Consistent with the FRA, potential hot spot areas were delineated by identifying the sample locations with the highest concentrations of each potential hot spot analyte, identifying sampling

locations that might represent discrete areas of elevated concentrations (while also considering known or suspected sources of OHM release), and showing spatial distribution of concentrations on a figure. These figures are provided in Appendix C to this report. Potential hot spot figures available for individual potential hot spot analytes in soil include bis(2-ethylhexyl)phthalate, ammonia, trimethyl-1-pentene, n-nitrosodiphenylamine, chromium, and C11-C22 Aromatics.

Figures were not prepared for the butylphthalates, p-isopropyltoluene, 1,2,3-trichlorobenzene, or 1,4-dichlorobenzene. The ratio of the maximum and minimum concentrations for 1,2,3-trichlorobenzene, 1,4-dichlorobenzene, p-isopropyltoluene are generally between 10 and 100; a 'hot" area of elevated concentrations for these OHM greater than 100 times the surrounding area is not likely. For the phthalates shaded as potential hot spot analytes, about 80% of the samples are non-detects with detection limits between 10 and 100 times the maximum detected concentration. A 'hot" area of elevated concentrations for these OHM greater than 100 times the surrounding area is not likely. Further hot spot analyses focused on those OHM most frequently detected and those likely to be potential risk drivers for the area.

The hot spot evaluation confirmed the following samples or areas as hot spots:

Limited to Subsurface Soil (3-15 ft bgs):

- Lake Poly 1R hot spot for bis(2-ethylhexyl)phthalate
- Lake Poly 2R hot spot for ammonia
- Lake Poly 3R hot spot for trimethylpentenes

Within Soil 0-15 feet bgs:

- Lake Poly 4R hot spot for n-nitrosodiphenylamine

All confirmed hot spots in soil are identified in Figures 3 through 6. There are no hot spots for chromium and C11-C22 Aromatics in soil. There were no single samples or discrete areas of elevated concentrations (defined as samples/areas with concentrations 100 times or greater than the concentrations in the surrounding area).

Given the removal of LPB-1, the Lake Poly 1 hot spot at LPB-1 (6-8 ft) identified in the FRA for ammonia, trimethylpentenes, and chromium no longer exists. The removal of soil from the area of sample LPB-1 removes high VOC concentrations from the Lake Poly data set. Therefore, removal of this sample affects the soil vapor to ambient air evaluations for the construction worker and offsite downwind resident, as well as the evaluation of the construction worker's direct soil contact and inhalation of soil particulates.

Groundwater

OHM concentrations detected in the July 2001 groundwater samples are generally low. No new groundwater hot spots exist given the new data.

4.2.2 Soil Exposure Points for Lake Poly – Planned Redevelopment Scenario

A construction worker could potentially be exposed to soils 0-15 feet bgs in the planned redevelopment area through ingestion and direct contact, inhalation of respirable dust, and inhalation of VOCs that migrate from soil to the ambient air while performing excavation-related activities. An offsite resident living downwind of the planned redevelopment area may be exposed to OHM detected in soils 0-15 feet bgs at the planned redevelopment area when soils are disturbed during soil excavation activities. The exposure pathway of concern for this receptor is inhalation of dusts and vapors downwind of the excavation area.

In order to simplify calculations (since the hot spots overlap each other), the potential hot spot exposure point (EP) identified for soil in the Lake Poly area is the Lake Poly Region hot spot (**Revised Hot EP 9**). This EP encompasses all samples included in the 4 Lake Poly area hot spots (Lake Poly 1R, 2R, 3R, 4R). This region is used to represent exposure to these 4 Lake Poly area hot spots. The construction worker and offsite resident are potentially exposed to Revised EP 9. It is important to note that these four hot spots represent roughly the same area that was identified as Hot EP 9 in the FRA.

Risks associated with non-hot areas are not recalculated in this assessment. It is assumed that with incorporation of the new Lake Poly data, EPCs for non-hot spot exposure points will not change significantly. To support this, the new Lake Poly data outside hot spot areas will be compared to data for the FRA non-hot spots. If the data between the two data sets are generally consistent, no formal recalculation of risks is required. In Table 11, concentrations of OHM in surface soil for the updated non-hot spot data for Lake Poly are compared to the FRA non-hot spot EPCs for surface soil. In Table 12, concentrations of OHM in soil 0-15 feet bgs for the new non-hot spot data for Lake Poly are compared to the FRA non-hot spot EPCs for soil 0-15 feet bgs. As shown in Tables 11 and 12, the new data are generally consistent with the non-hot spot data from the FRA.

4.2.3 Soil Exposure Points for Lake Poly – Unspecified Future Land Use

The potential EP identified for soil under the unspecified future land use scenario is the Hot EP identified for the planned redevelopment scenario (Revised Hot EP 9). As discussed earlier, Lake Poly-1 remains the only surface soil portion of the Lake Poly hot spot region. Therefore, recalculation of risks for an on-property worker associated with direct contact with surface soil in the Lake Poly area is not required.

4.3 EXPOSURE PROFILES

Exposure profiles for the construction worker and offsite downwind resident are summarized in FRA Tables 12 and 13 for the planned redevelopment scenario and for the unspecified future land use scenario, respectively. Consistent with the FRA, the construction worker and offsite downwind resident could be exposed for extremely limited periods (assuming construction period of six months per year) and have been evaluated for subchronic exposures. Exposure assumptions and

parameters identified for the construction worker and offsite downwind resident will be consistent with those used in the FRA.

4.4 EXPOSURE POINT CONCENTRATIONS

Exposure Point Concentrations (EPCs) are identified for each exposure point and exposure scenario as follows:

- The maximum detected concentration is used to evaluate the exposure point if the data exhibit a high degree of variability as evidenced by more than a 100-fold difference in the range of detected concentrations. In these cases, the maximum detected concentration is selected to conservatively represent the true mean.
- If the data do not exhibit a high degree of variability (as defined above), the arithmetic mean concentration is used to evaluate the exposure point.
- The arithmetic mean is not used as the EPC if the value of the mean exceeds the maximum detected concentration. The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit used as the value for non-detects. Therefore, the value of the mean may exceed the maximum detect if the detection limits used in the calculation of the mean are high.

EPCs for each of the four Lake Poly hot spots are provided in Tables 5 through 8. Table 9 provides the EPCs for the Lake Poly Region (Revised Hot Spot 9). The EPCs in Table 9 will represent those concentrations to which the construction worker and offsite downwind resident are potentially exposed.

The hazard identification, toxicity assessment, and exposure assessment information is integrated in the risk characterization, as described in Section 5.

5.0 HUMAN HEALTH RISK CHARACTERIZATION

In this section, potential risks to human health associated with possible exposure to soil OHM in the Lake Poly hot spot region are re-characterized. The technical approach used to generate the potential carcinogenic and noncarcinogenic risk estimates for the Lake Poly area is discussed in detail in Section 5.1 of the FRA.

Cumulative Receptor Cancer Risks and Cumulative Receptor Non-Cancer Risks are presented for the exposure scenarios discussed in Section 4 under the planned redevelopment and unspecified future land use scenarios. Tables 13 and 14 summarize Cumulative Receptor Cancer and Non-Cancer Risks for planned redevelopment and unspecified future land use, respectively. The revised risk estimates for the construction worker and offsite downwind resident are shaded in Tables 13 and 14.

For the construction worker and offsite downwind resident, Cumulative Receptor Cancer Risk and Cumulative Receptor Non-cancer Risk were equal to or below the corresponding MCP limits and were within the USEPA's National Contingency Plan acceptable range. A summary of the revised risks is provided in Table 15. The risks calculated for the FRA for these receptors are also provided. There were no significant differences between the FRA total risks for these receptors and the revised total risk estimates.

6.0 CHARACTERIZATION OF RISK OF HARM TO SAFETY AND PUBLIC WELFARE

Consistent with the MCP, concentrations representative of the Lake Poly soil hot spots have been compared to soil UCLs. These comparisons are presented in Table 16. The new Lake Poly groundwater data have been compared to groundwater UCLs. The October 1999 MCP revisions require, for OHM without published UCLs, that default MCP UCLs or chemical-specific UCLs (calculated per MCP procedures) be identified and used in the evaluation of public welfare and environmental risk. The identification of UCLs for OHMPCs without published UCLs is presented in Appendix J to the FRA.

As shown in Table 16, the representative concentration for ammonia for Lake Poly Hot Spot 2R (46,667 mg/kg) exceeds the UCL ceiling of 10,000 mg/kg. Representative concentrations for the hot spot analytes within the remaining Lake Poly hot spots are below UCLs. The MCP states that UCLs are concentrations that if exceeded under the conditions specified in 40.0996 indicate the potential for significant risk of harm to public welfare and the environment under future conditions. Because the soil EPC for ammonia exceeds the corresponding UCL, there is not a condition of no significant risk of harm to public welfare.

As presented in Table 17, the maximum concentrations of all OHM detected in the new groundwater samples are below UCLs.

7.0 UNCERTAINTY ANALYSIS

The uncertainties in this focused risk assessment are similar to those discussed in the FRA.

Additional uncertainties for this assessment are identified below:

- This interim update is limited in scope. Only soil in the area of Lake Poly is re-evaluated. Impacts to other media (e.g., groundwater) from the removal of LPB-1 soils are uncertain. However, removal of soil from the LPB-1 area would likely result in static or improving conditions in groundwater.

- Risks for the areas of the site outside of the Lake Poly area were not recalculated considering the new soil data that have been collected. A comprehensive addendum to the entire FRA will be completed at a later date.

8.0 CONCLUSIONS

The following conclusions are drawn from this risk assessment:

Soil

- For the planned redevelopment (warehouse) that incorporates soil data recently collected from the Lake Poly area and for an unspecified future commercial/industrial use of the property, cancer and noncancer risks for the receptors who might contact soil 0-15 feet in the Lake Poly area (construction worker and off-property neighborhood resident) do not exceed the corresponding MCP Cumulative Receptor Risk Limit and Cumulative Receptor Cancer and NonCancer Risk Limit. A condition of no significant risk of harm to health exists for those receptors potentially exposed in the Lake Poly area.

- Lake Poly hot spot EPCs for the building occupant and potential on-property worker would not be impacted by the additional Lake Poly soil data. Risks for those receptors are unchanged (below MCP risk limits).

- The risk of harm to welfare was evaluated by comparing EPCs for the hot spot analytes within each Lake Poly hot spot to Upper Concentration Limits for soil. It appears the Lake Poly 2R Soil Hot Spot represents a UCL exceedance for ammonia. No other Lake Poly soil hot spots have UCL exceedances. A condition of no significant risk to public welfare has not been achieved.

- Although health risks associated with the entire Lake Poly hot spot region (Revised EP 9) may have gone up slightly, total risks for the construction worker and offsite downwind resident remained essentially the same.

Groundwater

- No new groundwater hot spots were identified given the July 2001 groundwater data.

- Groundwater EPCs for the building occupant (associated with the potential migration of VOCs from groundwater to indoor air) would not be impacted by the additional Lake Poly groundwater data. Risks for the building occupant associated with this pathway are, therefore, unchanged.

- Maximum concentrations of all OHM detected in the July 2001 Lake Poly groundwater samples are below the groundwater UCLs.

Requirements for Ordinary Fill
Former Lake Poly Area
51 Eames Street
Wilmington, Massachusetts

Ordinary Fill shall consist of hard, durable sand and gravel, free of clay, organic matter, surface coatings, and other deleterious materials. Soil finer than the No. 200 sieve (the "fines") shall be non-plastic. Ordinary Fill shall meet the following gradation requirements:

Sieve Size	Percent Passing by Weight
6 Inches	100
3 Inches	80 – 100
No. 4	20 – 100
No. 200 (fines)	0 - 20

Ordinary Fill shall be compacted in maximum 12-inch-thick, loose lifts to at least 92 percent of the maximum dry density determined in accordance with ASTM D1557 (Modified AASHTO Compaction).

FIGURES

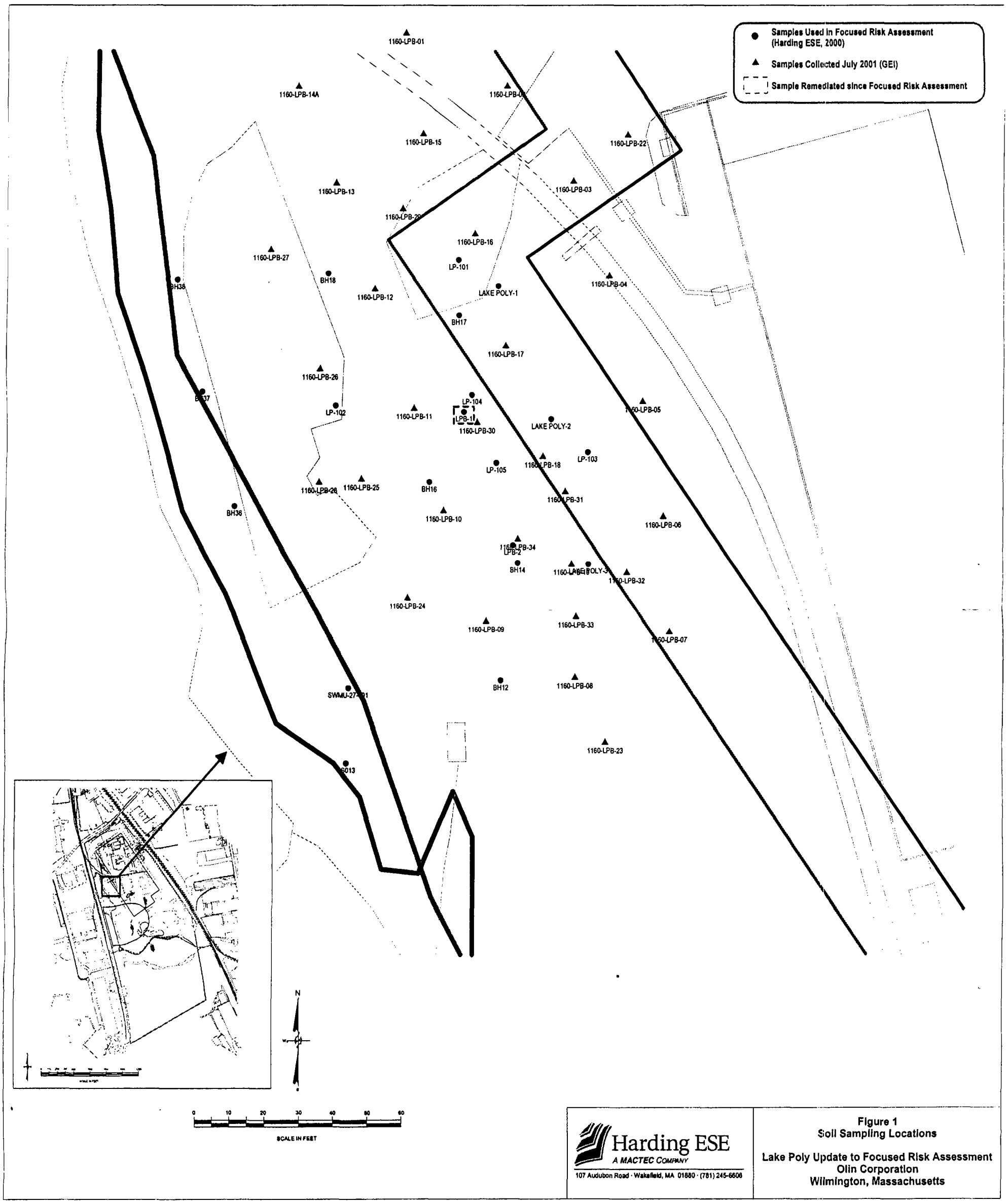

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Figure 1
Soil Sampling Locations

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

Figure 2
Groundwater Sampling Locations

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

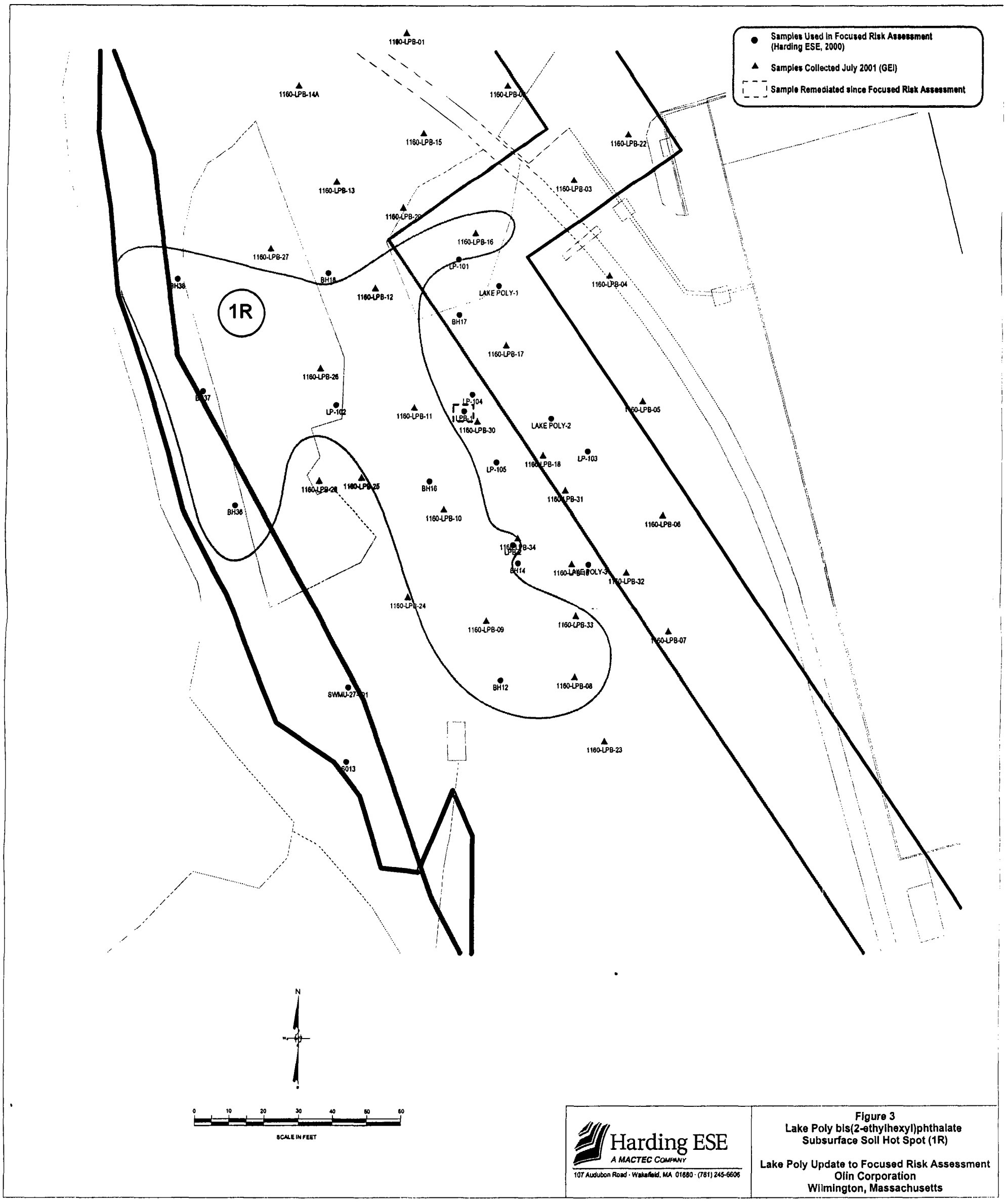

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Figure 3
Lake Poly bis(2-ethylhexyl)phthalate Subsurface Soil Hot Spot (1R)

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

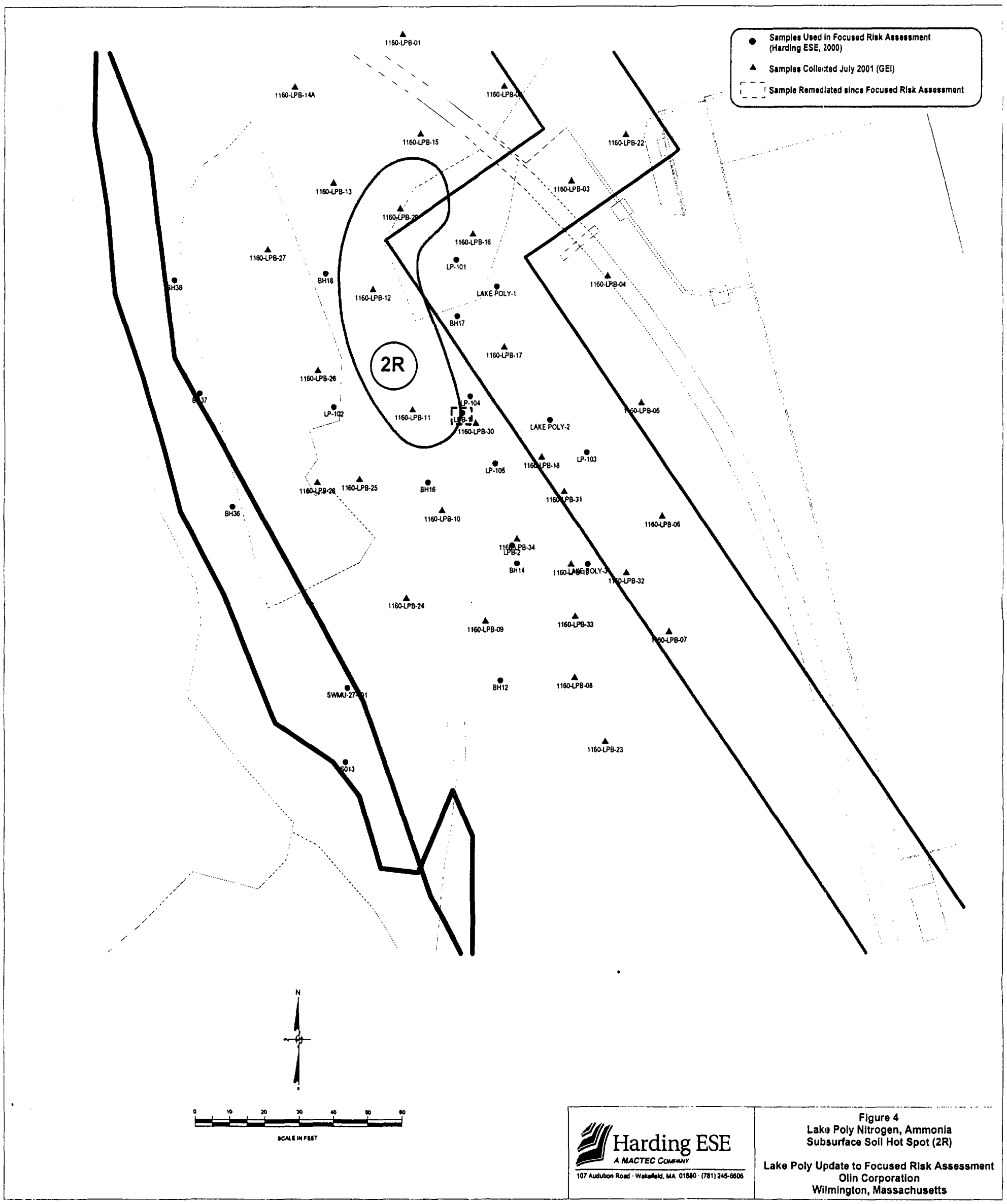

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Figure 4
Lake Poly Nitrogen, Ammonia
Subsurface Soil Hot Spot (2R)

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

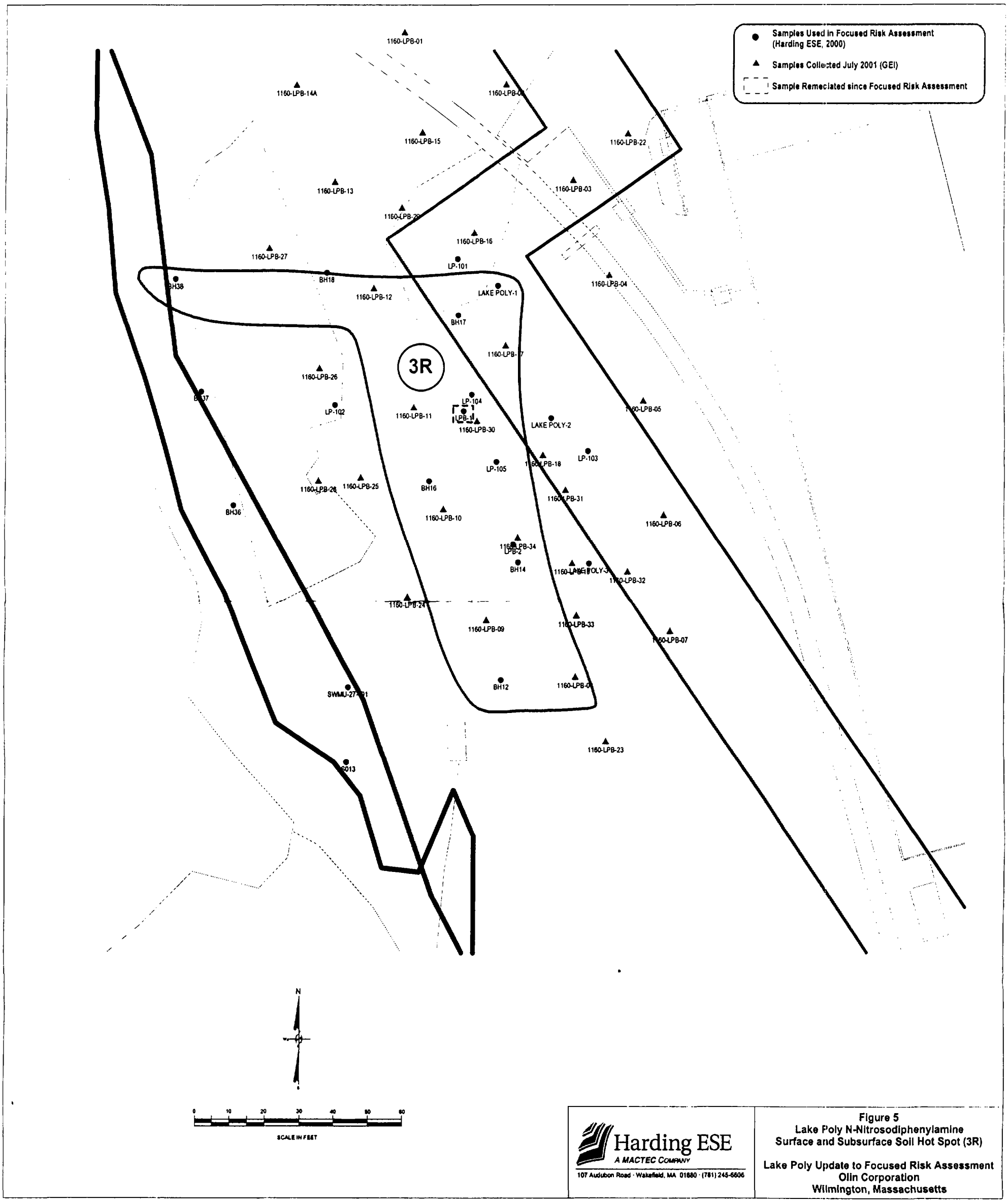

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Figure 5
Lake Poly N-Nitrosodiphenylamine
Surface and Subsurface Soil Hot Spot (3R)

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

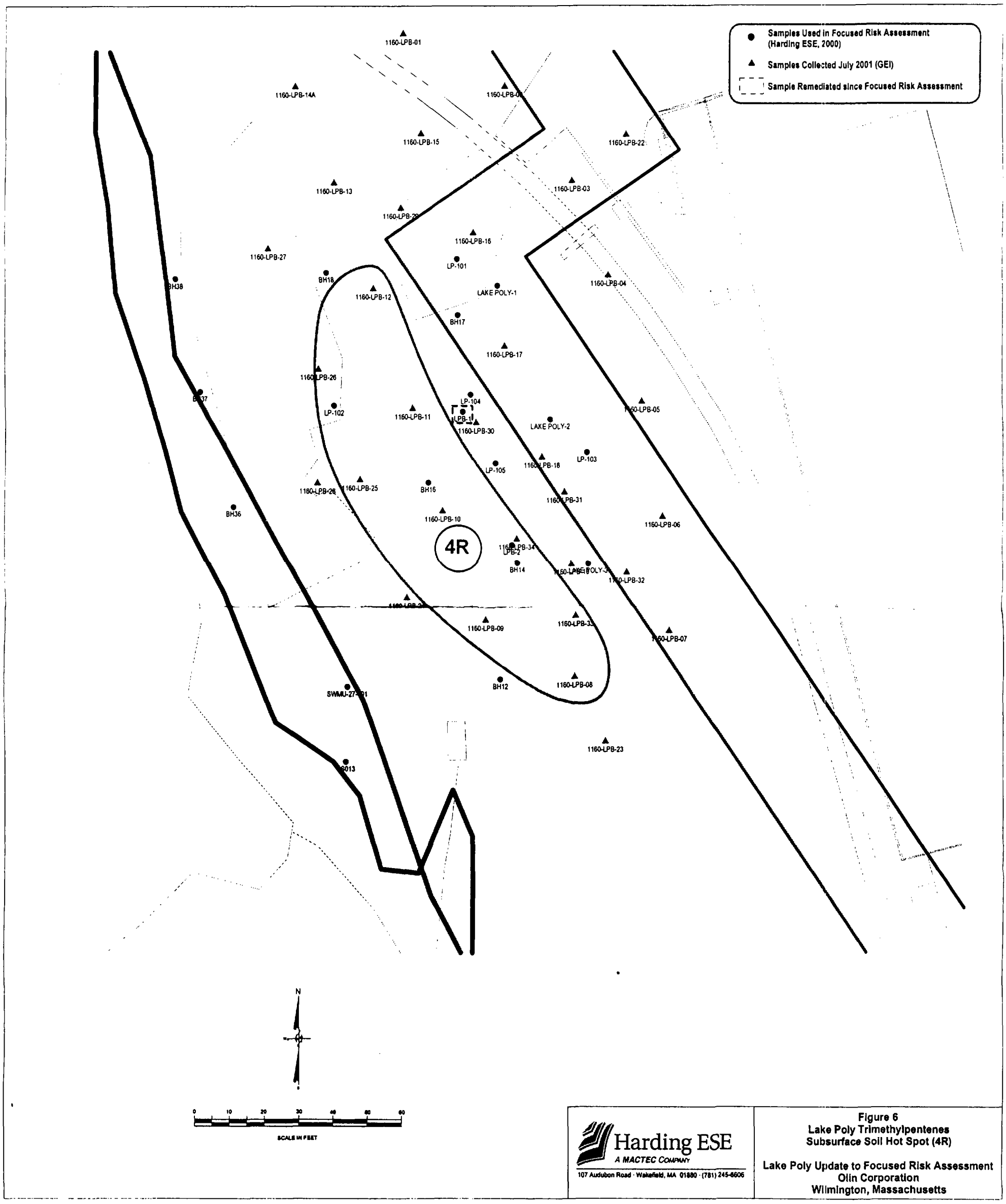

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Figure 6
Lake Poly Trimethylpentenes Subsurface Soil Hot Spot (4R)

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

TABLES

Table 1
Summary of Lake Poly Soil and Groundwater Samples Used in the Risk Assessment

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Location Identification	Sample Date	Surface (SS) or Subsurface Soil (SB)	Used In the Risk Assessment Soil Evaluation?	Comment
Soil				
1160-LPB10-S1	10-Jul-01	SS	YES	New Sample
1160-LPB10-S2	10-Jul-01	SB	YES	New Sample
1160-LPB10-S3	10-Jul-01	SB	YES	New Sample
1160-LPB11-S1	09-Jul-01	SS	YES	New Sample
1160-LPB11-S2	09-Jul-01	SB	YES	New Sample
1160-LPB11-S3	09-Jul-01	SB	YES	New Sample
1160-LPB12-S1	10-Jul-01	SS	YES	New Sample
1160-LPB12-S2	10-Jul-01	SB	YES	New Sample
1160-LPB12-S3	10-Jul-01	SB	YES	New Sample
1160-LPB12-S3	11-Jul-01	SB	YES	New Sample
1160-LPB13-S1	09-Jul-01	SS	YES	New Sample
1160-LPB13-S2	09-Jul-01	SB	YES	New Sample
1160-LPB13-S3	09-Jul-01	SB	YES	New Sample
1160-LPB14A-S1	11-Jul-01	SS	YES	New Sample
1160-LPB14A-S2	11-Jul-01	SS	YES	New Sample
1160-LPB14-S1	11-Jul-01	SS	YES	New Sample
1160-LPB14-S2	11-Jul-01	SS	YES	New Sample
1160-LPB15-S1	10-Jul-01	SS	YES	New Sample
1160-LPB15-S2	10-Jul-01	SB	YES	New Sample
1160-LPB15-S3	10-Jul-01	SB	YES	New Sample
1160-LPB16-S1	10-Jul-01	SS	YES	New Sample
1160-LPB16-S2	10-Jul-01	SB	YES	New Sample
1160-LPB17-S1	09-Jul-01	SS	YES	New Sample
1160-LPB17-S2	09-Jul-01	SB	YES	New Sample
1160-LPB18-S1	10-Jul-01	SS	YES	New Sample
1160-LPB18-S2	10-Jul-01	SB	YES	New Sample
1160-LPB18-S3	10-Jul-01	SB	YES	New Sample
1160-LPB19-S1	09-Jul-01	SS	YES	New Sample
1160-LPB19-S2	09-Jul-01	SB	YES	New Sample
1160-LPB19-S3	09-Jul-01	SB	YES	New Sample
1160-LPB1-S1	11-Jul-01	SS	YES	New Sample
1160-LPB1-S2	11-Jul-01	SB	YES	New Sample
1160-LPB22-S1	11-Jul-01	SS	YES	New Sample
1160-LPB22-S2	11-Jul-01	SB	YES	New Sample
1160-LPB23-S1	11-Jul-01	SS	YES	New Sample
1160-LPB23-S2	11-Jul-01	SB	YES	New Sample
1160-LPB24-S1	11-Jul-01	SS	YES	New Sample
1160-LPB24-S2	11-Jul-01	SS	YES	New Sample
1160-LPB24-S3	11-Jul-01	SS	YES	New Sample
1160-LPB25-S1	11-Jul-01	SS	YES	New Sample
1160-LPB25-S2	11-Jul-01	SS	YES	New Sample
1160-LPB25-S3	11-Jul-01	SB	YES	New Sample
1160-LPB26-S1	11-Jul-01	SS	YES	New Sample
1160-LPB26-S2	11-Jul-01	SB	YES	New Sample
1160-LPB26-S3	11-Jul-01	SS	YES	New Sample
1160-LPB27-S1	11-Jul-01	SS	YES	New Sample
1160-LPB27-S2	11-Jul-01	SB	YES	New Sample

Table 1
Summary of Lake Poly Soil and Groundwater Samples Used in the Risk Assessment

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Location Identification	Sample Date	Surface (SS) or Subsurface Soil (SB)	Used In the Risk Assessment Soil Evaluation?	Comment
1160-LPB27-S3	11-Jul-01	SB	YES	New Sample
1160-LPB28-S1	11-Jul-01	SS	YES	New Sample
1160-LPB28-S2	11-Jul-01	SB	YES	New Sample
1160-LPB28-S3	11-Jul-01	SB	YES	New Sample
1160-LPB29-S1	12-Jul-01	SS	YES	New Sample
1160-LPB29-S2	12-Jul-01	SB	YES	New Sample
1160-LPB29-S3	12-Jul-01	SB	YES	New Sample
1160-LPB2-S1	11-Jul-01	SS	YES	New Sample
1160-LPB2-S2	11-Jul-01	SB	YES	New Sample
1160-LPB30-S1	12-Jul-01	SS	YES	New Sample
1160-LPB30-S2	12-Jul-01	SB	YES	New Sample
1160-LPB30-S3	12-Jul-01	SB	YES	New Sample
1160-LPB31-S1	12-Jul-01	SS	YES	New Sample
1160-LPB31-S2	12-Jul-01	SB	YES	New Sample
1160-LPB32-S1	12-Jul-01	SS	YES	New Sample
1160-LPB32-S2	12-Jul-01	SS	YES	New Sample
1160-LPB33-S1	12-Jul-01	SS	YES	New Sample
1160-LPB33-S2	12-Jul-01	SB	YES	New Sample
1160-LPB33-S3	12-Jul-01	SB	YES	New Sample
1160-LPB34-S1	12-Jul-01	SS	YES	New Sample
1160-LPB34-S2	12-Jul-01	SB	YES	New Sample
1160-LPB3-S1	09-Jul-01	SS	YES	New Sample
1160-LPB3-S2	09-Jul-01	SS	YES	New Sample
1160-LPB3-S3	09-Jul-01	SB	YES	New Sample
1160-LPB4-S1	10-Jul-01	SS	YES	New Sample
1160-LPB4-S2	10-Jul-01	SS	YES	New Sample
1160-LPB4-S3	10-Jul-01	SB	YES	New Sample
1160-LPB5-S1	10-Jul-01	SS	YES	New Sample
1160-LPB5-S2	10-Jul-01	SS	YES	New Sample
1160-LPB6-S1	10-Jul-01	SS	YES	New Sample
1160-LPB6-S2	10-Jul-01	SS	YES	New Sample
1160-LPB7-S1	10-Jul-01	SS	YES	New Sample
1160-LPB7-S2	10-Jul-01	SB	YES	New Sample
1160-LPB7-S2	11-Jul-01	SB	YES	New Sample
1160-LPB8-S1	10-Jul-01	SS	YES	New Sample
1160-LPB8-S2	10-Jul-01	SB	YES	New Sample
1160-LPB8-S3	10-Jul-01	SB	YES	New Sample
1160-LPB9-S1	09-Jul-01	SS	YES	New Sample
1160-LPB9-S2	09-Jul-01	SB	YES	New Sample
1160-LPB9-S3	09-Jul-01	SB	YES	New Sample
BH12	10-Jun-91	SB	YES	
BH14	10-Jun-91	SB	YES	
BH16	10-Jun-91	SB	YES	
BH17	10-Jun-91	SB	YES	
BH18	10-Jun-91	SB	YES	
BH36	06-Feb-92	SB	YES	
BH37	06-Feb-92	SB	YES	
BH38	06-Feb-92	SB	YES	
BS013	21-Jan-97	SS	YES	

Table 1
Summary of Lake Poly Soil and Groundwater Samples Used in the Risk Assessment

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Location Identification	Sample Date	Surface (SS) or Subsurface Soil (SB)	Used In the Risk Assessment Soil Evaluation?	Comment
LAKE POLY-1	15-Dec-96	SS	YES	
LAKE POLY-2	15-Dec-96	SS	YES	
LAKE POLY-3	15-Dec-96	SS	YES	
LP-101	24-Nov-98	SS/SB	YES	
LP-101	30-Nov-98	SS/SB	YES	
LP-102	24-Nov-98	SS/SB	YES	
LP-102	30-Nov-98	SS/SB	YES	
LP-103	24-Nov-98	SS/SB	YES	
LP-104	24-Nov-98	SS/SB	YES	
LP-104	30-Nov-98	SS/SB	YES	
LP-105	24-Nov-98	SS/SB	YES	
LPB-1	18-Jan-95	SB	NO	Removed Since the FRA
LPB-2	18-Jan-95	SB	YES	
SWMU-27-101	23-Nov-98	SS	YES	
SWMU-27-101	30-Nov-98	SS	YES	
Groundwater				
1140-GW-29D	27-Jul-01	NA	YES	
1140-GW-29S	27-Jul-01	NA	YES	
1140-GW-34D	27-Jul-01	NA	YES	
1140-GW-LPB-11	27-Jul-01	NA	YES	New Sample

Notes:
FRA = Focused Risk Assessment
SS = surface soil
SB = subsurface soil

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean
Volatile Organics (mg/Kg)				
1,2,3-Trichlorobenzene	2 / 19	0.082 : 0.13	0.44 - 1.2	1.37E-01
1,2,4-Trimethylbenzene	1 / 19	0.082 : 0.15	0.39 - 0.39	7.53E-02
1,2-Dichlorobenzene	2 / 21	0.082 : 83	0.16 - 5.9	2.32E+00
1,3,5-Trimethylbenzene	1 / 19	0.082 : 0.15	0.11 - 0.11	6.06E-02
1,3-Dichlorobenzene	1 / 21	0.082 : 83	0.74 - 0.74	2.07E+00
1,4-Dichlorobenzene	2 / 21	0.082 : 83	0.27 - 8.6	2.45E+00
2,4,4-Trimethyl-1-pentene	5 / 19	0.09 : 0.13	3.4 - 103	8.12E+00
2,4,4-Trimethyl-2-Pentene	5 / 19	0.09 : 0.13	2.8 - 58	6.17E+00
Ethylbenzene	2 / 19	0.09 : 0.15	0.72 - 6.7	4.43E-01
m,p-Xylene	1 / 19	0.082 : 0.15	0.2 - 0.2	6.53E-02
p-Isopropyl Toluene	3 / 19	0.09 : 0.13	0.46 - 5.2	3.74E-01
Toluene	1 / 19	0.09 : 0.15	0.11 - 0.11	6.13E-02
Xylenes, Total	2 / 19	0.2 : 0.3	0.24 - 4.6	3.52E-01
Semivolatile Organics (mg/Kg)				
Benzo(g,h,i)perylene	1 / 20	0.36 : 5.7	0.66 - 0.66	3.96E-01
bis(2-EthylHexyl)phthalate	15 / 17	0.36 : 0.41	0.35 - 1218	2.32E+02
Fluoranthene	1 / 20	0.36 : 5.7	5.7 - 5.7	6.48E-01
Indeno (1,2,3-cd) pyrene	1 / 20	0.36 : 5.7	10 - 10	8.63E-01
N-Nitrosodiphenylamine	6 / 20	0.36 : 15	0.27 - 1201	1.08E+02
Inorganics (mg/Kg)				
Arsenic, Total	1 / 20	3 : 18	12 - 12	5.25E+00
Barium, Total	6 / 7	11 : 11	22 - 640	1.20E+02
Chromium, Total	81 / 82	11 : 11	6 - 7900	7.24E+02
Lead, Total	5 / 20	5 : 13	7 - 21	7.45E+00
Mercury, Total	3 / 7	0.04 : 0.05	0.06 - 7	1.07E+00
Nitrogen, Ammonia	24 / 24	:	10 - 71000	6.05E+03
EPH (mg/Kg)				
C11-C22 Aromatics (FID)	17 / 20	3.6 : 3.7	5.2 - 5100	6.09E+02
C19-C36 Aliphatics (PID)	13 / 20	3.6 : 4.2	6.5 - 3200	3.82E+02
C9-C18 Aliphatics (FID)	9 / 20	3.6 : 4.2	5.5 - 1100	1.20E+02
VPH (mg/Kg)				
C5-C8 Aliphatics (FID)	5 / 19	1.8 : 2.7	4.9 - 88	9.63E+00
C9-C10 Aromatics (PID)	3 / 19	1.8 : 8.2	12 - 45	4.92E+00
C9-C12 Aliphatics (FID)	4 / 19	1.8 : 8.2	2.7 - 46	4.79E+00

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-01 1160-LPB1-S1 0.0-4.0 7/11/01	1160-LPB-01 1160-LPB1-S2 4.0-8.0 7/11/01	1160-LPB-02 1160-LPB2-S1 0.0-6.0 7/11/01	1160-LPB-02 1160-LPB2-S2 6.0-8.0 7/11/01	1160-LPB-03 1160-LPB3-S1 0.0-2.5 7/9/01	1160-LPB-03 1160-LPB3-S2 2.5-6.0 7/9/01	1160-LPB-03 1160-LPB3-S3 6.0-6.5 7/9/01	1160-LPB-04 1160-LPB4-S1 0.0-1.0 7/10/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene								
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
2,4,4-Trimethyl-1-pentene								
2,4,4-Trimethyl-2-Pentene								
Ethylbenzene								
m,p-Xylene								
p-Isopropyl Toluene								
Toluene								
Xylenes, Total								
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene								
bis(2-EthylHexyl)phthalate								
Fluoranthene								
Indeno (1,2,3-cd) pyrene								
N-Nitrosodiphenylamine								
Inorganics (mg/Kg)								
Arsenic, Total								
Barium, Total								
Chromium, Total	32	21	130	580	78	19	12	27
Lead, Total								
Mercury, Total								
Nitrogen, Ammonia								
EPH (mg/Kg)								
C11-C22 Aromatics (FID)								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-04 1160-LPB4-S2 1.0-4.0 7/10/01	1160-LPB-04 1160-LPB4-S3 4.0-6.0 7/10/01	1160-LPB-05 1160-LPB5-S1 0.0-2.5 7/10/01	1160-LPB-05 1160-LPB5-S2 2.5-8.0 7/10/01	1160-LPB-06 1160-LPB6-S1 0.0-1.0 7/10/01	1160-LPB-06 1160-LPB6-S2 1.0-8.0 7/10/01	1160-LPB-07 1160-LPB7-S1 0.0-3.0 7/10/01	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/10/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene			< 0.099	< 0.11			< 0.11	< 0.09
1,2,4-Trimethylbenzene			< 0.099	< 0.11			< 0.11	< 0.09
1,2-Dichlorobenzene			< 0.099	< 0.11			< 0.11	< 0.09
1,3,5-Trimethylbenzene			< 0.099	< 0.11			< 0.11	< 0.09
1,3-Dichlorobenzene			< 0.099	< 0.11			< 0.11	< 0.09
1,4-Dichlorobenzene			< 0.099	< 0.11			< 0.11	< 0.09
2,4,4-Trimethyl-1-pentene			< 0.099	< 0.11			< 0.11	< 0.09
2,4,4-Trimethyl-2-Pentene			< 0.099	< 0.11			< 0.11	< 0.09
Ethylbenzene			< 0.099	< 0.11			< 0.11	< 0.09
m,p-Xylene			< 0.099	< 0.11			< 0.11	< 0.09
p-Isopropyl Toluene			< 0.099	< 0.11			< 0.11	< 0.09
Toluene			< 0.099	< 0.11			< 0.11	< 0.09
Xylenes, Total			< 0.2	< 0.2			< 0.2	< 0.2
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene			< 0.36	< 0.36			< 0.36	
bis(2-EthylHexyl)phthalate				< 0.36				
Fluoranthene			< 0.36	< 0.36			< 0.36	
Indeno (1,2,3-cd) pyrene			< 0.36	< 0.36			< 0.36	
N-Nitrosodiphenylamine			< 0.36	< 0.36			< 0.36	
Inorganics (mg/Kg)								
Arsenic, Total			< 11	< 11			< 6	
Barium, Total				< 11				
Chromium, Total	14	32	140	< 11	11	720	14	480
Lead, Total			< 11	< 11			< 6	
Mercury, Total				< 0.04				
Nitrogen, Ammonia			11	14			13	10
EPH (mg/Kg)								
C11-C22 Aromatics (FID)			< 3.6	< 3.6			5.7	
C19-C36 Aliphatics (PID)			< 3.6	< 3.6			< 3.6	
C9-C18 Aliphatics (FID)			< 3.6	< 3.6			< 3.6	
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)			< 2	< 2.3			< 2.3	< 1.8
C9-C10 Aromatics (PID)			< 2	< 2.3			< 2.3	< 1.8
C9-C12 Aliphatics (FID)			< 2	< 2.3			< 2.3	< 1.8

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected In July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/11/01	1160-LPB-08 1160-LPB8-S1 0.0-5.0 7/10/01	1160-LPB-08 1160-LPB8-S2 5.0-7.0 7/10/01	1160-LPB-08 1160-LPB8-S3 7.0-8.0 7/10/01	1160-LPB-09 1160-LPB9-S1 0.0-4.5 7/9/01	1160-LPB-09 1160-LPB9-S2 4.5-6.0 7/9/01	1160-LPB-09 1160-LPB9-S3 6.0-8.0 7/9/01	1160-LPB-10 1160-LPB10-S1 0.0-5.5 7/10/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene		< 0.12	< 0.082					< 0.12
1,2,4-Trimethylbenzene		< 0.12	< 0.082					< 0.12
1,2-Dichlorobenzene		< 0.12	< 0.082					< 0.12
1,3,5-Trimethylbenzene		< 0.12	< 0.082					< 0.12
1,3-Dichlorobenzene		< 0.12	< 0.082					< 0.12
1,4-Dichlorobenzene		< 0.12	< 0.082					< 0.12
2,4,4-Trimethyl-1-pentene		< 0.12	20					12
2,4,4-Trimethyl-2-Pentene		< 0.12	9.2					3.4
Ethylbenzene		< 0.12	6.7					< 0.12
m,p-Xylene		< 0.12	< 0.082					< 0.12
p-Isopropyl Toluene		< 0.12	0.46					< 0.12
Toluene		< 0.12	0.11					< 0.12
Xylenes, Total		< 0.2	4.6					< 0.2
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene	< 0.37	< 0.36	0.66					< 0.4
bis(2-EthylHexyl)phthalate		0.53	699					54
Fluoranthene	< 0.37	< 0.36	5.7					< 0.4
Indeno (1,2,3-cd) pyrene	< 0.37	< 0.36	10					< 0.4
N-Nitrosodiphenylamine	< 0.37	< 0.36	203					4.9
Inorganics (mg/Kg)								
Arsenic, Total	12	< 5	< 6					< 12
Barium, Total			22					
Chromium, Total		17	460	11	270	64	230	1300
Lead, Total	< 6	< 5	< 6					< 12
Mercury, Total			< 0.05					
Nitrogen, Ammonia		17	130					610
EPH (mg/Kg)								
C11-C22 Aromatics (FID)	< 3.7	17	500					620
C19-C36 Aliphatics (PID)	< 3.7	10	160					570
C9-C18 Aliphatics (FID)	< 3.7	< 3.6	9.1					160
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)		< 2.4	20					9.8
C9-C10 Aromatics (PID)		< 2.4	< 8.2					15
C9-C12 Aliphatics (FID)		< 2.4	< 8.2					13

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-10 1160-LPB10-S2 5.5-7.5 7/10/01	1160-LPB-10 1160-LPB10-S2-D 5.5-7.5 7/10/01	1160-LPB-10 1160-LPB10-S3 7.5-8.5 7/10/01	1160-LPB-11 1160-LPB11-S1 0.0-4.0 7/9/01	1160-LPB-11 1160-LPB11-S2 4.0-6.0 7/9/01	1160-LPB-11 1160-LPB11-S3 6.0-9.0 7/9/01	1160-LPB-12 1160-LPB12-S1 0.0-3.5 7/10/01	1160-LPB-12 1160-LPB12-S2 3.5-6.5 7/10/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene	0.44						< 0.12	1.2
1,2,4-Trimethylbenzene	0.39						< 0.12	< 0.15
1,2-Dichlorobenzene	< 0.11	< 83					< 0.12	5.9
1,3,5-Trimethylbenzene	0.11						< 0.12	< 0.15
1,3-Dichlorobenzene	< 0.11	< 83					< 0.12	0.74
1,4-Dichlorobenzene	< 0.11	< 83					< 0.12	8.6
2,4,4-Trimethyl-1-pentene	103						< 0.12	15
2,4,4-Trimethyl-2-Pentene	43						< 0.12	58
Ethylbenzene	0.72						< 0.12	< 0.15
m,p-Xylene	0.2						< 0.12	< 0.15
p-Isopropyl Toluene	5.2						< 0.12	0.53
Toluene	< 0.11						< 0.12	< 0.15
Xylenes, Total	0.24						< 0.2	< 0.3
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene	< 0.8	< 2					< 0.4	< 5.7
bis(2-EthylHexyl)phthalate	1218	1081					33	692
Fluoranthene	< 0.8	< 2					< 0.4	< 5.7
Indeno (1,2,3-cd) pyrene	< 0.8	< 2					< 0.4	< 5.7
N-Nitrosodiphenylamine	682	1201					< 7.4	60
Inorganics (mg/Kg)								
Arsenic, Total	< 13	< 3					< 11	< 18
Barium, Total	52							640
Chromium, Total	2700		920	120		1100	62	4600
Lead, Total	< 13	8					< 11	19
Mercury, Total	7							0.36
Nitrogen, Ammonia	660	380			29000		60	71000
EPH (mg/Kg)								
C11-C22 Aromatics (FID)	2100	3000					120	5100
C19-C36 Aliphatics (PID)	1300	1800					43	3200
C9-C18 Aliphatics (FID)	380	590					8.4	1100
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)	88						< 2.3	44
C9-C10 Aromatics (PID)	12						< 2.3	45
C9-C12 Aliphatics (FID)	8.9						< 2.3	46

Note:
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Table 2
Summary Statistics and Compounds Detected In July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/10/01	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/11/01	1160-LPB-13 1160-LPB13-S1 0.0-4.5 7/9/01	1160-LPB-13 1160-LPB13-S2 4.5-6.0 7/9/01	1160-LPB-13 1160-LPB13-S3 6.0-7.0 7/9/01	1160-LPB-14 1160-LPB14-S1 0.0-2.5 7/11/01	1160-LPB-14 1160-LPB14-S2 2.5-5.0 7/11/01	1160-LPB-14A 1160-LPB14A-S1 0.0-2.5 7/11/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene	< 0.11							< 0.12
1,2,4-Trimethylbenzene	< 0.11							< 0.12
1,2-Dichlorobenzene	0.16						< 0.43	< 0.12
1,3,5-Trimethylbenzene	< 0.11							< 0.12
1,3-Dichlorobenzene	< 0.11						< 0.43	< 0.12
1,4-Dichlorobenzene	0.27						< 0.43	< 0.12
2,4,4-Trimethyl-1-pentene	3.4							< 0.12
2,4,4-Trimethyl-2-Pentene	2.8							< 0.12
Ethylbenzene	< 0.11							< 0.12
m,p-Xylene	< 0.11							< 0.12
p-Isopropyl Toluene	< 0.11							< 0.12
Toluene	< 0.11							< 0.12
Xylenes, Total	< 0.2							< 0.2
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene		< 0.36					< 0.4	< 0.38
bis(2-EthylHexyl)phthalate		6.4					0.35	2
Fluoranthene		< 0.36					< 0.4	< 0.38
Indeno (1,2,3-cd) pyrene		< 0.36					< 0.4	< 0.38
N-Nitrosodiphenylamine		0.27					< 0.43	< 0.38
Inorganics (mg/Kg)								
Arsenic, Total	< 6						< 7	< 6
Barium, Total	50							
Chromium, Total	1300		200	700	920	690	530	
Lead, Total	7						21	19
Mercury, Total	< 0.05							
Nitrogen, Ammonia	80						68	37
EPH (mg/Kg)								
C11-C22 Aromatics (FID)	19						5.2	210
C19-C36 Aliphatics (PID)	20						< 4.2	13
C9-C18 Aliphatics (FID)	5.5						< 4.2	< 3.8
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)	4.9							< 2.4
C9-C10 Aromatics (PID)	< 2.1							< 2.4
C9-C12 Aliphatics (FID)	2.7							< 2.4

Note:
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Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-14A 1160-LPB14A-S2 2.5-5.0 7/11/01	1160-LPB-15 1160-LPB15-S1 0.0-6.5 7/10/01	1160-LPB-15 1160-LPB15-S2 6.5-8.5 7/10/01	1160-LPB-15 1160-LPB15-S3 8.5-11.0 7/10/01	1160-LPB-16 1160-LPB16-S1 0.0-7.5 7/10/01	1160-LPB-16 1160-LPB16-S2 7.5-8.5 7/10/01	1160-LPB-17 1160-LPB17-S1 0.0-5.5 7/9/01	1160-LPB-17 1160-LPB17-S2 5.5-8.5 7/9/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
1,2,4-Trimethylbenzene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
1,2-Dichlorobenzene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
1,3,5-Trimethylbenzene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
1,3-Dichlorobenzene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
1,4-Dichlorobenzene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
2,4,4-Trimethyl-1-pentene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
2,4,4-Trimethyl-2-Pentene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
Ethylbenzene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
m,p-Xylene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
p-Isopropyl Toluene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
Toluene	< 0.13	< 0.12		< 0.11	< 0.12	< 0.12		
Xylenes, Total	< 0.3	< 0.2		< 0.2	< 0.2	< 0.2		
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene		< 0.36		< 0.37	< 0.38	< 0.4		
bis(2-EthylHexyl)phthalate		1		1.3	0.54	157		
Fluoranthene		< 0.36		< 0.37	< 0.38	< 0.4		
Indeno (1,2,3-cd) pyrene		< 0.36		< 0.37	< 0.38	< 0.4		
N-Nitrosodiphenylamine		< 0.36		< 0.37	< 0.38	< 15		
Inorganics (mg/Kg)								
Arsenic, Total		< 11		< 12	< 11	< 12		
Barium, Total				43		28		
Chromium, Total		150	460	2700	37	2900	86	1000
Lead, Total		< 11		< 12	< 11	< 12		
Mercury, Total				0.06		< 0.05		
Nitrogen, Ammonia		21		12	15	55		
EPH (mg/Kg)								
C11-C22 Aromatics (FID)		31		6.1	9.8	330		
C19-C36 Aliphatics (PID)		6.5		< 3.6	< 3.8	390		
C9-C18 Aliphatics (FID)		< 3.6		< 3.6	< 3.8	110		
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)	< 2.7	< 2.5		< 2.2	< 2.4	< 2.4		
C9-C10 Aromatics (PID)	< 2.7	< 2.5		< 2.2	< 2.4	< 2.4		
C9-C12 Aliphatics (FID)	< 2.7	< 2.5		< 2.2	< 2.4	< 2.4		

Note:
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Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-18 1160-LPB18-S1 0.0-8.0 7/10/01	1160-LPB-18 1160-LPB18-S2 8.0-10.0 7/10/01	1160-LPB-18 1160-LPB18-S3 10.0-10.5 7/10/01	1160-LPB-19 1160-LPB19-S1 0.0-3.5 7/9/01	1160-LPB-19 1160-LPB19-S2 3.5-5.5 7/9/01	1160-LPB-19 1160-LPB19-S3 5.5-12.0 7/9/01	1160-LPB-22 1160-LPB22-S1 0.0-4.2 7/11/01	1160-LPB-22 1160-LPB22-S2 4.2-9.0 7/11/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene								
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
2,4,4-Trimethyl-1-pentene								
2,4,4-Trimethyl-2-Pentene								
Ethylbenzene								
m,p-Xylene								
p-Isopropyl Toluene								
Toluene								
Xylenes, Total								
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene								
bis(2-EthylHexyl)phthalate								
Fluoranthene								
Indeno (1,2,3-cd) pyrene								
N-Nitrosodiphenylamine								
Inorganics (mg/Kg)								
Arsenic, Total								
Barium, Total								
Chromium, Total	33	7900	1200	13	660	780	6.5	8.4
Lead, Total								
Mercury, Total								
Nitrogen, Ammonia								
EPH (mg/Kg)								
C11-C22 Aromatics (FID)								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-23 1160-LPB23-S1 0.0-3.0 7/11/01	1160-LPB-23 1160-LPB23-S2 3.0-8.0 7/11/01	1160-LPB-24 1160-LPB24-S1 0.0-2.0 7/11/01	1160-LPB-24 1160-LPB24-S2 2.0-2.5 7/11/01	1160-LPB-24 1160-LPB24-S3 2.5-8.0 7/11/01	1160-LPB-25 1160-LPB25-S1 0.0-2.5 7/11/01	1160-LPB-25 1160-LPB25-S2 2.5-3.0 7/11/01	1160-LPB-25 1160-LPB25-S3 3.0-8.0 7/11/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene								
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
2,4,4-Trimethyl-1-pentene								
2,4,4-Trimethyl-2-Pentene								
Ethylbenzene								
m,p-Xylene								
p-Isopropyl Toluene								
Toluene								
Xylenes, Total								
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene								
bis(2-EthylHexyl)phthalate								
Fluoranthene								
Indeno (1,2,3-cd) pyrene								
N-Nitrosodiphenylamine								
Inorganics (mg/Kg)								
Arsenic, Total								
Barium, Total								
Chromium, Total	12	16	18	7	17	40	8	34
Lead, Total								
Mercury, Total								
Nitrogen, Ammonia							320	
EPH (mg/Kg)								
C11-C22 Aromatics (FID)								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-26 1160-LPB26-S1 0.0-3.5 7/11/01	1160-LPB-26 1160-LPB26-S2 3.5-7.0 7/11/01	1160-LPB-26 1160-LPB26-S3 1.0-8.0 7/11/01	1160-LPB-27 1160-LPB27-S1 0.0-5.0 7/11/01	1160-LPB-27 1160-LPB27-S2 5.0-7.5 7/11/01	1160-LPB-27 1160-LPB27-S3 7.5-12.0 7/11/01	1160-LPB-28 1160-LPB28-S1 0.0-5.0 7/11/01	1160-LPB-28 1160-LPB28-S2 5.0-9.0 7/11/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene							< 0.12	< 0.13
1,2,4-Trimethylbenzene							< 0.12	< 0.13
1,2-Dichlorobenzene							< 0.12	< 0.13
1,3,5-Trimethylbenzene							< 0.12	< 0.13
1,3-Dichlorobenzene							< 0.12	< 0.13
1,4-Dichlorobenzene							< 0.12	< 0.13
2,4,4-Trimethyl-1-pentene							< 0.12	< 0.13
2,4,4-Trimethyl-2-Pentene							< 0.12	< 0.13
Ethylbenzene							< 0.12	< 0.13
m,p-Xylene							< 0.12	< 0.13
p-Isopropyl Toluene							< 0.12	< 0.13
Toluene							< 0.12	< 0.13
Xylenes, Total							< 0.2	< 0.3
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene							< 0.36	< 0.4
bis(2-EthylHexyl)phthalate							1.8	< 0.41
Fluoranthene							< 0.36	< 0.4
Indeno (1,2,3-cd) pyrene							< 0.36	< 0.4
N-Nitrosodiphenylamine							< 0.36	< 0.41
Inorganics (mg/Kg)								
Arsenic, Total							< 12	< 13
Barium, Total								
Chromium, Total	62	14	31	140	6	13	720	780
Lead, Total							< 10	< 13
Mercury, Total								
Nitrogen, Ammonia							17	130
EPH (mg/Kg)								
C11-C22 Aromatics (FID)							14	96
C19-C36 Aliphatics (PID)							25	82
C9-C18 Aliphatics (FID)							< 3.6	21
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)							< 2.3	< 2.5
C9-C10 Aromatics (PID)							< 2.3	< 2.5
C9-C12 Aliphatics (FID)							< 2.3	< 2.5

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-28 1160-LPB28-S3 9.0-10.0 7/11/01	1160-LPB-29 1160-LPB29-S1 0.0-7.0 7/12/01	1160-LPB-29 1160-LPB29-S2 7.0-8.0 7/12/01	1160-LPB-29 1160-LPB29-S3 8.0-10.5 7/12/01	1160-LPB-30 1160-LPB30-S1 0.0-8.0 7/12/01	1160-LPB-30 1160-LPB30-S2 8.0-9.0 7/12/01	1160-LPB-30 1160-LPB30-S3 9.0-12.0 7/12/01	1160-LPB-31 1160-LPB31-S1 0.0-6.0 7/12/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene								
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
2,4,4-Trimethyl-1-pentene								
2,4,4-Trimethyl-2-Pentene								
Ethylbenzene								
m,p-Xylene								
p-Isopropyl Toluene								
Toluene								
Xylenes, Total								
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene								
bis(2-EthylHexyl)phthalate								
Fluoranthene								
Indeno (1,2,3-cd) pyrene								
N-Nitrosodiphenylamine								
Inorganics (mg/Kg)								
Arsenic, Total								
Barium, Total								
Chromium, Total	18	120	5900	2700	38	3000	740	16
Lead, Total								
Mercury, Total								
Nitrogen, Ammonia			40000			2500		
EPH (mg/Kg)								
C11-C22 Aromatics (FID)								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 2
Summary Statistics and Compounds Detected in July 2001 Lake Poly Soil Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-31 1160-LPB31-S2 6.0-8.0 7/12/01	1160-LPB-32 1160-LPB32-S1 0.0-2.0 7/12/01	1160-LPB-32 1160-LPB32-S2 2.0-8.0 7/12/01	1160-LPB-33 1160-LPB33-S1 0.0-6.0 7/12/01	1160-LPB-33 1160-LPB33-S2 6.0-7.0 7/12/01	1160-LPB-33 1160-LPB33-S3 7.0-8.0 7/12/01	1160-LPB-34 1160-LPB34-S1 0.0-6.0 7/12/01	1160-LPB-34 1160-LPB34-S2 6.0-8.0 7/12/01
Volatile Organics (mg/Kg)								
1,2,3-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene								
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
2,4,4-Trimethyl-1-pentene								
2,4,4-Trimethyl-2-Pentene								
Ethylbenzene								
m,p-Xylene								
p-Isopropyl Toluene								
Toluene								
Xylenes, Total								
Semivolatile Organics (mg/Kg)								
Benzo(g,h,i)perylene								
bis(2-EthylHexyl)phthalate								
Fluoranthene								
Indeno (1,2,3-cd) pyrene								
N-Nitrosodiphenylamine								
Inorganics (mg/Kg)								
Arsenic, Total								
Barium, Total								
Chromium, Total	1800	27	450	18	2100	76	39	4000
Lead, Total								
Mercury, Total								
Nitrogen, Ammonia								
EPH (mg/Kg)								
C11-C22 Aromatics (FID)								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
VPH (mg/Kg)								
C5-C8 Aliphatics (FID)								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table 3
Summary Statistics and Compounds Detected in July 2001 Lake Poly Groundwater Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean
Volatile Organics (mg/L)				
1,2-Dichlorobenzene	1 / 4	0.001 : 0.01	0.003 - 0.003	0.0023
1,3-Dichlorobenzene	1 / 4	0.001 : 0.01	0.00055 - 0.00055	0.0016
1,4-Dichlorobenzene	2 / 4	0.001 : 0.01	0.00064 - 0.0031	0.0023
2,4,4-Trimethyl-1-pentene	3 / 4	0.001 : 0.001	0.022 - 0.52	0.14
2,4,4-Trimethyl-2-Pentene	3 / 4	0.001 : 0.001	0.0065 - 0.1	0.030
Benzene	1 / 4	0.001 : 0.01	0.0031 - 0.0031	0.0023
Chloromethane (Methyl Chloride)	1 / 4	0.002 : 0.02	0.0014 - 0.0014	0.0034
Ethylbenzene	1 / 4	0.001 : 0.01	0.0034 - 0.0034	0.0024
m,p-Xylene	1 / 4	0.001 : 0.01	0.0014 - 0.0014	0.0019
p-Isopropyl Toluene	1 / 4	0.001 : 0.01	0.0011 - 0.0011	0.0018
Toluene	1 / 4	0.001 : 0.01	0.0017 - 0.0017	0.0019
Semivolatile Organics (mg/L)		:	-	
N-Nitrosodiphenylamine	2 / 4	0.01 : 0.01	0.15 - 1	0.29
Pesticides (mg/L)				
Alpha-BHC	2 / 7	0.00005 : 0.00005	0.00026 - 0.00032	0.00010
Methoxychlor	1 / 7	0.00005 : 0.00005	0.0003 - 0.0003	0.000064
Inorganics (mg/L)		:	-	
Barium, Total	3 / 4	0.01 : 0.01	0.027 - 0.054	0.029
Chromium, Total	2 / 4	0.01 : 0.01	0.048 - 0.092	0.038
Nitrogen, Ammonia	3 / 4	0.1 0.1	8.8 28	13
Site Specific Compounds (mg/L)		:	-	
Kempore (Azodicarbonamide)	1 / 4	0.2 : 4	3.5 - 3.5	1.4

Note:
Sample heading includes Sample Id and Sample Date.

Table 3
Summary Statistics and Compounds Detected in July 2001 Lake Poly Groundwater Samples

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1140-GW-29D 7/27/01	1140-GW-29D RX 7/27/01	1140-GW-29S 7/27/01	1140-GW-29S RX 7/27/01	1140-GW-34D 7/27/01	1140-GW-34D RX 7/27/01	1140-GW-LPB-11 7/27/01
/olatile Organics (mg/L)							
,2-Dichlorobenzene	0.003J		< 0.001		< 0.01		< 0.001
,3-Dichlorobenzene	0.00055		< 0.001		< 0.01		< 0.001
,4-Dichlorobenzene	0.0031J		< 0.001		< 0.01		0.00064
,4,4-Trimethyl-1-pentene	0.022J		< 0.001		0.52J		0.03J
,4,4-Trimethyl-2-Pentene	0.0065J		< 0.001		0.1J		0.012J
3enzene	< 0.001		< 0.001		< 0.01		0.0031J
:hloromethane (Methyl Chloride)	0.0014		< 0.002		< 0.02		< 0.002
:thylbenzene	< 0.001		< 0.001		< 0.01		0.0034J
n,p-Xylene	< 0.001		< 0.001		< 0.01		0.0014J
›-Isopropyl Toluene	< 0.001		< 0.001		< 0.01		0.0011J
Toluene	< 0.001		< 0.001		< 0.01		0.0017J
Semivolatile Organics (mg/L)							
J-Nitrosodiphenylamine	0.15J		< 0.01		< 0.01		1J
'esticides (mg/L)							
\lpha-BHC	0.00026J	0.00032J	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
1ethoxychlor	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.0003J
norganics (mg/L)							
3arium, Total	< 0.01		0.03		0.027		0.054
:hromium, Total	0.092		0.048		< 0.01		< 0.01
litrogen, Ammonia	28		8.8		< 0.1		16
Site Specific Compounds (mg/L)							
:empore (Azodicarbonamide)	< 0.2K		< 4K		< 0.2K		3.5K

'ote:
ample heading includes Sample Id and Sample Date.

Table 4
Identification of Potential Hot Spot Analytes for Surface and Subsurface Soils in the Lake Poly Region

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern[1]	Site Data/Concentration[2] Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean	Method 1 Soil Standard[3]	Maximum Concentration Exceeds Standard?	Data Vary Widely?[4]	Is OHM Potential Hot Spot Analyte?[4]
Volatile Organics (mg/kg)								
1,1,1-Trichloroethane (TCA)	3 / 34	0.0055 : 0.66	0.003 - 0.011	0.044	30	No	No	No
1,1-Dichloroethane	1 / 34	0.005 : 0.66	0.001 - 0.001	0.044	3	No	No	No
1,2,3-Trichlorobenzene	2 / 21	0.009 : 0.66	0.44 - 1.2	0.14	NA	NA	Yes	Yes
1,2,4-Trichlorobenzene	1 / 36	0.009 : 37	0.088 - 0.088	0.67	100	No	No	No
1,2,4-Trimethylbenzene	2 / 21	0.082 : 0.66	0.025 - 0.39	0.09	NA	NA	Yes	No
1,2-Dichlorobenzene	3 / 36	0.009 : 37	0.16 - 5.9	0.84	200	No	Yes	No
1,2-Dichloroethane	2 / 34	0.005 : 0.66	0.001 - 0.002	0.043	0.05	No	No	No
1,3,5-Trimethylbenzene	1 / 21	0.009 : 0.66	0.11 - 0.11	0.071	NA	NA	No	No
1,3-Dichlorobenzene	1 / 36	0.009 : 37	0.74 - 0.74	0.70	200	No	No	No
1,4-Dichlorobenzene	3 / 36	0.009 : 37	0.23 - 8.6	0.92	2	Yes	Yes	Yes
2,4,4-Trimethyl-1-pentene	14 / 33	0.005 : 0.13	0.006 - 103	5.0	NA	NA	Yes	Yes
2,4,4-Trimethyl-2-Pentene	12 / 33	0.005 : 0.13	0.002 - 58	3.7	NA	NA	Yes	Yes
2-Butanone (MEK)	5 / 34	0.011 : 13	0.004 - 0.084	0.84	0.3	No	Yes	No
Acetone	7 / 34	0.016 : 13	0.018 - 0.24	0.86	3	No	Yes	No
Benzene	4 / 34	0.005 : 0.66	0.001 - 0.012	0.043	10	No	Yes	No
Benzoic Acid	2 / 32	1.7 : 400	0.039 - 0.13	17	NA	NA	No	No
Carbon Disulfide	2 / 13	0.005 : 0.07	0.005 - 0.013	0.0077	NA	NA	No	No
Chloroform	1 / 34	0.005 : 0.66	0.001 - 0.001	0.044	0.1	No	No	No
Ethylbenzene	5 / 34	0.005 : 0.66	0.011 - 6.7	0.26	80	No	Yes	No
m,p-Xylene	1 / 19	0.082 : 0.15	0.2 - 0.2	0.065	500	No	No	No
Methylene Chloride	3 / 34	0.005 : 0.66	0.002 - 0.004	0.077	0.1	No	No	No
p-Isopropyl Toluene	3 / 21	0.009 : 0.66	0.46 - 5.2	0.35	NA	NA	Yes	Yes
Styrene	5 / 34	0.005 : 0.66	0.001 - 0.004	0.043	2	No	No	No
Tetrachloroethene (PCE)	1 / 34	0.005 : 0.66	0.0093 - 0.0093	0.044	0.5	No	No	No
Toluene	11 / 34	0.005 : 0.66	0.0006 - 0.19	0.052	90	No	Yes	No
Trichloroethene (TCE)	1 / 34	0.005 : 0.66	0.01 - 0.01	0.043	0.4	No	No	No
Xylenes, Total	5 / 32	0.005 : 0.3	0.002 - 4.6	0.21	500	No	Yes	No
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene	1 / 34	0.35 : 37	0.063 - 0.063	1.4	4	No	No	No
4-Chlorophenyl-phenylether	1 / 34	0.35 : 79	0.17 - 0.17	3.3	NA	NA	No	No
Acenaphthylene	1 / 34	0.35 : 37	0.027 - 0.027	0.86	100	No	No	No
Anthracene	2 / 34	0.35 : 37	0.002 - 0.041	0.86	5000	No	Yes	No
Benzo(a)anthracene	5 / 34	0.36 : 37	0.008 - 0.13	0.84	4	No	Yes	No
Benzo(b)fluoranthene	6 / 34	0.36 : 37	0.01 - 0.2	0.83	4	No	Yes	No
Benzo(g,h,i)perylene	1 / 34	0.35 : 37	0.66 - 0.66	0.88	2500	No	No	No
Benzo(k)fluoranthene	3 / 34	0.36 : 37	0.006 - 0.17	0.86	40	No	Yes	No
bis(2-EthylHexyl)phthalate	28 / 31	0.36 . 0.92	0.18 - 6700	368	100	Yes	Yes	Yes
Butylbenzylphthalate	8 / 34	0.35 : 79	0.029 - 4.5	3.5	NA	NA	Yes	Yes
Chrysene	5 / 34	0.36 : 37	0.012 - 0.16	0.84	40	No	Yes	No
Dibenzofuran	3 / 34	0.35 : 79	0.016 - 0.11	3.3	NA	NA	No	No
Diethylphthalate	3 / 34	0.35 : 79	0.01 - 0.057	3.3	0.7	No	No	No
Di-n-butylphthalate	7 / 34	0.36 : 79	0.009 - 32	4.0	NA	NA	Yes	Yes
Di-n-octylphthalate	6 / 34	0.35 : 79	0.059 - 0.38	3.3	NA	NA	No	No
Fluoranthene	7 / 34	0.36 : 37	0.015 - 5.7	1.0	1000	No	Yes	No
Fluorene	1 / 34	0.35 : 37	0.02 - 0.02	0.86	400	No	No	No

Table 4
Identification of Potential Hot Spot Analytes for Surface and Subsurface Soils in the Lake Poly Region

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern[1]	Site Data/Concentration[2]				Method 1 Soil Standard[3]	Maximum Concentration Exceeds Standard?	Data Vary Widely?[4]	Is OHM Potential Hot Spot Analyte?[4]
	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean				
Indeno (1,2,3-cd) pyrene	1 / 34	0.35 : 37	10 - 10	1.2	4	Yes	No	No
Naphthalene	3 / 36	0.09 : 37	0.013 - 0.16	0.82	4	No	Yes	No
N-Nitrosodiphenylamine	15 / 34	0.35 : 15	0.075 - 3400	149	NA	NA	Yes	Yes
Phenanthrene	6 / 34	0.35 : 37	0.011 - 0.64	0.85	100	No	Yes	No
Phenol	2 / 34	0.35 : 79	0.055 - 0.25	3.3	60	No	No	No
Pyrene	8 / 34	0.36 : 37	0.015 - 0.3	0.82	1000	No	Yes	No
Pesticides/PCBs (mg/kg)								No
4,4'-DDD	2 / 31	0.0035 . 0.08	0.0012 - 0.04	0.014	10	No	Yes	No
4,4'-DDE	2 / 31	0.0035 : 0.08	0.0018 - 0.002	0.014	9	No	No	No
4,4'-DDT	3 / 31	0.0099 : 0.08	0.0023 - 0.015	0.014	9	No	No	No
Aldrin	1 / 31	0.0018 : 0.08	0.032 - 0.032	0.012	0.1	No	No	No
Alpha-BHC	1 / 31	0.0018 : 0.08	0.024 - 0.024	0.011	NA	NA	No	No
Alpha-Chlordane	2 / 12	0.0018 : 0.22	0.00023 - 0.0034	0.065	5	No	Yes	No
Endosulfan Sulfate	1 / 31	0.0035 : 0.08	0.15 - 0.15	0.018	0.05	Yes	No	No
Endrin	2 / 31	0.0035 : 0.08	0.0004 - 0.089	0.016	0.6	No	Yes	No
Endrin Aldehyde	1 / 23	0.0035 : 0.08	0.0006 - 0.0006	0.012	0.6	No	No	No
Gamma-BHC (Lindane)	1 / 31	0.0019 : 0.08	0.00036 - 0.00036	0.011	0.1	No	No	No
Gamma-Chlordane	2 / 12	0.0018 : 0.22	0.00029 - 0.0012	0.064	5	No	No	No
Inorganics (mg/kg)								
Aluminum, Total	15 / 15	NA	2500 - 8340	5391	NA	NA	No	No
Antimony, Total	2 / 15	0.5 : 20	1.2 - 41	7.7	40	Yes	Yes	No
Barium, Total	21 / 22	11 : 11	2.8 - 640	49	5000	No	Yes	No
Beryllium, Total	3 / 15	0.2 : 1.5	0.2 - 0.26	0.50	3	No	No	No
Cadmium, Total	1 / 34	0.18 : 4	1 - 1	0.68	80	No	No	No
Calcium, Total	15 / 15	NA	170 - 1400	674	NA	NA	No	No
Chromium, Total	112 / 113	11 : 11	5.9 - 7900	695	5000	Yes	Yes	Yes
Cobalt, Total	12 / 15	1.5 : 3	1.5 - 4.4	2.3	NA	NA	No	No
Copper, Total	14 / 15	2.5 : 2.5	3.4 - 20	8.2	NA	NA	No	No
Hexavalent Chromium, Total	16 / 16	NA	0.41 - 19.9	5.7	1000	No	No	No
Iron, Total	15 / 15	NA	580 - 9900	6507	NA	NA	No	No
Lead, Total	15 / 34	5 : 13	4.8 - 183	14	600	No	Yes	No
Manganese, Total	15 / 15	NA	8.7 - 100	59	NA	NA	No	No
Mercury, Total	9 / 22	0.04 : 0.12	0.06 - 7	0.42	60	No	Yes	No
Nickel, Total	11 / 15	4 : 4	4.1 - 8.6	5.4	700	No	No	No
Potassium, Total	15 / 15	NA	130 - 1300	584	NA	NA	No	No
Sodium, Total	15 / 15	NA	39 - 440	130	NA	NA	No	No
Thallium, Total	2 / 15	0.5 : 2	1.6 - 2.2	0.59	100	No	No	No
Vanadium, Total	15 / 15	NA	2.6 - 24	12	2000	No	No	No
Zinc, Total	15 / 15	NA	3.2 - 75.5	27	5000	No	No	No
Chloride	3 / 11	40 : 40	26.1 - 130	38	NA	NA	No	No
Cyanide	3 / 8	2 : 2	2.3 - 5.4	1.9	400	No	No	No
Nitrogen, Ammonia	37 / 37	NA	10 - 71000	3953	NA	NA	Yes	Yes
Sulfate as SO4	6 / 14	20 : 110	6.8 - 110	45	NA	NA	Yes	No

Table 4
Identification of Potential Hot Spot Analytes for Surface and Subsurface Soils in the Lake Poly Region

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern[1]	Site Data/Concentration [2]				Method 1 Soil Standard [3]	Maximum Concentration Exceeds Standard?	Data Vary Widely? [4]	Is OHM Potential Hot Spot Analyte? [4]
	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean				
Extractable Petroleum Hydrocarbons (mg/kg)								
C11-C22 Aromatics (FID)	16 / 19	3.6 : 3.7	5.2 - 5100	484	200	Yes	Yes	Yes
C19-C36 Aliphatics (PID)	12 / 19	3.6 : 4.2	6.5 - 3200	307	5000	No	Yes	No
C9-C18 Aliphatics (FID)	8 / 19	3.6 : 4.2	5.5 - 1100	95	5000	No	Yes	No
Volatile Petroleum Hydrocarbons (mg/kg)								
C5-C8 Aliphatics (FID)	5 / 19	1.8 : 2.7	4.9 - 88	10	500	No	Yes	No
C9-C10 Aromatics (PID)	3 / 19	1.8 : 8.2	12 - 45	4.9	100	No	No	No
C9-C12 Aliphatics (FID)	4 / 19	1.8 : 8.2	2.7 - 46	4.8	5000	No	Yes	No

Notes:
[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).
[2] Samples included in data set are listed in Table 1.
The arithmetic mean represents the arithmetic average of all samples results, with one-half the SQL used as the value for non-detects
[3] Standard is the lesser of the S-3/GW-1, S-3/GW-2, and S-3/GW-3 Standard (310 CMR 40 0974).
[4] Potential Hot Spot Analyte: Maximum concentration exceeds Method 1 standard (or no standard is available) and data vary widely (i e., more than a 10-fold difference between minimum and maximum detected concentrations or more than a 100-fold difference between the maximum detected concentration and the lower end of the range of detection limits)
In addition, if the maximum detected concentration will never exceed any other detected concentration or SQL by a 100-fold difference, then the OHM is eliminated as a potential hot spot analyte (antimony, sulfate).
OHM = Oil and/or Hazardous Material
SQL = Sample Quanitation Limit
NA = Not Available/Not Applicable

Table 5
Subsurface Soil EPCs for Lake Poly 1R Hot Spot

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]									Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean			
Volatile Organics (mg/kg)											
1,2,3-Trichlorobenzene	2 / 4	0.082	:	0.12	0.44	-	1.2	0.44		0.44	A
1,2,4-Trichlorobenzene	1 / 10	0.082	:	0.82	0.088	-	0.088	0.22		0.088	M
1,2,4-Trimethylbenzene	1 / 4	0.082	:	0.15	0.39	-	0.39	0.14		0.39	M
1,2-Dichlorobenzene	2 / 10	0.082	:	0.82	0.17	-	5.9	0.81		0.81	A
1,2-Dichloroethane	1 / 10	0.0055	:	0.15	0.002	-	0.002	0.025		0.00	M
1,3,5-Trimethylbenzene	1 / 4	0.082	:	0.15	0.11	-	0.11	0.072		0.11	M
1,3-Dichlorobenzene	1 / 10	0.082	:	0.83	0.74	-	0.74	0.32		0.74	M
1,4-Dichlorobenzene	2 / 10	0.082	:	0.82	0.23	-	8.6	1.1		1.1	A
2,4,4-Trimethyl-1-pentene	8 / 10	0.011	:	0.12	0.01	-	103	15		103	M
2,4,4-Trimethyl-2-Pentene	6 / 10	0.011	:	0.12	0.005	-	58	11		58	M
2-Butanone (MEK)	2 / 10	0.016	:	2.9	0.007	-	0.084	0.47		0.0840	M
Acetone	2 / 10	0.016	:	2.9	0.026	-	0.24	0.49		0.2400	M
Benzene	2 / 10	0.0055	:	0.15	0.001	-	0.002	0.025		0.0020	M
Carbon Disulfide	2 / 6	0.011	:	0.012	0.005	-	0.013	0.0068		0.01	A
Chloroform	1 / 10	0.0055	:	0.15	0.001	-	0.001	0.025		0.00	M
Ethylbenzene	3 / 10	0.0055	:	0.15	0.057	-	6.7	0.8		6.7	M
m,p-Xylene	1 / 4	0.082	:	0.15	0.2	-	0.2	0.094		0.20	M
Methylene Chloride	1 / 10	0.011	:	0.29	0.002	-	0.002	0.049		0.0020	M
p-Isopropyl Toluene	3 / 4	0.12	:	0.12	0.46	-	5.2	1.56		1.56	A
Styrene	2 / 10	0.0055	:	0.15	0.003	-	0.004	0.02		0.0040	M
Toluene	5 / 10	0.0055	:	0.15	0.0006	-	0.19	0.05		0.19	M
Xylenes, Total	3 / 10	0.0055	:	0.3	0.091	-	4.6	0.52		0.52	A
Semivolatile Organics (mg/Kg)											
2-Methylnaphthalene	1 / 10	0.4	:	37	0.063	-	0.063	2.4		0.063	M
4-Chlorophenyl-phenylether	1 / 10	0.73	:	79	0.17	-	0.17	8.46		0.17	M
Benzo(a)anthracene	2 / 10	0.4	:	5.7	0.048	-	0.052	0.53		0.052	M
Benzo(b)fluoranthene	2 / 10	0.4	:	5.7	0.043	-	0.049	0.53		0.049	M
Benzo(g,h,i)perylene	1 / 10	0.4	:	5.7	0.66	-	0.66	1		0.66	M
bis(2-EthylHexyl)phthalate	10 / 10		:		4.9	-	6700	1119		6700.0	M
Butylbenzylphthalate	4 / 10	0.73	:	79	0.37	-	4.5	9.09		4.500	M
Chrysene	2 / 10	0.4	:	5.7	0.058	-	0.089	0.5		0.09	M
Dibenzofuran	2 / 10	0.73	:	79	0.095	-	0.11	8.4		0.1	M
Di-n-butylphthalate	2 / 10	0.73	:	79	9.1	-	32	12.5		12.52	A
Di-n-octylphthalate	5 / 10	0.73	:	79	0.11	-	0.38	8.4		0.38	M
Fluoranthene	3 / 10	0.4	:	5.7	0.072	-	5.7	1.1		1.1	A
Indeno (1,2,3-cd) pyrene	1 / 10	0.4	:	5.7	10	-	10	1.58		10.00	M
Naphthalene	2 / 10	0.4	:	0.82	0.092	-	0.16	0.28		0.16	M
N-Nitrosodiphenylamine	7 / 10	0.76	:	15	3	-	3400	466.73		3400.00	M
Phenanthrene	2 / 10	0.4	:	5.7	0.28	-	0.64	0.6		0.61	A
Phenol	2 / 10	0.73	:	79	0.055	-	0.25	8.43		0.25	M
Pyrene	4 / 10	0.4	:	5.7	0.057	-	0.2	0.49		0.20	M
Pesticides (mg/Kg)											
4,4'-DDD	1 / 9	0.011	:	0.08	0.04	-	0.04	0.024		0.040	M
Aldrin	1 / 9	0.011	:	0.08	0.032	-	0.032	0.019		0.032	M
Alpha-BHC	1 / 9	0.011	:	0.08	0.024	-	0.024	0.018		0.024	M
Endosulfan Sulfate	1 / 9	0.011	:	0.08	0.15	-	0.15	0.036		0.15	M
Endrin	1 / 9	0.011	:	0.08	0.069	-	0.069	0.030		0.069	M

Table 5
Subsurface Soil EPCs for Lake Poly 1R Hot Spot

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]					Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs		Range of Detected Concentrations		Arithmetic Mean	
Inorganics (mg/Kg)							
Aluminum, Total	6 / 6	NA : NA		2500 - 7900		5400	5400	A
Antimony, Total	1 / 6	0.5 : 20		41 - 41		14	41	M
Barium, Total	10 / 10	NA : NA		13 - 640		87	66.9	A
Calcium, Total	6 / 6	NA : NA		420 - 1400		882	882	A
Chromium, Total	20 / 20	NA : NA		14 - 4600		1058	4600	M
Cobalt, Total	5 / 6	3 : 3		1.6 - 4.4		2.8	2.8	A
Copper, Total	6 / 6	NA : NA		3.9 - 15		8.5	8.5	A
Hexavalent Chromium, Total	3 / 3	NA : NA		2.29 - 12.7		5.9	5.9	A
Iron, Total	6 / 6	NA : NA		4900 - 8800		7033	7033	A
Lead, Total	5 / 10	6 : 13		11 - 19		9.4	9.4	A
Manganese, Total	6 / 6	NA : NA		34 - 100		66	65.8	A
Mercury, Total	5 / 10	0.05 : 0.11		0.1 - 7		0.85	0.85	A
Nickel, Total	4 / 6	4 : 4		4.7 - 8.6		5.3	5.3	A
Potassium, Total	6 / 6	NA : NA		260 - 1300		853	853	A
Sodium, Total	6 / 6	NA : NA		39 - 190		104	104	A
Zinc, Total	6 / 6	NA : NA		9.2 - 33		25	25	A
Cyanide	2 / 5	2 : 2		2.3 - 2.3		1.5	1.5	A
Nitrogen, Ammonia	11 / 11	NA : NA		10 - 71000		9208	71000	M
Sulfate as SO4	3 / 6	20 : 80		40 - 87		47	47	A
EPH (mg/Kg)							
C11-C22 Aromatics (FID)	4 / 4	NA : NA		330 - 5100		2008	2008	A
C19-C36 Aliphatics (PID)	4 / 4	NA : NA		160 - 3200		1263	1263	A
C9-C18 Aliphatics (FID)	4 / 4	NA : NA		9.1 - 1100		400	1100	M
VPH (mg/Kg)							
C5-C8 Aliphatics (FID)	3 / 4	2.4 : 2.4		20 - 88		38.3	38	A
C9-C10 Aromatics (PID)	2 / 4	2.4 : 8.2		12 - 45		15.6	16	A
C9-C12 Aliphatics (FID)	2 / 4	2.4 : 8.2		8.9 - 46		15.1	15	A

Notes:

[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).

[2] Samples included in data set are listed in Table 1.

The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.

[3] EPCs determined as follows:

M - Maximum detected concentration used to evaluate hot spot. The data exhibit a high degree of variability as evidenced by more than a 100-fold difference in the range of detected concentrations; therefore, the maximum detected concentration is selected to conservatively represent the true mean.

A - Arithmetic mean concentration used to evaluate hot spot. Per 310 CMR 40.0926(3), the arithmetic mean conservatively represents the true mean, considering the range of detected concentrations and the representativeness of the soil sampling; see text.

Table 6
Subsurface Soil EPCs for Lake Poly 2R Hot Spot

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]										Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean				
Volatile Organics (mg/kg)												
1,2,3-Trichlorobenzene	1 / 1	NA	:	NA	1.2	-	1.2	1.2			1.2	M
1,2-Dichlorobenzene	1 / 1	NA	:	NA	5.9	-	5.9	5.9			5.9	M
1,3-Dichlorobenzene	1 / 1	NA	:	NA	0.74	-	0.74	0.74			0.74	M
1,4-Dichlorobenzene	1 / 1	NA	:	NA	8.6	-	8.6	8.6			8.6	M
2,4,4-Trimethyl-1-pentene	1 / 1	NA	:	NA	15	-	15	15.0			15.0	M
2,4,4-Trimethyl-2-Pentene	1 / 1	NA	:	NA	58	-	58	58.0			58.0	M
p-Isopropyl Toluene	1 / 1	NA	:	NA	0.53	-	0.53	0.53			0.53	M
Semivolatile Organics (mg/Kg)												
bis(2-EthylHexyl)phthalate	1 / 1	NA	:	NA	692	-	692	692			692	M
N-Nitrosodiphenylamine	1 / 1	NA	:	NA	60	-	60	60.0			60.0	M
Inorganics (mg/kg)												
Barium, Total	1 / 1	NA	:	NA	640	-	640	640			640	M
Chromium, Total	3 / 3	NA	:	NA	1100	-	5900	3867			3867	A
Lead, Total	1 / 1	NA	:	NA	19	-	19	19.0			19.0	M
Mercury, Total	1 / 1	NA	:	NA	0.36	-	0.36	0.36			0.36	M
Nitrogen, Ammonia	3 / 3	NA	:	NA	29000	-	71000	46667			46667	A
EPH (mg/Kg)												
C11-C22 Aromatics (FID)	1 / 1	NA	:	NA	5100	-	5100	5100			5100	M
C19-C36 Aliphatics (PID)	1 / 1	NA	:	NA	3200	-	3200	3200			3200	M
C9-C18 Aliphatics (FID)	1 / 1	NA	:	NA	1100	-	1100	1100			1100	M
VPH (mg/Kg)												
C5-C8 Aliphatics (FID)	1 / 1	NA	:	NA	44	-	44	44.0			44.0	M
C9-C10 Aromatics (PID)	1 / 1	NA	:	NA	45	-	45	45.0			45.0	M
C9-C12 Aliphatics (FID)	1 / 1	NA	:	NA	46	-	46	46.0			46.0	M

Notes:

[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).

[2] Samples included in data set are listed in Table 1.

The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.

[3] EPCs determined as follows:

M - Maximum detected concentration used to evaluate hot spot. The data exhibit a high degree of variability as evidenced by more than a 100-fold difference in the range of detected concentrations; therefore, the maximum detected concentration is selected to conservatively represent the true mean.

A - Arithmetic mean concentration used to evaluate hot spot. Per 310 CMR 40.0926(3), the arithmetic mean conservatively represents the true mean, considering the range of detected concentrations and the representativeness of the soil sampling; see text.

Table 7
Surface and Subsurface Soil EPCs for Lake Poly 3R Hot Spot

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2] Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean	Concentration Used to Evaluate Area [3]	
Volatile Organics (mg/kg)						
1,1,1-Trichloroethane (TCA)	1 / 11	0.0055 : 0.15	0.011 - 0.011	0.02	0.011	M
1,2,3-Trichlorobenzene	2 / 3	0.082 : 0.082	0.44 - 1.2	0.56	0.56	A
1,2,4-Trichlorobenzene	1 / 11	0.082 : 37	0.088 - 0.088	1.9	0.088	M
1,2,4-Trimethylbenzene	1 / 3	0.082 : 0.15	0.39 - 0.39	0.17	0.39	M
1,2-Dichlorobenzene	2 / 11	0.082 : 37	0.17 - 5.9	2.4	2.4	A
1,2-Dichloroethane	1 / 11	0.005 : 0.15	0.002 - 0.002	0.018	0.0020	M
1,3,5-Trimethylbenzene	1 / 3	0.082 : 0.15	0.11 - 0.11	0.075	0.11	M
1,3-Dichlorobenzene	1 / 11	0.082 : 37	0.74 - 0.74	2.0	0.74	M
1,4-Dichlorobenzene	2 / 11	0.082 : 37	0.23 - 8.6	2.7	2.7	A
2,4,4-Trimethyl-1-pentene	9 / 11	0.005 : 0.011	0.006 - 103	13.6	103	M
2,4,4-Trimethyl-2-Pentene	8 / 11	0.005 : 0.011	0.002 - 58	10.4	58.0	M
2-Butanone (MEK)	1 / 11	0.011 : 2.9	0.021 - 0.021	0.32	0.021	M
2-Hexanone	1 / 11	0.011 : 0.58	0.007 - 0.007	0.07	0.0070	M
Acetone	4 / 11	0.016 : 2.9	0.018 - 0.14	0.33	0.14	M
Chloroform	1 / 11	0.005 : 0.15	0.001 - 0.001	0.017	0.0010	M
Ethylbenzene	4 / 11	0.005 : 0.15	0.015 - 6.7	0.69	6.7	M
m,p-Xylene	1 / 3	0.082 : 0.15	0.2 - 0.2	0.11	0.20	M
Methylene Chloride	2 / 11	0.005 : 0.29	0.002 - 0.004	0.034	0.0040	M
p-Isopropyl Toluene	3 / 3	NA : NA	0.46 - 5.2	2.1	2.1	A
Styrene	3 / 11	0.005 : 0.15	0.001 - 0.004	0.018	0.0040	M
Toluene	6 / 11	0.005 : 0.15	0.0006 - 0.11	0.025	0.11	M
Xylenes, Total	4 / 11	0.005 : 0.3	0.003 - 4.6	0.46	4.6	M
Semivolatile Organics (mg/kg)						
2-Methylnaphthalene	1 / 11	0.4 : 37	0.063 - 0.063	3.9	0.063	M
4-Chlorophenyl-phenylether	1 / 11	0.4 : 79	0.17 - 0.17	8.7	0.17	M
Benzo(a)anthracene	1 / 11	0.4 : 37	0.052 - 0.052	2.2	0.052	M
Benzo(b)fluoranthene	2 / 11	0.4 : 37	0.039 - 0.043	2.2	0.043	M
Benzo(g,h,i)perylene	1 / 11	0.4 : 37	0.66 - 0.66	2.3	0.66	M
bis(2-EthylHexyl)phthalate	11 / 11	NA : NA	1.8 - 6700	981	6700	M
Butylbenzylphthalate	4 / 11	0.4 : 79	0.15 - 2.2	8.9	2.2	M
Chrysene	1 / 11	0.4 : 37	0.089 - 0.089	2.2	0.089	M
Dibenzofuran	2 / 11	0.4 : 79	0.095 - 0.11	8.7	0.11	M
Di-n-butylphthalate	4 / 11	0.73 : 79	0.032 - 32	10.8	32	M
Di-n-octylphthalate	4 / 11	0.4 : 79	0.059 - 0.38	8.6	0.38	M
Fluoranthene	3 / 11	0.4 : 37	0.038 - 5.7	2.7	5.7	M
Indeno (1,2,3-cd) pyrene	1 / 11	0.4 : 37	10 - 10	3.1	10.0	M
Naphthalene	2 / 11	0.4 : 37	0.092 - 0.16	1.9	0.16	M
N-Nitrosodiphenylamine	11 / 11	NA : NA	3 - 3400	458	3400	M
Phenanthrene	4 / 11	0.4 : 37	0.052 - 0.64	2.2	0.64	M
Phenol	1 / 11	0.4 : 79	0.055 - 0.055	8.7	0.055	M
Pyrene	3 / 11	0.4 : 37	0.064 - 0.2	2.2	0.20	M
Pesticide/PCB (mg/Kg)						
4,4'-DDD	1 / 9	0.018 : 0.08	0.04 - 0.04	0.025	0.040	M
Aldrin	1 / 9	0.0094 : 0.08	0.032 - 0.032	0.019	0.032	M
Alpha-BHC	1 / 9	0.0094 : 0.08	0.024 - 0.024	0.018	0.024	M
Endosulfan Sulfate	1 / 9	0.018 : 0.08	0.15 - 0.15	0.037	0.15	M
Endrin	1 / 9	0.018 : 0.08	0.089 - 0.089	0.030	0.089	M

Table 7
Surface and Subsurface Soil EPCs for Lake Poly 3R Hot Spot

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]										Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean				
Inorganics (mg/Kg)												
Aluminum, Total	8 / 8	NA	:	NA	2500	-	7900	5080			5080	A
Antimony, Total	1 / 8	0.5	:	20	41	-	41	10.3			41.0	M
Barium, Total	11 / 11	NA	:	NA	8.4	-	640	79.1			79.1	A
Beryllium, Total	1 / 8	0.5	:	1.5	0.25	-	0.25	0.56			0.25	M
Cadmium, Total	1 / 11	0.18	:	4	1	-	1	0.74			1.0	M
Calcium, Total	8 / 8	NA	:	NA	420	-	1200	684			684	A
Chromium, Total	25 / 25	NA	:	NA	9.4	-	4600	1125			4600	M
Cobalt, Total	6 / 8	3	:	3	1.8	-	3.8	2.5			2.5	A
Copper, Total	8 / 8	NA	:	NA	3.4	-	15	7.9			7.9	A
Hexavalent Chromium, Total	4 / 4	NA	:	NA	0.47	-	16.2	5.7			5.7	A
Iron, Total	8 / 8	NA	:	NA	5200	-	9900	7444			7444	A
Lead, Total	6 / 11	8	:	13	5.7	-	40	11.7			11.7	A
Manganese, Total	8 / 8	NA	:	NA	41	-	100	66.6			66.6	A
Mercury, Total	7 / 11	0.05	:	0.11	0.1	-	7	0.79			0.79	A
Nickel, Total	6 / 8	4	:	4	4.7	-	8.6	5.7			5.7	A
Potassium, Total	8 / 8	NA	:	NA	260	-	1300	686			686	A
Sodium, Total	8 / 8	NA	:	NA	39	-	200	114			114	A
Thallium, Total	1 / 8	0.5	:	0.5	1.6	-	1.6	0.42			1.6	M
Vanadium, Total	8 / 8	NA	:	NA	4.8	-	24	12.3			12.3	A
Zinc, Total	8 / 8	NA	:	NA	13	-	35.1	28.9			28.9	A
Chloride	1 / 7	40	:	40	98	-	98	31.1			98.0	M
Cyanide	2 / 5	2	:	2	2.3	-	5.4	2.1			2.1	A
Nitrogen, Ammonia	13 / 13	NA	:	NA	26	-	71000	8033			71000	M
Sulfate as SO4	5 / 8	20	:	110	40	-	110	58.9			58.9	A
EPH (mg/kg)												
C11-C22 Aromatics (FID)	3 / 3	NA	:	NA	500	-	5100	2567			2567	A
C19-C36 Aliphatics (PID)	3 / 3	NA	:	NA	160	-	3200	1553			1553	A
C9-C18 Aliphatics (FID)	3 / 3	NA	:	NA	9.1	-	1100	496			1100	M
VPH (mg/kg)												
C5-C8 Aliphatics (FID)	3 / 3	NA	:	NA	20	-	88	50.7			50.7	A
C9-C10 Aromatics (PID)	2 / 3	8.2	:	8.2	12	-	45	20.4			20.4	A
C9-C12 Aliphatics (FID)	2 / 3	8.2	:	8.2	8.9	-	46	19.7			19.7	A

Notes:

[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).

[2] Samples included in data set are listed in Table 1.

The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.

[3] EPCs determined as follows:

M - Maximum detected concentration used to evaluate hot spot. The data exhibit a high degree of variability as evidenced by more than a 100-fold difference in the range of detected concentrations; therefore, the maximum detected concentration is selected to conservatively represent the true mean.

A - Arithmetic mean concentration used to evaluate hot spot. Per 310 CMR 40.0926(3), the arithmetic mean conservatively represents the true mean, considering the range of detected concentrations and the representativeness of the soil sampling; see text

Table 8
Subsurface Soil EPCs for Lake Poly 4R Hot Spot

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]										Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean				
Volatile Organics (mg/kg)												
1,2,3-Trichlorobenzene	2 / 4	0.082	:	0.12	0.44	-	1.2	0.44			0.44	A
1,2,4-Trichlorobenzene	1 / 7	0.082	:	0.76	0.088	-	0.088	0.15			0.088	M
1,2,4-Trimethylbenzene	1 / 4	0.082	:	0.15	0.39	-	0.39	0.14			0.39	M
1,2-Dichlorobenzene	2 / 7	0.082	:	0.76	0.17	-	5.9	1.0			1.0	A
1,2-Dichloroethane	1 / 7	0.0055	:	0.15	0.002	-	0.002	0.034			0.0020	M
1,3,5-Trimethylbenzene	1 / 4	0.082	:	0.15	0.11	-	0.11	0.072			0.11	M
1,3-Dichlorobenzene	1 / 7	0.082	:	0.83	0.74	-	0.74	0.29			0.74	M
1,4-Dichlorobenzene	2 / 7	0.082	:	0.76	0.23	-	8.6	1.4			1.4	A
2,4,4-Trimethyl-1-pentene	6 / 7	0.011	:	0.011	0.006	-	103	22.9			103	M
2,4,4-Trimethyl-2-Pentene	6 / 7	0.011	:	0.011	0.002	-	58	16.7			58.0	M
Acetone	1 / 7	0.016	:	2.9	0.026	-	0.026	0.66			0.026	M
Chloroform	1 / 7	0.0055	:	0.15	0.001	-	0.001	0.034			0.0010	M
Ethylbenzene	3 / 7	0.0055	:	0.15	0.057	-	6.7	1.1			6.7	M
m,p-Xylene	1 / 4	0.082	:	0.15	0.2	-	0.2	0.094			0.20	M
Methylene Chloride	1 / 7	0.011	:	0.29	0.002	-	0.002	0.068			0.0020	M
p-Isopropyl Toluene	3 / 4	0.12	:	0.12	0.46	-	5.2	1.6			1.6	A
Toluene	3 / 7	0.0055	:	0.15	0.0008	-	0.11	0.044			0.11	M
Xylenes, Total	3 / 7	0.0055	:	0.3	0.091	-	4.6	0.74			0.74	A
Semivolatile Organics (mg/kg)												
4-Chlorophenyl-phenylether	1 / 7	0.73	:	79	0.17	-	0.17	11.1			0.17	M
Benzo(b)fluoranthene	1 / 7	0.4	:	5.7	0.039	-	0.039	0.64			0.039	M
Benzo(g,h,i)perylene	1 / 7	0.4	:	5.7	0.66	-	0.66	0.75			0.66	M
bis(2-EthylHexyl)phthalate	7 / 7	NA	:	NA	4.9	-	1218	428			1218	M
Butylbenzylphthalate	1 / 7	0.73	:	79	0.5	-	0.5	11.2			0.50	M
Dibenzofuran	1 / 7	0.73	:	79	0.095	-	0.095	11.1			0.095	M
Di-n-butylphthalate	1 / 7	0.73	:	79	9.1	-	9.1	12.4			9.1	M
Di-n-octylphthalate	2 / 7	0.73	:	79	0.059	-	0.11	11.1			0.11	M
Fluoranthene	3 / 7	0.4	:	5.7	0.038	-	5.7	1.4			5.7	M
Indeno (1,2,3-cd) pyrene	1 / 7	0.4	:	5.7	10	-	10	2.1			10.0	M
Naphthalene	1 / 7	0.4	:	0.76	0.092	-	0.092	0.26			0.092	M
N-Nitrosodiphenylamine	7 / 7	NA	:	NA	3	-	682	182			682	M
Phenanthrene	2 / 7	0.4	:	5.7	0.062	-	0.28	0.62			0.28	M
Phenol	1 / 7	0.73	:	79	0.055	-	0.055	11.1			0.055	M
Pyrene	2 / 7	0.4	:	5.7	0.064	-	0.098	0.60			0.10	M

Table 8
Subsurface Soil EPCs for Lake Poly 4R Hot Spot

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]										Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean				
Inorganics (mg/kg)												
Aluminum, Total	3 / 3	NA	:	NA	2500	-	5700	3867			3867	A
Barium, Total	6 / 6	NA	:	NA	13	-	640	128			128	A
Cadmium, Total	1 / 7	1	:	4	1	-	1	1.0			1.0	M
Calcium, Total	3 / 3	NA	:	NA	420	-	740	577			577	A
Chromium, Total	18 / 18	NA	:	NA	14	-	4600	943			4600	M
Cobalt, Total	2 / 3	3	:	3	1.8	-	2.4	1.9			1.9	A
Copper, Total	3 / 3	NA	:	NA	3.9	-	10	6.1			6.1	A
Hexavalent Chromium, Total	3 / 3	NA	:	NA	2.29	-	12.7	5.9			5.9	A
Iron, Total	3 / 3	NA	:	NA	5200	-	9900	7267			7267	A
Lead, Total	3 / 7	6	:	13	13	-	40	13.2			13.2	A
Manganese, Total	3 / 3	NA	:	NA	41	-	73	58.7			58.7	A
Mercury, Total	4 / 6	0.05	:	0.1	0.1	-	7	1.3			1.3	A
Nickel, Total	2 / 3	4	:	4	4.7	-	7.2	4.6			4.6	A
Potassium, Total	3 / 3	NA	:	NA	260	-	1100	707			707	A
Sodium, Total	3 / 3	NA	:	NA	39	-	200	107			107	A
Vanadium, Total	3 / 3	NA	:	NA	4.8	-	12	8.9			8.9	A
Zinc, Total	3 / 3	NA	:	NA	28	-	32	29.3			29.3	A
Chloride	1 / 3	40	:	40	98	-	98	46.0			98.0	M
Nitrogen, Ammonia	8 / 8	NA	:	NA	26	-	71000	12703			71000	M
Sulfate as SO4	3 / 3	NA	:	NA	40	-	110	78.3			78.3	A
EPH (mg/kg)												
C11-C22 Aromatics (FID)	4 / 4	NA	:	NA	500	-	5100	2080			2080	A
C19-C36 Aliphatics (PID)	4 / 4	NA	:	NA	160	-	3200	1308			1308	A
C9-C18 Aliphatics (FID)	4 / 4	NA	:	NA	9.1	-	1100	412			1100	M
VPH (mg/kg)												
C5-C8 Aliphatics (FID)	4 / 4	NA	:	NA	9.8	-	88	40.5			40.5	A
C9-C10 Aromatics (PID)	3 / 4	8.2	:	8.2	12	-	45	19.0			19.0	A
C9-C12 Aliphatics (FID)	3 / 4	8.2	:	8.2	8.9	-	46	18.0			18.0	A

Notes:

[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).

[2] Samples included in data set are listed in Table 1.

The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.

[3] EPCs determined as follows:

M - Maximum detected concentration used to evaluate hot spot. The data exhibit a high degree of variability as evidenced by more than a 100-fold difference in the range of detected concentrations; therefore, the maximum detected concentration is selected to conservatively represent the true mean.

A - Arithmetic mean concentration used to evaluate hot spot. Per 310 CMR 40.0926(3), the arithmetic mean conservatively *represents the true mean, considering the range of detected concentrations and the representativeness of the soil sampling; see text*

Table 9
Surface and Subsurface Soil EPCs for Lake Poly Region (Revised Hot EP9)

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]										Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean				
Volatile Organics (mg/kg)												
1,1,1-Trichloroethane (TCA)	1 / 15	0.0055	:	0.15	0.011	-	0.011	0.022			0.011	M
1,2,3-Trichlorobenzene	2 / 5	0.082	:	0.12	0.44	-	1.2	0.36			0.36	A
1,2,4-Trichlorobenzene	1 / 15	0.082	:	37	0.088	-	0.088	1.5			0.088	M
1,2,4-Trimethylbenzene	1 / 5	0.082	:	0.15	0.39	-	0.39	0.13			0.39	M
1,2-Dichlorobenzene	2 / 15	0.082	:	37	0.17	-	5.9	1.8			1.8	A
1,2-Dichloroethane	1 / 15	0.005	:	0.15	0.002	-	0.002	0.021			0.0020	M
1,3,5-Trimethylbenzene	1 / 5	0.082	:	0.15	0.11	-	0.11	0.069			0.11	M
1,3-Dichlorobenzene	1 / 15	0.082	:	37	0.74	-	0.74	1.5			0.74	M
1,4-Dichlorobenzene	2 / 15	0.082	:	37	0.23	-	8.6	2.0			2.0	A
2,4,4-Trimethyl-1-pentene	12 / 15	0.005	:	0.12	0.006	-	103	10.8			103	M
2,4,4-Trimethyl-2-Pentene	10 / 15	0.005	:	0.12	0.002	-	58	7.9			58.0	M
2-Butanone (MEK)	3 / 15	0.011	:	2.9	0.007	-	0.084	0.40			0.084	M
2-Hexanone	1 / 15	0.011	:	0.58	0.007	-	0.007	0.083			0.0070	M
Acetone	5 / 15	0.016	:	2.9	0.018	-	0.24	0.42			0.24	M
Benzene	2 / 15	0.005	:	0.15	0.001	-	0.002	0.021			0.0020	M
Carbon Disulfide	2 / 10	0.005	:	0.012	0.005	-	0.013	0.0061			0.0061	A
Chloroform	1 / 15	0.005	:	0.15	0.001	-	0.001	0.021			0.0010	M
Ethylbenzene	4 / 15	0.005	:	0.15	0.015	-	6.7	0.51			6.7	M
m,p-Xylene	1 / 5	0.082	:	0.15	0.2	-	0.2	0.087			0.20	M
Methylene Chloride	2 / 15	0.005	:	0.29	0.002	-	0.004	0.042			0.0040	M
p-Isopropyl Toluene	3 / 5	0.12	:	0.12	0.46	-	5.2	1.3			1.3	A
Styrene	4 / 15	0.005	:	0.15	0.001	-	0.004	0.021			0.0040	M
Toluene	8 / 15	0.005	:	0.15	0.0006	-	0.19	0.040			0.19	M
Xylenes, Total	4 / 15	0.005	:	0.3	0.003	-	4.6	0.35			4.6	M
Semivolatile Organics (mg/kg)												
2-Methylnaphthalene	1 / 15	0.4	:	37	0.063	-	0.063	2.9			0.063	M
4-Chlorophenyl-phenylether	1 / 15	0.4	:	79	0.17	-	0.17	7.1			0.17	M
Benzo(a)anthracene	2 / 15	0.4	:	37	0.048	-	0.052	1.7			0.052	M
Benzo(b)fluoranthene	3 / 15	0.4	:	37	0.039	-	0.049	1.6			0.049	M
Benzo(g,h,i)perylene	1 / 15	0.4	:	37	0.66	-	0.66	1.7			0.66	M
bis(2-EthylHexyl)phthalate	15 / 15		:		1.8	-	6700	757			6700	M
Butylbenzylphthalate	6 / 15	0.4	:	79	0.15	-	4.5	7.5			4.5	M
Chrysene	2 / 15	0.4	:	37	0.058	-	0.089	1.7			0.089	M
Dibenzofuran	2 / 15	0.4	:	79	0.095	-	0.11	7.0			0.11	M
Di-n-butylphthalate	4 / 15	0.73	:	79	0.032	-	32	8.6			32.0	M
Di-n-octylphthalate	6 / 15	0.4	:	79	0.059	-	0.38	7.0			0.38	M
Fluoranthene	4 / 15	0.4	:	37	0.038	-	5.7	2.0			5.7	M
Indeno (1,2,3-cd) pyrene	1 / 15	0.4	:	37	10	-	10	2.4			10.0	M
Naphthalene	2 / 15	0.4	:	37	0.092	-	0.16	1.5			0.16	M
N-Nitrosodiphenylamine	12 / 15	0.76	:	15	3	-	3400	337			3400	M
Phenanthrene	4 / 15	0.4	:	37	0.052	-	0.64	1.7			0.64	M
Phenol	2 / 15	0.4	:	79	0.055	-	0.25	7.0			0.25	M
Pyrene	5 / 15	0.4	:	37	0.057	-	0.2	1.6			0.20	M

Table 9
Surface and Subsurface Soil EPCs for Lake Poly Region (Revised Hot EP9)

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]									Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean			
Pesticide/PCB (mg/Kg)											
4,4'-DDD	1 / 13	0.011	:	0.08	0.04	-	0.04	0.022		0.040	M
Aldrin	1 / 13	0.0094	:	0.08	0.032	-	0.032	0.017		0.032	M
Alpha-BHC	1 / 13	0.0094	:	0.08	0.024	-	0.024	0.016		0.024	M
Endosulfan Sulfate	1 / 13	0.011	:	0.08	0.15	-	0.15	0.031		0.15	M
Endrin	1 / 13	0.011	:	0.08	0.089	-	0.089	0.026		0.089	M
Inorganics (mg/Kg)											
Aluminum, Total	10 / 10	NA	:	NA	2500	-	7900	5214		5214	A
Antimony, Total	1 / 10	0.5	:	20	41	-	41	10.2		41.0	M
Barium, Total	14 / 14	NA	:	NA	8.4	-	640	66.1		66.1	A
Beryllium, Total	1 / 10	0.5	:	1.5	0.25	-	0.25	0.60		0.25	M
Cadmium, Total	1 / 15	0.18	:	4	1	-	1	0.74		1.0	M
Calcium, Total	10 / 10	NA	:	NA	420	-	1400	786		786	A
Chromium, Total	38 / 38	NA	:	NA	9.4	-	5900	1120		5900	M
Cobalt, Total	8 / 10	3	:	3	1.6	-	4.4	2.6		2.6	A
Copper, Total	10 / 10	NA	:	NA	3.4	-	15	8.3		8.3	A
Hexavalent Chromium, Total	7 / 7	NA	:	NA	0.47	-	16.2	5.8		5.8	A
Iron, Total	10 / 10	NA	:	NA	4900	-	9900	7255		7255	A
Lead, Total	8 / 15	6	:	13	5.7	-	40	11.0		11.0	A
Manganese, Total	10 / 10	NA	:	NA	34	-	100	64.5		64.5	A
Mercury, Total	7 / 14	0.05	:	0.11	0.1	-	7	0.63		0.63	A
Nickel, Total	7 / 10	4	:	4	4.7	-	8.6	5.5		5.5	A
Potassium, Total	10 / 10	NA	:	NA	260	-	1300	694		694	A
Sodium, Total	10 / 10	NA	:	NA	39	-	200	113		113	A
Thallium, Total	1 / 10	0.5	:	0.5	1.6	-	1.6	0.39		1.6	M
Vanadium, Total	10 / 10	NA	:	NA	4.8	-	24	12.6		12.6	A
Zinc, Total	10 / 10	NA	:	NA	9.2	-	35.1	26.0		26.0	A
Chloride	1 / 9	40	:	40	98	-	98	28.7		98.0	M
Cyanide	3 / 7	2	:	2	2.3	-	5.4	2.0		2.0	A
Nitrogen, Ammonia	18 / 18	NA	:	NA	10	-	71000	8069		71000	M
Sulfate as SO4	5 / 10	20	:	110	40	-	110	50.1		50.1	A

Table 9
Surface and Subsurface Soil EPCs for Lake Poly Region (Revised Hot EP9)

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]				Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean		
EPH (mg/kg)						
C11-C22 Aromatics (FID)	5 / 5	NA : NA	330 - 5100	1730	1730	A
C19-C36 Aliphatics (PID)	5 / 5	NA : NA	160 - 3200	1124	1124	A
C9-C18 Aliphatics (FID)	5 / 5	NA : NA	9.1 - 1100	352	1100	M
VPH (mg/kg)						
C5-C8 Aliphatics (FID)	4 / 5	2.4 : 2.4	9.8 - 88	32.6	32.6	A
C9-C10 Aromatics (PID)	3 / 5	2.4 : 8.2	12 - 45	15.5	15.5	A
C9-C12 Aliphatics (FID)	3 / 5	2.4 : 8.2	8.9 - 46	14.6	14.6	A

Notes:
[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).
[2] Samples included in data set are listed in Table 1.
The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.
[3] EPCs determined as follows:
M - Maximum detected concentration used to evaluate hot spot. The data exhibit a high degree of variability as evidenced by more than a 100-fold difference in the range of detected concentrations; therefore, the maximum detected concentration is selected to conservatively represent the true mean.
A - Arithmetic mean concentration used to evaluate hot spot. Per 310 CMR 40.0926(3), the arithmetic mean conservatively represents the true mean, considering the range of detected concentrations and the representativeness of the soil sampling; see text

Table 10
Statistical Summary of Soil Data Collected Beneath and Within 30 Feet of the Building

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]								
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean
Volatile Organics (mg/kg)								
2,4,4-Trimethyl-1-pentene	1 / 7	0.09	:	0.12	0.64	-	0.64	0.14
2,4,4-Trimethyl-2-Pentene	1 / 7	0.09	:	0.12	0.57	-	0.57	0.13
2-Hexanone	1 / 7	0.36	:	0.48	0.007	-	0.007	0.19
Acetone	1 / 7	1.8	:	2.4	0.018	-	0.018	0.95
Styrene	1 / 7	0.09	:	0.12	0.003	-	0.003	0.047
Toluene	1 / 7	0.09	:	0.12	0.017	-	0.017	0.049
Inorganics (mg/kg)								
Nitrogen, Ammonia	7 / 7	NA	:	NA	10	-	360	68.3
EPH (mg/Kg)								
C19-C36 Aliphatics (PID)	1 / 6	3.6	:	3.8	390	-	390	66.5
C9-C18 Aliphatics (FID)	1 / 6	3.6	:	3.8	110	-	110	19.9
C11-C22 Aromatics (FID)	3 / 6	3.6	:	3.7	5.7	-	330	58.5

Notes:
[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).
[2] Samples included in data set are listed in Table 1.
The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.

Table 11
Surface Soil Concentrations for July 2001 Samples in Lake Poly Non-Hot Spot Area
Compared to Surface Soil EPCs in the Non-Hot Spot Area from the Focused Risk Assessment

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]									FRA Concentration Used to Evaluate Area [3]	
	Frequency of Detection	Range of SQLs			Range of Detected Concentrations			Arithmetic Mean			
Semivolatile Organics (mg/Kg)											
bis(2-EthylHexyl)phthalate	7 / 8	0.36	:	0.36	0.35	-	33	4.9		1.7	M
Inorganics (mg/Kg)											
Chromium, Total	35 / 36	11	:	11	6.5	-	720	130		520	M
Lead, Total	2 / 10	5	:	11	19	-	21	7.8		20	M
Nitrogen, Ammonia	11 / 11	NA	:	NA	11	-	320	53.9		156	A
EPH (mg/Kg)											
C11-C22 Aromatics (FID)	8 / 10	3.6	:	3.6	5.2	-	210	41.6		NA	
C19-C36 Aliphatics (PID)	5 / 10	3.6	:	4.2	6.5	-	43	10.7		NA	
C9-C18 Aliphatics (FID)	1 / 10	3.6	:	4.2	8.4	-	8.4	2.5		NA	

Notes:
[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).
[2] Samples included in data set are listed in Table 1.
The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.
NA = not applicable (analysis not previously performed in this area or OHM not previously detected)
M = maximum concentration used as the EPC
A = average concentration used as the EPC

Table 12
Surface and SubSurface Soil Concentrations for July 2001 Samples in Lake Poly Non-Hot Spot Area
Compared to Surface and Subsurface Soil EPCs in the Non-Hot Spot Area from the Focused Risk Assessment

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern [1]	Site Data/Concentration [2]				FRA Concentration Used to Evaluate Area [3]
	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean	
Volatile Organics (mg/kg)					
1,2-Dichlorobenzene	1 / 16	0.09 : 83	0.16 - 0.16	2.7	NA
1,4-Dichlorobenzene	1 / 16	0.09 : 83	0.27 - 0.27	2.7	NA
2,4,4-Trimethyl-1-pentene	1 / 14	0.09 : 0.13	3.4 - 3.4	0.30	2.3 M
2,4,4-Trimethyl-2-Pentene	1 / 14	0.09 : 0.13	2.8 - 2.8	0.25	0.90 M
Semivolatile Organics (mg/Kg)					
bis(2-EthylHexyl)phthalate	10 / 12	0.36 : 0.41	0.35 - 1081	94.0	36.0 M
N-Nitrosodiphenylamine	2 / 15	0.36 : 7.4	0.27 - 1201	80.5	140 M
Inorganics (mg/Kg)					
Barium, Total	2 / 3	11 : 11	43 - 50	32.8	75.0 M
Chromium, Total	60 / 61	11 : 11	6 - 7900	487	2610 M
Lead, Total	4 / 15	5 : 13	7 - 21	7.2	210.0 M
Mercury, Total	1 / 3	0.04 : 0.05	0.06 - 0.06	0.035	0.22 M
Nitrogen, Ammonia	16 / 16	NA : NA	10 - 380	75.3	400 M
EPH (mg/Kg)					
C11-C22 Aromatics (FID)	12 / 15	3.6 : 3.7	5.2 - 3000	236	NA
C19-C36 Aliphatics (PID)	8 / 15	3.6 : 4.2	6.5 - 1800	134	NA
C9-C18 Aliphatics (FID)	4 / 15	3.6 : 4.2	5.5 - 590	43.0	NA
VPH (mg/Kg)					
C5-C8 Aliphatics (FID)	1 / 14	1.8 : 2.7	4.9 - 4.9	1.4	NA
C9-C12 Aliphatics (FID)	1 / 14	1.8 : 2.7	2.7 - 2.7	1.3	NA

Notes:
[1] OHM of Concern are identified in Table 3 of the Focused Risk Assessment (Harding ESE, 2000).
[2] Samples included in data set are listed in Table 1.
The arithmetic mean represents the arithmetic average of all samples results, with one-half the sample quantitation limit (SQL) used as the value for non-detects.
NA = not applicable (analysis not previously performed in this area or OHM not previously detected)
M = maximum concentration used as the EPC
A = average concentration used as the EPC

Table 13
Risk Summary Table - Planned Redevelopment Scenario

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Exposure Scenario	Exposure Point	Medium	Exposure Route		HI	ELCR
Redevelopment						
Adolescent Trespasser (ages 7 to 16)	Area 8 Hot Spot (Hot EP1)	Soil	Ingestion/Dermal		0.00004	3E-10
				Total	0.00004	3E-10
	SWMU-33/BS-016 Hot Spot (Hot EP3)	Soil	Ingestion/Dermal		0.0001	6E-10
				Total	0.0001	6E-10
	BS-004 Hot Spot (Hot EP4)	Soil	Ingestion/Dermal		0.00007	4E-10
				Total	0.00007	4E-10
	A8CW-1 Hot Spot (Hot EP5)	Soil	Ingestion/Dermal		0.0002	9E-08
				Total	0.0002	9E-08
	BS-015 Hot Spot (Hot EP6)	Soil	Ingestion/Dermal		0.00005	7E-10
				Total	0.00005	7E-10
	SS NHS (Non-Hot EP1)	Soil	Ingestion/Dermal		0.002	4E-08
				Total	0.002	4E-08
	Distribution System	Drinking Water	Ingestion/Dermal		0.5	0E+00
				Total	0.5	0E+00
	All Ditches*	Surface Water	Ingestion/Dermal		0.04	6E-08
				Total	0.04	6E-08
			Total Risk for Receptor		**0.5**	**2E-07**

Table 13
Risk Summary Table - Planned Redevelopment Scenario

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Exposure Scenario	Exposure Point	Medium	Exposure Route	HI	ELCR
Construction Worker					
	SWMU-26 Hot Spot (Hot EP2)	Soil	Ingestion/Dermal	0.0000007	1E-12
			Particulate Inhalation	0.00000003	4E-16
			Total	0.0000007	1E-12
	BH-26 Hot Spot (Hot EP 7)	Soil	Ingestion/Dermal	0.002	3E-09
			Particulate Inhalation	0.0001	2E-12
			Total	0.002	3E-09
	Plant B Area Hot Spot (Hot EP 8)	Soil	Ingestion/Dermal	0.0008	8E-10
			Particulate Inhalation	0.00007	1E-12
			Total	0.0009	8E-10
	Lake Poly Region Hot Spot (Hot EP 9)	Soil	Ingestion/Dermal	0.04	3E-08
			Particulate Inhalation	0.008	9E-11
			Total	0.05	3E-08
	SWMU-26 Area Hot Spot (Hot EP 10)	Soil	Ingestion/Dermal	0.001	5E-14
			Particulate Inhalation	0.0002	2E-12
			Total	0.0012	2E-12
	BH-15 Hot Spot (Hot EP 11)	Soil	Ingestion/Dermal	0.0004	0E+00
			Particulate Inhalation	0.00008	4E-13
			Soil Vapor Inhalation	0.02	2E-10
			Total	0.02048	2E-10
	Warehouse 2 Hot Spot (Hot EP 12)	Soil	Ingestion/Dermal	0.001	0E+00
			Particulate Inhalation	0.00007	6E-13
			Total	0.001	6E-13
	Lake Poly 1 Hot Spot	Soil	Soil Vapor Inhalation	0.0	0E+00
			Total	0.0	0E+00
	SS/SB NHS (Non-Hot EP 2)	Soil	Ingestion/Dermal	1	5E-07
			Particulate Inhalation	0.01	3E-09
	SS/SB NHS (all redevelopment area except BH-15 and Lake Poly 1)		Soil Vapor Inhalation	0.09	3E-09
			Total	1	5E-07
			Total Risk for Receptor	**1**	**5E-07**

Table 13
Risk Summary Table - Planned Redevelopment Scenario

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Exposure Scenario	Exposure Point	Medium	Exposure Route		HI	ELCR
Offsite Downwind Resident (ages 0 to 6)	SWMU-26 Hot Spot (Hot EP 2)	Soil	Particulate Inhalation		0.00000003	4E-16
				Total	0.00000003	4E-16
	BH-26 Hot Spot (Hot EP 7)	Soil	Particulate Inhalation		0.0003	8E-12
				Total	0.0003	8E-12
	Plant B Area Hot Spot (Hot EP 8)	Soil	Particulate Inhalation		0.0002	4E-12
				Total	0.0002	4E-12
	Lake Poly Region Hot Spot (Hot EP 9)	Soil	Particulate Inhalation		0.03	3E-10
				Total	0.03	3E-10
	SWMU-26 Area Hot Spot (Hot EP 10)	Soil	Particulate Inhalation		0.0008	6E-12
				Total	0.0008	6E-12
	BH-15 Hot Spot (Hot EP 11)	Soil	Particulate Inhalation		0.0003	1E-12
			Soil Vapor Inhalation		0.02	3E-10
				Total	0.02	3E-10
	Warehouse 2 Hot Spot (Hot EP 12)	Soil	Particulate Inhalation		0.0002	2E-12
				Total	0.0002	2E-12
	Lake Poly 1 Hot Spot	Soil	Soil Vapor Inhalation		0.0	0E+00
				Total	0.0	0E+00
	SS/SB NHS (Non-Hot EP 2)	Soil	Particulate Inhalation		0.04	1E-08
	SS/SB NHS (all redevelopment area except BH-15 and Lake Poly 1)	Soil	Soil Vapor Inhalation		0.2	3E-07
				Total	0.2	3E-07
	Distribution System	Drinking Water	Ingestion/Dermal		0.5	0E+00
				Total	0.5	0E+00
			Total Risk for Receptor		**0.8**	**3E-07**

Table 13
Risk Summary Table - Planned Redevelopment Scenario

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Exposure Scenario	Exposure Point	Medium	Exposure Route	HI	ELCR
Utility Worker					
Worst Case Scenario	Surface and Subsurface Soil	Soil	Ingestion/Dermal	0.006	0E+00
	Maximum PAC concentration / Hexavalent Chromium		Particulate Inhalation	0.0000003	0E+00
			Total	0.006	0E+00
			Total Risk for Receptor	**0.006**	**0E+00**
Building Occupant					
Worst Case Scenario	Soil beneath and within 30 feet of building	Soil	Vapor Inhalation	0.09	7E-07
			Total	0.09	7E-07
	Groundwater beneath and within 30 feet of building	Groundwater	Vapor Inhalation	0.2	9E-10
			Total	0.2	9E-10
	Distribution System	Drinking Water	Ingestion/Dermal	0.2	0E+00
			Total	0.2	0E+00
			Total Risk for Receptor	**0.5**	**7E-07**

Notes:
* The 1997 values for the cancer risk and hazard index for ingestion/dermal contact of surface water in all ditches for a neighborhood resident (ages 7 to 16) were used for the current adolescent trespasser for the same exposure point and pathway (See ABB-ES, 1997).

Shading indicates that risks may have changed given the new Lake Poly data and excavation of LPB-1.

Table 14
Risk Summary Table - Unspecified Future Land Use

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Exposure Scenario	Exposure Point	Medium	Exposure Route		HI	ELCR
Unspecified Future Land Use						
Adolescent Trespasser						
	Area 8 Hot Spot (Hot EP1)	Soil	Ingestion/Dermal		0.00002	1E-10
				Total	0.00002	1E-10
	SWMU-26 Hot Spot (Hot EP2)	Soil	Ingestion/Dermal		0.0000002	4E-12
				Total	0.0000002	4E-12
	SWMU-33/BS-016 Hot Spot (Hot EP 3)	Soil	Ingestion/Dermal		0.00006	3E-10
				Total	0.00006	3E-10
	BS-004 Hot Spot (Hot EP 4)	Soil	Ingestion/Dermal		0.00003	2E-10
				Total	0.00003	2E-10
	A8CW-1 Hot Spot (Hot EP 5)	Soil	Ingestion/Dermal		0.00009	4E-08
				Total	0.00009	4E-08
	BS-015 Hot Spot (Hot EP 6)	Soil	Ingestion/Dermal		0.000009	1E-10
				Total	0.000009	1E-10
	E1.45 (1.5 ft) Sample Hot Spot (Hot EP 13)	Soil	Ingestion/Dermal		0.00002	0E+00
				Total	0.00002	0E+00
	LakePoly-1 Sample Hot Spot (Hot EP 14)	Soil	Ingestion/Dermal		0.000001	6E-11
				Total	0.000001	6E-11
	SSNHS (Non-Hot EP 3)	Soil	Ingestion/Dermal		0.02	4E-07
				Total	0.02	4E-07
	Distribution System	Drinking Water	Ingestion/Dermal		0.5	0E+00
				Total	0.5	0E+00
	All Ditches*	Surface Water	Ingestion/Dermal		0.04	6E-08
				Total	0.04	6E-08
			Total Risk for Receptor		0.6	8E-07

Table 14
Risk Summary Table - Unspecified Future Land Use

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Exposure Scenario	Exposure Point	Medium	Exposure Route	HI	ELCR
Construction Worker					
	Area 8 Hot Spot (Hot EP 1)	Soil	Ingestion/Dermal	0.00006	2E-11
			Particulate Inhalation	0.000003	1E-13
			Total	0.00006	2E-11
	SWMU-26 Hot Spot (Hot EP 2)	Soil	Ingestion/Dermal	0.0000004	9E-13
			Particulate Inhalation	0.000000005	8E-17
			Total	0.0000004	9E-13
	SWMU-33/BS-016 Hot Spot (Hot EP 3)	Soil	Ingestion/Dermal	0.0002	5E-11
			Particulate Inhalation	0.000003	3E-13
			Total	0.0002	5E-11
	BS-004 Hot Spot (Hot EP 4)	Soil	Ingestion/Dermal	0.0001	3E-11
			Particulate Inhalation	0.000003	9E-14
			Total	0 0001	3E-11
	A8CW-1 Hot Spot (Hot EP 5)	Soil	Ingestion/Dermal	0.0002	8E-09
			Particulate Inhalation	0.000001	4E-12
			Total	0.0002	8E-09
	BS-015 Hot Spot (Hot EP 6)	Soil	Ingestion/Dermal	0 00004	3E-11
			Particulate Inhalation	0.000001	7E-14
			Total	0 00004	3E-11
	BH-26 Hot Spot (Hot EP 7)	Soil	Ingestion/Dermal	0 001	2E-09
			Particulate Inhalation	0.00006	1E-12
			Total	0.001	2E-09
	Plant B Area Hot Spot (Hot EP 8)	Soil	Ingestion/Dermal	0.0005	5E-10
			Particulate Inhalation	0.00004	7E-13
			Total	0.0005	5E-10
	Lake Poly Region Hot Spot (Hot EP 9)	Soil	Ingestion/Dermal	0.02	2E-08
			Particulate Inhalation	0.005	5E-11
			Total	0.03	2E-08
	SWMU-26 Area Hot Spot (Hot EP 10)	Soil	Ingestion/Dermal	0 0008	3E-14
			Particulate Inhalation	0.0001	1E-12
			Total	0.0009	1E-12
	BH-15 Hot Spot (Hot EP 11)	Soil	Ingestion/Dermal	0.0002	0E+00
			Particulate Inhalation	0 00005	3E-13
			Soil Vapor Inhalation*	0.02	2E-10
			Total	0.02	2E-10
	Warehouse 2 Hot Spot (Hot EP 12)	Soil	Ingestion/Dermal	0.0007	0E+00
			Particulate Inhalation	0.00004	4E-13
			Total	0 0007	4E-13
	Lake Poly 1 Hot Spot	Soil	Soil Vapor Inhalation*	0.0	0E+00
			Total	0.0	0E+00
	SS/SB NHS (Non-Hot EP 4)	Soil	*Ingestion/Dermal*	1	5E-07
			Particulate Inhalation	0 01	3E-09
			Soil Vapor Inhalation*	0.09	3E-09
			Total	1	5E-07
			Total Risk for Receptor	1	5E-07

Table 14
Risk Summary Table - Unspecified Future Land Use

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Exposure Scenario	Exposure Point	Medium	Exposure Route		HI	ELCR
On-Property Worker						
	Area 8 Hot Spot (Hot EP 1)	Soil	Ingestion/Dermal		0.0001	2E-09
			Particulate Inhalation		0.000007	2E-11
				Total	0.0001	2E-09
	SWMU-26 Hot Spot (Hot EP 2)	Soil	Ingestion/Dermal		0.000002	1E-10
			Particulate Inhalation		0.00000001	9E-15
				Total	0.000002	1E-10
	SWMU-33/BS-016 Hot Spot (Hot EP 3)	Soil	Ingestion/Dermal		0.0006	6E-09
	BS-004 Hot Spot (Hot EP 4)	Soil	Ingestion/Dermal		0.0003	4E-11
			Particulate Inhalation		0.000008	6E-09
				Total	0.0003	
						4E-09
			Particulate Inhalation		0.000008	1E-11
				Total	0.0000	4E-09
	ABCW-1 Hot Spot (Hot EP 5)	Soil	Ingestion/Dermal		0.0009	9E-07
			Particulate Inhalation		0.000003	5E-10
				Total	0.0009	9E-07
	BS-015 Hot Spot (Hot EP 6)	Soil	Ingestion/Dermal		0.00008	3E-09
			Particulate Inhalation		0.000002	9E-12
				Total	0.0001	3E-09
	E1.45 (1.5 ft) Sample Hot Spot (Hot EP 13)	Soil	Ingestion/Dermal		0.0002	0E+00
			Particulate Inhalation		0.0000004	0E+00
				Total	0.0002	0E+00
	LakePoly-1 Sample Hot Spot (Hot EP 14)	Soil	Ingestion/Dermal		0.00001	1E-09
			Particulate Inhalation		0.000004	3E-12
				Total	0.000014	1E-09
	SSNHS (Non-Hot EP3)	Soil	Ingestion/Dermal		0.1	1E-05
			Particulate Inhalation		0.0007	4E-09
				Total	0.1	1E-05
	Soil beneath and within 30 feet of building	Soil	Vapor Inhalation		0.3	7E-07
				Total	0.3	7E-07
	Groundwater beneath and within 30 feet of building	Groundwater	Vapor Inhalation		0.07	9E-10
				Total	0.07	9E-10
	Distribution System	Drinking Water	Ingestion/Dermal		0.2	0E+00
				Total	0.2	0E+00
				Total Risk for Receptor	**0.7**	**1E-05**

Notes:
* The 1997 values for the cancer risk and hazard index for ingestion/dermal contact of surface water in all ditches for a neighborhood resident (ages 7 to 16) were used for the current adolescent trespasser for the same exposure point and pathway (See ABB-ES, 1997).
** Soil Vapor Inhalation risks calculated for the construction worker under the planned redevelopment scenario are provided here. It's assumed that a different construction scenario would not result in any greater risk than those calculated for the planned redevelopment scenario

Shading indicates that risks may have changed given the new Lake Poly data and excavation of LPB-1.

Table 15
Summary Risk Estimates for the Lake Poly Update vs. the Focused Risk Assessment

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Receptor	FRA Hot EP 9	Revised Hot EP 9	FRA Total Risk	Revised Total Risk
Planned Redevelopment				
Construction Worker	HI = 0.02 ELCR = 3E-08	HI = 0.05 ELCR = 3E-08	HI = 1 ELCR = 5E-07	HI = 1 ELCR = 5E-07
Offsite Downwind Resident	HI = 0.002 ELCR = 8E-11	HI = 0.03 ELCR = 3E-10	HI = 0.9 ELCR = 3E-07	HI = 0.8 ELCR = 3E-07
Unspecified Future				
Construction Worker	HI = 0.01 ELCR = 2E-08	HI = 0.03 ELCR = 2E-08	HI = 1 ELCR = 5E-07	HI = 1 ELCR = 5E-07

Table 16
Soil UCL Comparison for the Lake Poly Hot Spots

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Revised Hot Spot ID	Hot Spot Analyte	Hot Spot Data: Frequency of Detection	Hot Spot Data: Range of SQLs	Hot Spot Data: Range of Detected Concentrations	Hot Spot Data: Arithmetic Mean	Hot Spot EPC [1]	UCL [2]	Does EPC Exceed UCL?
1R	bis(2-Ethylhexyl)phthalate	9 / 9	NA : NA	4.90 - 6700	1215	6700	10000	No
2R	Nitrogen, Ammonia	3 / 3	NA : NA	29000 - 71000	46667	46667	10000 [a]	Yes
3R	N-Nitrosodiphenylamine	11 / 11	NA : NA	3.0 - 3400	458	3400	7300 [a]	No
4R	2,4,4-Trimethyl-1-pentene	6 / 7	0.011 : 0.011	0.006 - 103	22.9	103	1000	No
4R	2,4,4-Trimethyl-2-Pentene	6 / 7	0.011 : 0.011	0.002 - 58	16.7	58.0	1000	No

Notes:
[1] EPCs obtained from the appropriate hot spot EPC table.
[2] UCL = Upper Concentration Limit in Soil (310 CMR 40.0996)
[a] For any OHM not listed in 310 CMR 40.0996, the UCL is developed per 40.0984 (see Appendix J to the FRA [HLA, 2000]).

Table 17
Groundwater UCL Comparison for the New Lake Poly Data

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

OHM of Concern	Hot Spot Data: Frequency of Detection	Hot Spot Data: Range of SQLs	Hot Spot Data: Range of Detected Concentrations	Hot Spot Data: Arithmetic Mean	UCL [1]	Does Maximum Concentration Exceed UCL?
Volatile Organics (mg/L)						
1,2-Dichlorobenzene	1 / 4	0.0010 : 0.010	0.0030 - 0.0030	0.0023	100	No
1,3-Dichlorobenzene	1 / 4	0.0010 : 0.010	0.00055 - 0.00055	0.0016	100	No
1,4-Dichlorobenzene	2 / 4	0.0010 : 0.010	0.00064 - 0.0031	0.0023	100	No
2,4,4-Trimethyl-1-pentene	3 / 4	0.0010 : 0.0010	0.022 - 0.52	0.14	10 [a]	No
2,4,4-Trimethyl-2-Pentene	3 / 4	0.0010 : 0.0010	0.0065 - 0.1	0.030	10 [a]	No
Benzene	1 / 4	0.0010 : 0.010	0.0031 - 0.0031	0.0023	10 [a]	No
Chloromethane (Methyl Chloride)	1 / 4	0.0020 : 0.020	0.0014 - 0.0014	0.0034	10 [a]	No
Ethylbenzene	1 / 4	0.0010 : 0.010	0.0034 - 0.0034	0.0024	100	No
m,p-Xylene	1 / 4	0.0010 : 0.010	0.0014 - 0.0014	0.0019	100	No
p-Isopropyl Toluene	1 / 4	0.0010 : 0.010	0.0011 - 0.0011	0.0018	10 [a]	No
Toluene	1 / 4	0.0010 : 0.010	0.0017 - 0.0017	0.0019	100	No
Semivolatile Organics (mg/L)		:	-			
N-Nitrosodiphenylamine	2 / 4	0.010 : 0.010	0.15 - 1	0.29	100	No
Pesticides (mg/L)						
Alpha-BHC	2 / 7	0.00005 : 0.00005	0.00026 - 0.00032	0.00010	10 [a]	No
Methoxychlor	1 / 7	0.00005 : 0.00005	0.00030 - 0.00030	0.000064	0.4	No
Inorganics (mg/L)		:	-			
Barium, Total	3 / 4	0.010 : 0.010	0.027 - 0.054	0.029	100	No
Chromium, Total	2 / 4	0.010 : 0.010	0.048 - 0.092	0.038	20	No
Nitrogen, Ammonia	3 / 4	0.10 0.10	8.8 28	13	100	No
Site Specific Compounds (mg/L)		:	-			
Kempore (Azodicarbonamide)	1 / 4	0.20 : 4.0	3.5 - 3.5	1.4	10 [a]	No

Notes:

[1] UCL = Upper Concentration Limit in Soil (310 CMR 40.0996)

[a] For any OHM not listed in 310 CMR 40.0996, the UCL is developed per 40.0984 (see Appendix J to the FRA [HLA, 2000]).

APPENDIX A

SOIL ANALYTICAL RESULTS FOR THE LAKE POLY AREA

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean	1160-LPB-01 1160-LPB1-S1 0.0-4.0 7/11/2001	1160-LPB-01 1160-LPB1-S2 4.0-8.0 7/11/2001
Volatile Organics (mg/kg)						
1,1,1-Trichloroethane (TCA)	3 / 34	0.0055 : 0.66	0.003 - 0.011	4.40E-02		
1,1-Dichloroethane	1 / 34	0.005 : 0.66	0.001 - 0.001	4.35E-02		
1,2,3-Trichlorobenzene	2 / 21	0.009 : 0.66	0.44 - 1.2	1.40E-01		
1,2,4-Trichlorobenzene	1 / 36	0.009 : 37	0.088 - 0.088	6.71E-01		
1,2,4-Trimethylbenzene	2 / 21	0.082 : 0.66	0.025 - 0.39	8.50E-02		
1,2-Dichlorobenzene	3 / 36	0.009 : 37	0.16 - 5.9	8.38E-01		
1,2-Dichloroethane	2 / 34	0.005 : 0.66	0.001 - 0.002	4.35E-02		
1,3,5-Trimethylbenzene	1 / 21	0.009 : 0.66	0.11 - 0.11	7.07E-02		
1,3-Dichlorobenzene	1 / 36	0.009 : 37	0.74 - 0.74	6.98E-01		
1,4-Dichlorobenzene	3 / 36	0.009 : 37	0.23 - 8.6	9.18E-01		
2,4,4-Trimethyl-1-pentene	14 / 33	0.005 : 0.13	0.006 - 103	5.03E+00		
2,4,4-Trimethyl-2-Pentene	12 / 33	0.005 : 0.13	0.002 - 58	3.68E+00		
2-Butanone (MEK)	5 / 34	0.011 : 13	0.004 - 0.084	8.43E-01		
2-Hexanone	1 / 34	0.011 : 2.7	0.007 - 0.007	1.73E-01		
Acetone	7 / 34	0.016 : 13	0.018 - 0.24	8.56E-01		
Benzene	4 / 34	0.005 : 0.66	0.001 - 0.012	4.33E-02		
Benzoic Acid	2 / 32	1.7 : 400	0.039 - 0.13	1.75E+01		
Carbon Disulfide	2 / 13	0.005 : 0.07	0.005 - 0.013	7.73E-03		
Chloroform	1 / 34	0.005 : 0.66	0.001 - 0.001	4.35E-02		
Ethylbenzene	5 / 34	0.005 : 0.66	0.011 - 6.7	2.61E-01		
m,p-Xylene	1 / 19	0.082 : 0.15	0.2 - 0.2	6.53E-02		
Methylene Chloride	3 / 34	0.005 : 0.66	0.002 - 0.004	7.69E-02		
p-Isopropyl Toluene	3 / 21	0.009 : 0.66	0.46 - 5.2	3.55E-01		
Styrene	5 / 34	0.005 : 0.66	0.001 - 0.004	4.35E-02		
Tetrachloroethene (PCE)	1 / 34	0.005 : 0.66	0.0093 - 0.0093	4.37E-02		
Toluene	11 / 34	0.005 : 0.66	0.0006 - 0.19	5.18E-02		
Trichloroethene (TCE)	1 / 34	0.005 : 0.66	0.01 - 0.01	4.33E-02		
Xylenes, Total	5 / 32	0.005 : 0.3	0.002 - 4.6	2.13E-01		
Semivolatile Organics (mg/kg)						
2-Methylnaphthalene	1 / 34	0.35 : 37	0.063 - 0.063	1.40E+00		
4-Chlorophenyl-phenylether	1 / 34	0.35 : 79	0.17 - 0.17	3.33E+00		
Acenaphthylene	1 / 34	0.35 : 37	0.027 - 0.027	8.63E-01		

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean	1160-LPB-01 1160-LPB1-S1 0.0-4.0 7/11/2001	1160-LPB-01 1160-LPB1-S2 4.0-8.0 7/11/2001
Anthracene	2 / 34	0.35 : 37	0.002 - 0.041	8.57E-01		
Benzo(a)anthracene	5 / 34	0.36 : 37	0.008 - 0.13	8.36E-01		
Benzo(b)fluoranthene	6 / 34	0.36 : 37	0.01 - 0.2	8.28E-01		
Benzo(g,h,i)perylene	1 / 34	0.35 : 37	0.66 - 0.66	8.81E-01		
Benzo(k)fluoranthene	3 / 34	0.36 : 37	0.006 - 0.17	8.57E-01		
bis(2-EthylHexyl)phthalate	28 / 31	0.36 : 0.92	0.18 - 6700	3.68E+02		
Butylbenzylphthalate	8 / 34	0.35 : 79	0.029 - 4.5	3.50E+00		
Chrysene	5 / 34	0.36 : 37	0.012 - 0.16	8.39E-01		
Dibenzofuran	3 / 34	0.35 : 79	0.016 - 0.11	3.32E+00		
Diethylphthalate	3 / 34	0.35 : 79	0.01 - 0.057	3.32E+00		
Di-n-butylphthalate	7 / 34	0.36 : 79	0.009 - 32	4.00E+00		
Di-n-octylphthalate	6 / 34	0.35 : 79	0.059 - 0.38	3.30E+00		
Fluoranthene	7 / 34	0.36 : 37	0.015 - 5.7	9.93E-01		
Fluorene	1 / 34	0.35 : 37	0.02 - 0.02	8.63E-01		
Indeno (1,2,3-cd) pyrene	1 / 34	0.35 : 37	10 - 10	1.16E+00		
Naphthalene	3 / 36	0.09 : 37	0.013 - 0.16	8.19E-01		
N-Nitrosodiphenylamine	15 / 34	0.35 : 15	0.075 - 3400	1.49E+02		
Phenanthrene	6 / 34	0.35 : 37	0.011 - 0.64	8.48E-01		
Phenol	2 / 34	0.35 : 79	0.055 - 0.25	3.32E+00		
Pyrene	8 / 34	0.36 : 37	0.015 - 0.3	8.20E-01		
Pesticides/PCBs (mg/kg)						
4,4'-DDD	2 / 31	0.0035 : 0.08	0.0012 - 0.04	1.43E-02		
4,4'-DDE	2 / 31	0.0035 : 0.08	0.0018 - 0.002	1.36E-02		
4,4'-DDT	3 / 31	0.0099 : 0.08	0.0023 - 0.015	1.44E-02		
Aldrin	1 / 31	0.0018 : 0.08	0.032 - 0.032	1.16E-02		
Alpha-BHC	1 / 31	0.0018 : 0.08	0.024 - 0.024	1.14E-02		
Alpha-Chlordane	2 / 12	0.0018 : 0.22	0.00023 - 0.0034	6.45E-02		
Endosulfan Sulfate	1 / 31	0.0035 : 0.08	0.15 - 0.15	1.78E-02		
Endrin	2 / 31	0.0035 : 0.08	0.0004 - 0.089	1.58E-02		
Endrin Aldehyde	1 / 23	0.0035 : 0.08	0.0006 - 0.0006	1.16E-02		
Gamma-BHC (Lindane)	1 / 31	0.0019 : 0.08	0.00036 - 0.00036	1.09E-02		
Gamma-Chlordane	2 / 12	0.0018 : 0.22	0.00029 - 0.0012	6.43E-02		
Inorganics (mg/kg)						

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean	1160-LPB-01 1160-LPB1-S1 0.0-4.0 7/11/2001	1160-LPB-01 1160-LPB1-S2 4.0-8.0 7/11/2001
Aluminum, Total	15 / 15	:	2500 - 8340	5.39E+03		
Antimony, Total	2 / 15	0.5 : 20	1.2 - 41	7.73E+00		
Arsenic, Total	14 / 34	2 : 18	2.3 - 12	4.75E+00		
Barium, Total	21 / 22	11 : 11	2.8 - 640	4.89E+01		
Beryllium, Total	3 / 15	0.2 : 1.5	0.2 - 0.26	4.97E-01		
Cadmium, Total	1 / 34	0.18 : 4	1 - 1	6.78E-01		
Calcium, Total	15 / 15	:	170 - 1400	6.74E+02		
Chromium, Total	112 / 113	11 : 11	5.9 - 7900	6.95E+02	32	21
Cobalt, Total	12 / 15	1.5 : 3	1.5 - 4.4	2.31E+00		
Copper, Total	14 / 15	2.5 : 2.5	3.4 - 20	8.17E+00		
Hexavalent Chromium, Total	16 / 16	:	0.41 - 19.9	5.69E+00		
Iron, Total	15 / 15	:	580 - 9900	6.51E+03		
Lead, Total	15 / 34	5 : 13	4.8 - 183	1.41E+01		
Magnesium, Total	15 / 15	:	210 - 3400	1.46E+03		
Manganese, Total	15 / 15	:	8.7 - 100	5.93E+01		
Mercury, Total	9 / 22	0.04 : 0.12	0.06 - 7	4.21E-01		
Nickel, Total	11 / 15	4 : 4	4.1 - 8.6	5.35E+00		
Potassium, Total	15 / 15	:	130 - 1300	5.84E+02		
Sodium, Total	15 / 15	:	39 - 440	1.30E+02		
Thallium, Total	2 / 15	0.5 : 2	1.6 - 2.2	5.87E-01		
Vanadium, Total	15 / 15	:	2.6 - 24	1.17E+01		
Zinc, Total	15 / 15	:	3.2 - 75.5	2.69E+01		
Chloride	3 / 11	40 : 40	26.1 - 130	3.76E+01		
Cyanide	3 / 8	2 : 2	2.3 - 5.4	1.88E+00		
Nitrogen, Ammonia	37 / 37	:	10 - 71000	3.95E+03		
Sulfate as SO4	6 / 14	20 : 110	6.8 - 110	4.48E+01		
Total Organic Carbon (TOC)	10 / 10	:	2370 - 13600	6.47E+03		
Extractable Petroleum Hydrocarbons (mg/kg)						
C11-C22 Aromatics (FID)	16 / 19	3.6 : 3.7	5.2 - 5100	4.84E+02		
C11-C22 Aromatics, Unadjusted	16 / 19	3.6 : 3.7	5.2 - 5100	5.31E+02		
C19-C36 Aliphatics (PID)	12 / 19	3.6 : 4.2	6.5 - 3200	3.07E+02		
C9-C18 Aliphatics (FID)	8 / 19	3.6 : 4.2	5.5 - 1100	9.55E+01		
EPH Concentration (Total)	16 / 19	3.6 : 3.7	5.2 - 9300	9.11E+02		

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	Frequency of Detection	Range of SQLs	Range of Detected Concentrations	Arithmetic Mean	1160-LPB-01 1160-LPB1-S1 0.0-4.0 7/11/2001	1160-LPB-01 1160-LPB1-S2 4.0-8.0 7/11/2001
Volatile Petroleum Hydrocarbons (mg/kg)						
C5-C8 Aliphatics (FID)	5 / 19	1.8 : 2.7	4.9 - 88	9.63E+00		
C5-C8 Aliphatics, Unadjusted	5 / 19	1.8 : 2.7	4.9 - 88	9.63E+00		
C9-C10 Aromatics (PID)	3 / 19	1.8 : 8.2	12 - 45	4.92E+00		
C9-C12 Aliphatics (FID)	4 / 19	1.8 : 8.2	2.7 - 46	4.79E+00		
C9-C12 Aliphatics, Unadjusted	5 / 19	1.8 : 2.7	2.7 - 91	9.37E+00		
VPH Concentration (Total)	5 / 19	1.8 : 2.7	7.6 - 130	1.69E+01		

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-02 1160-LPB2-S1 0.0-6.0 7/11/2001	1160-LPB-02 1160-LPB2-S2 6.0-8.0 7/11/2001	1160-LPB-03 1160-LPB3-S1 0.0-2.5 7/9/2001	1160-LPB-03 1160-LPB3-S2 2.5-6.0 7/9/2001	1160-LPB-03 1160-LPB3-S3 6.0-6.5 7/9/2001	1160-LPB-04 1160-LPB4-S1 0.0-1.0 7/10/2001	1160-LPB-04 1160-LPB4-S2 1.0-4.0 7/10/2001	1160-LPB-04 1160-LPB4-S3 4.0-6.0 7/10/2001
olatile Organics (mg/kg)								
,1,1-Trichloroethane (TCA)								
,1-Dichloroethane								
,2,3-Trichlorobenzene								
,2,4-Trichlorobenzene								
,2,4-Trimethylbenzene								
2-Dichlorobenzene								
2-Dichloroethane								
,3,5-Trimethylbenzene								
,3-Dichlorobenzene								
,4-Dichlorobenzene								
,4,4-Trimethyl-1-pentene								
4,4-Trimethyl-2-Pentene								
-Butanone (MEK)								
Hexanone								
cetone								
enzene								
enzoic Acid								
arbon Disulfide								
hloroform								
thylbenzene								
,p-Xylene								
ethylene Chloride								
Isopropyl Toluene								
tyrene								
etrachloroethene (PCE)								
oluene								
ichloroethene (TCE)								
ylenes, Total								
emivolatile Organics (mg/kg)								
Methylnaphthalene								
Chlorophenyl-phenylether								
cenaphthylene								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-02 1160-LPB2-S1 0.0-6.0 7/11/2001	1160-LPB-02 1160-LPB2-S2 6.0-8.0 7/11/2001	1160-LPB-03 1160-LPB3-S1 0.0-2.5 7/9/2001	1160-LPB-03 1160-LPB3-S2 2.5-6.0 7/9/2001	1160-LPB-03 1160-LPB3-S3 6.0-6.5 7/9/2001	1160-LPB-04 1160-LPB4-S1 0.0-1.0 7/10/2001	1160-LPB-04 1160-LPB4-S2 1.0-4.0 7/10/2001	1160-LPB-04 1160-LPB4-S3 4.0-6.0 7/10/2001
nthracene								
enzo(a)anthracene								
enzo(b)fluoranthene								
enzo(g,h,i)perylene								
enzo(k)fluoranthene								
is(2-EthylHexyl)phthalate								
utylbenzylphthalate								
hrysene								
ibenzofuran								
iethylphthalate								
i-n-butylphthalate								
i-n-octylphthalate								
luoranthene								
luorene								
deno (1,2,3-cd) pyrene								
aphthalene								
-Nitrosodiphenylamine								
henanthrene								
henol								
yrene								
esticides/PCBs (mg/kg)								
4'-DDD								
4'-DDE								
4'-DDT								
drin								
pha-BHC								
pha-Chlordane								
ndosulfan Sulfate								
ndrin								
ndrin Aldehyde								
amma-BHC (Lindane)								
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-02 1160-LPB2-S1 0.0-6.0 7/11/2001	1160-LPB-02 1160-LPB2-S2 6.0-8.0 7/11/2001	1160-LPB-03 1160-LPB3-S1 0.0-2.5 7/9/2001	1160-LPB-03 1160-LPB3-S2 2.5-6.0 7/9/2001	1160-LPB-03 1160-LPB3-S3 6.0-6.5 7/9/2001	1160-LPB-04 1160-LPB4-S1 0.0-1.0 7/10/2001	1160-LPB-04 1160-LPB4-S2 1.0-4.0 7/10/2001	1160-LPB-04 1160-LPB4-S3 4.0-6.0 7/10/2001
luminum, Total								
ntimony, Total								
rsenic, Total								
arium, Total								
eryllium, Total								
admium, Total								
alcium, Total								
hromium, Total	130	580	78	19	12	27	14	32
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total								
agnesium, Total								
anganese, Total								
ercury, Total								
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
inc, Total								
hloride								
yanide								
itrogen, Ammonia								
ulfate as SO4								
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)								
11-C22 Aromatics, Unadjusted								
19-C36 Aliphatics (PID)								
9-C18 Aliphatics (FID)								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-02 1160-LPB2-S1 0.0-6.0 7/11/2001	1160-LPB-02 1160-LPB2-S2 6.0-8.0 7/11/2001	1160-LPB-03 1160-LPB3-S1 0.0-2.5 7/9/2001	1160-LPB-03 1160-LPB3-S2 2.5-6.0 7/9/2001	1160-LPB-03 1160-LPB3-S3 6.0-8.5 7/9/2001	1160-LPB-04 1160-LPB4-S1 0.0-1.0 7/10/2001	1160-LPB-04 1160-LPB4-S2 1.0-4.0 7/10/2001	1160-LPB-04 1160-LPB4-S3 4.0-6.0 7/10/2001
/olatile Petroleum Hydrocarbons (mg/kg)								
:5-C8 Aliphatics (FID)								
:5-C8 Aliphatics, Unadjusted								
:9-C10 Aromatics (PID)								
:9-C12 Aliphatics (FID)								
:9-C12 Aliphatics, Unadjusted								
/PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-05 1160-LPB5-S1 0.0-2.5 7/10/2001	1160-LPB-05 1160-LPB5-S2 2.5-8.0 7/10/2001	1160-LPB-06 1160-LPB6-S1 0.0-1.0 7/10/2001	1160-LPB-06 1160-LPB6-S2 1.0-8.0 7/10/2001	1160-LPB-07 1160-LPB7-S1 0.0-3.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/11/2001	1160-LPB-08 1160-LPB8-S1 0.0-5.0 7/10/2001
olatile Organics (mg/kg)								
,1,1-Trichloroethane (TCA)	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,1-Dichloroethane	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,2,3-Trichlorobenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,2,4-Trichlorobenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,2,4-Trimethylbenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,2-Dichlorobenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,2-Dichloroethane	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,3,5-Trimethylbenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,3-Dichlorobenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,4-Dichlorobenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,4,4-Trimethyl-1-pentene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,4,4-Trimethyl-2-Pentene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
Butanone (MEK)	< 2	< 2.3			< 2.3	< 1.8		< 2.4
Hexanone	< 0.4	< 0.46			< 0.45	< 0.36		< 0.47
cetone	< 2	< 2.3			< 2.3	< 1.8		< 2.4
enzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
enzoic Acid	< 1.8	< 1.8			< 1.8		< 1.8	< 1.8
arbon Disulfide								
hloroform	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
thylbenzene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
,p-Xylene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
ethylene Chloride	< 0.2	< 0.23			< 0.23	< 0.18		< 0.24
Isopropyl Toluene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
yrene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
etrachloroethene (PCE)	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
oluene	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
ichloroethene (TCE)	< 0.099	< 0.11			< 0.11	< 0.09		< 0.12
ylenes, Total	< 0.2	< 0.2			< 0.2	< 0.2		< 0.2
emivolatile Organics (mg/kg)								
Methylnaphthalene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
Chlorophenyl-phenylether	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
enaphthylene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-05 1160-LPB5-S1 0.0-2.5 7/10/2001	1160-LPB-05 1160-LPB5-S2 2.5-8.0 7/10/2001	1160-LPB-06 1160-LPB6-S1 0.0-1.0 7/10/2001	1160-LPB-06 1160-LPB6-S2 1.0-8.0 7/10/2001	1160-LPB-07 1160-LPB7-S1 0.0-3.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/11/2001	1160-LPB-08 1160-LPB8-S1 0.0-5.0 7/10/2001
nthracene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
enzo(a)anthracene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
enzo(b)fluoranthene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
enzo(g,h,i)perylene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
enzo(k)fluoranthene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
s(2-EthylHexyl)phthalate		< 0.36						0.53
utylbenzylphthalate	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
hrysene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
ibenzofuran	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
iethylphthalate	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
i-n-butylphthalate	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
i-n-octylphthalate	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
luoranthene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
luorene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
deno (1,2,3-cd) pyrene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
aphthalene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
-Nitrosodiphenylamine	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
henanthrene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
henol	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
yrene	< 0.36	< 0.36			< 0.36		< 0.37	< 0.36
esticides/PCBs (mg/kg)								
4'-DDD	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
4'-DDE	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
4'-DDT	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
drin	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
pha-BHC	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
pha-Chlordane								
dosulfan Sulfate	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
drin	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
drin Aldehyde	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
amma-BHC (Lindane)	< 0.011	< 0.0099			< 0.01		< 0.011	< 0.01
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-05 1160-LPB5-S1 0.0-2.5 7/10/2001	1160-LPB-05 1160-LPB5-S2 2.5-8.0 7/10/2001	1160-LPB-06 1160-LPB6-S1 0.0-1.0 7/10/2001	1160-LPB-06 1160-LPB6-S2 1.0-3.0 7/10/2001	1160-LPB-07 1160-LPB7-S1 0.0-3.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-5.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-5.0 7/10/2001	1160-LPB-08 1160-LPB8-S1 0.0-3.0 7/10/2001
luminum, Total								
ntimony, Total								
rsenic, Total	< 11	< 11			< 6		12	< 5
arium, Total		< 11						
eryllium, Total								
admium, Total	< 2	< 2			< 1		< 1	< 1
alcium, Total								
hromium, Total	140	< 11	11	720	14	480		17
obalt, Total								
opper, Total								
'exavalent Chromium, Total								
on, Total								
ead, Total	< 11	< 11			< 6		< 6	< 5
lagnesium, Total								
'anganese, Total								
'ercury, Total		< 0.04						
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
nc, Total								
hloride								
yanide								
trogen, Ammonia	11	14			13	10		17
ulfate as SO4								
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)	< 3.6	< 3.6			5.7		< 3.7	17
11-C22 Aromatics, Unadjusted	< 3.6	< 3.6			5.7		< 3.7	17
19-C36 Aliphatics (PID)	< 3.6	< 3.6			< 3.6		< 3.7	10
9-C18 Aliphatics (FID)	< 3.6	< 3.6			< 3.6		< 3.7	< 3.6
PH Concentration (Total)	< 3.6	< 3.6			5.7		< 3.7	27

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-05 1160-LPB5-S1 0.0-2.5 7/10/2001	1160-LPB-05 1160-LPB5-S2 2.5-8.0 7/10/2001	1160-LPB-06 1160-LPB6-S1 0.0-1.0 7/10/2001	1160-LPB-06 1160-LPB6-S2 1.0-8.0 7/10/2001	1160-LPB-07 1160-LPB7-S1 0.0-3.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/10/2001	1160-LPB-07 1160-LPB7-S2 3.0-8.0 7/11/2001	1160-LPB-08 1160-LPB8-S1 0.0-6.0 7/10/2001
/olatile Petroleum Hydrocarbons (mg/kg)								
:5-C8 Aliphatics (FID)	< 2	< 2.3			< 2.3	< 1.8		< 2.4
:5-C8 Aliphatics, Unadjusted	< 2	< 2.3			< 2.3	< 1.8		< 2.4
:9-C10 Aromatics (PID)	< 2	< 2.3			< 2.3	< 1.8		< 2.4
:9-C12 Aliphatics (FID)	< 2	< 2.3			< 2.3	< 1.8		< 2.4
'9-C12 Aliphatics, Unadjusted	< 2	< 2.3			< 2.3	< 1.8		< 2.4
'PH Concentration (Total)	< 2	< 2.3			< 2.3	< 1.8		< 2.4

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-08 1160-LPB8-S2 5.0-7.0 7/10/2001	1160-LPB-08 1160-LPB8-S3 7.0-8.0 7/10/2001	1160-LPB-09 1160-LPB9-S1 0.0-4.5 7/9/2001	1160-LPB-09 1160-LPB9-S2 4.5-6.0 7/9/2001	1160-LPB-09 1160-LPB9-S3 6.0-8.0 7/9/2001	1160-LPB-10 1160-LPB10-S1 0.0-5.5 7/10/2001	1160-LPB-10 1160-LPB10-S2 5.5-7.5 7/10/2001	1160-LPB-10 1160-LPB10-S3 7.5-8.5 7/10/2001
olatile Organics (mg/kg)								
,1,1-Trichloroethane (TCA)	< 0.082					< 0.12	< 0.11	
,1-Dichloroethane	< 0.082					< 0.12	< 0.11	
,2,3-Trichlorobenzene	< 0.082					< 0.12	0.44	
,2,4-Trichlorobenzene	< 0.082					< 0.12	< 0.11	
,2,4-Trimethylbenzene	< 0.082					< 0.12	0.39	
,2-Dichlorobenzene	< 0.082					< 0.12	< 0.11	
,2-Dichloroethane	< 0.082					< 0.12	< 0.11	
,3,5-Trimethylbenzene	< 0.082					< 0.12	0.11	
,3-Dichlorobenzene	< 0.082					< 0.12	< 0.11	
,4-Dichlorobenzene	< 0.082					< 0.12	< 0.11	
,4,4-Trimethyl-1-pentene	20					12	103	
,4,4-Trimethyl-2-Pentene	9.2					3.4	43	
-Butanone (MEK)	< 1.6					< 2.4	< 2.3	
-Hexanone	< 0.33					< 0.49	< 0.46	
cetone	< 1.6					< 2.4	< 2.3	
enzene	< 0.082					< 0.12	< 0.11	
enzoic Acid	< 180					< 18	< 400	
arbon Disulfide								
hloroform	< 0.082					< 0.12	< 0.11	
thylbenzene	6.7					< 0.12	0.72	
,p-Xylene	< 0.082					< 0.12	0.2	
ethylene Chloride	< 0.16					< 0.24	< 0.23	
Isopropyl Toluene	0.46					< 0.12	5.2	
yrene	< 0.082					< 0.12	< 0.11	
etrachloroethene (PCE)	< 0.082					< 0.12	< 0.11	
oluene	0.11					< 0.12	< 0.11	
richloroethene (TCE)	< 0.082					< 0.12	< 0.11	
ylenes, Total	4.6					< 0.2	0.24	
emivolatile Organics (mg/kg)								
Methylnaphthalene	< 37					< 0.4	< 0.8	
Chlorophenyl-phenylether	< 37					< 3.7	< 79	
cenaphthylene	< 0.4					< 0.4	< 0.8	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-08 1160-LPB8-S2 5.0-7.0 7/10/2001	1160-LPB-08 1160-LPB8-S3 7.0-8.0 7/10/2001	1160-LPB-09 1160-LPB9-S1 0.0-4.5 7/9/2001	1160-LPB-09 1160-LPB9-S2 4.5-6.0 7/9/2001	1160-LPB-09 1160-LPB9-S3 6.0-8.0 7/9/2001	1160-LPB-10 1160-LPB10-S1 0.0-5.5 7/10/2001	1160-LPB-10 1160-LPB10-S2 5.5-7.5 7/10/2001	1160-LPB-10 1160-LPB10-S3 7.5-8.5 7/10/2001
nthracene	< 0.4					< 0.4	< 0.8	
enzo(a)anthracene	< 0.4					< 0.4	< 0.8	
enzo(b)fluoranthene	< 0.4					< 0.4	< 0.8	
enzo(g,h,i)perylene	0.66					< 0.4	< 0.8	
enzo(k)fluoranthene	< 0.4					< 0.4	< 0.8	
s(2-EthylHexyl)phthalate	699					54	1218	
utylbenzylphthalate	< 37					< 3.7	< 79	
hrysene	< 0.4					< 0.4	< 0.8	
benzofuran	< 37					< 3.7	< 79	
iethylphthalate	< 37					< 3.7	< 79	
i-n-butylphthalate	< 37					< 3.7	< 79	
-n-octylphthalate	< 37					< 3.7	< 79	
luoranthene	5.7					< 0.4	< 0.8	
luorene	< 0.4					< 0.4	< 0.8	
deno (1,2,3-cd) pyrene	10					< 0.4	< 0.8	
aphthalene	< 0.4					< 0.4	< 0.5	
-Nitrosodiphenylamine	203					4.9	682	
henanthrene	< 0.4					< 0.4	< 0.8	
henol	< 37					< 3.7	< 79	
yrene	< 0.4					< 0.4	< 0.8	
esticides/PCBs (mg/kg)								
4'-DDD	< 0.054					< 0.054	< 0.059	
4'-DDE	< 0.054					< 0.054	< 0.059	
4'-DDT	< 0.054					< 0.054	< 0.059	
ldrin	< 0.054					< 0.054	< 0.059	
pha-BHC	< 0.054					< 0.054	< 0.059	
pha-Chlordane								
ndosulfan Sulfate	< 0.054					< 0.054	< 0.059	
ndrin	< 0.054					< 0.054	< 0.059	
ndrin Aldehyde	< 0.054					< 0.054	< 0.059	
amma-BHC (Lindane)	< 0.054					< 0.054	< 0.059	
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-08 1160-LPB8-S2 5.0-7.0 7/10/2001	1160-LPB-08 1160-LPB8-S3 7.0-8.0 7/10/2001	1160-LPB-09 1160-LPB9-S1 0.0-4.5 7/9/2001	1160-LPB-09 1160-LPB9-S2 4.5-6.0 7/9/2001	1160-LPB-09 1160-LPB9-S3 6.0-8.0 7/9/2001	1160-LPB-10 1160-LPB10-S1 0.0-5.5 7/10/2001	1160-LPB-10 1160-LPB10-S2 5.5-7.5 7/10/2001	1160-LPB-10 1160-LPB10-S3 7.5-8.5 7/10/2001
luminum, Total								
ntimony, Total								
rsenic, Total	< 6					< 12	< 13	
arium, Total	22						52	
eryllium, Total								
admium, Total	< 1					< 2	< 3	
alcium, Total								
hromium, Total	460	11	270	64	230	1300	2700	920
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total	< 6					< 12	< 13	
agnesium, Total								
anganese, Total								
ercury, Total	< 0.05						7	
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
nc, Total								
hloride								
yanide								
trogen, Ammonia	130					610	660	
lfate as SO4								
tal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)	500					620	2100	
11-C22 Aromatics, Unadjusted	1400					620	2100	
19-C36 Aliphatics (PID)	160					570	1300	
9-C18 Aliphatics (FID)	9.1					160	380	
PH Concentration (Total)	1300					1300	3800	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-08 1160-LPB8-S2 5.0-7.0 7/10/2001	1160-LPB-08 1160-LPB8-S3 7.0-8.0 7/10/2001	1160-LPB-09 1160-LPB9-S1 0.0-4.5 7/9/2001	1160-LPB-09 1160-LPB9-S2 4.5-6.0 7/9/2001	1160-LPB-09 1160-LPB9-S3 6.0-8.0 7/9/2001	1160-LPB-10 1160-LPB10-S1 0.0-5.5 7/10/2001	1160-LPB-10 1160-LPB10-S2 6.5-7.5 7/10/2001	1160-LPB-10 1160-LPB10-S3 7.5-8.5 7/10/2001
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)	20					9.8	88	
5-C8 Aliphatics, Unadjusted	20					9.8	88	
9-C10 Aromatics (PID)	< 8.2					15	12	
9-C12 Aliphatics (FID)	< 8.2					13	8.9	
9-C12 Aliphatics, Unadjusted	18					28	22	
PH Concentration (Total)	20					38	110	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-11 1160-LPB11-S1 0.0-4.0 7/9/2001	1160-LPB-11 1160-LPB11-S2 4.0-6.0 7/9/2001	1160-LPB-11 1160-LPB11-S3 6.0-9.0 7/9/2001	1160-LPB-12 1160-LPB12-S1 0.0-3.5 7/10/2001	1160-LPB-12 1160-LPB12-S2 3.5-6.5 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/11/2001	1160-LPB-13 1160-LPB13-S1 0.0-4.5 7/8/2001
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)				< 0.12	< 0.15	< 0.11		
1-Dichloroethane				< 0.12	< 0.15	< 0.11		
2,3-Trichlorobenzene				< 0.12	1.2	< 0.11		
2,4-Trichlorobenzene				< 0.12	< 0.15	< 0.11		
2,4-Trimethylbenzene				< 0.12	< 0.15	< 0.11		
2-Dichlorobenzene				< 0.12	5.9	0.16		
2-Dichloroethane				< 0.12	< 0.15	< 0.11		
3,5-Trimethylbenzene				< 0.12	< 0.15	< 0.11		
3-Dichlorobenzene				< 0.12	0.74	< 0.11		
4-Dichlorobenzene				< 0.12	8.6	0.27		
4,4-Trimethyl-1-pentene				< 0.12	15	3.4		
4,4-Trimethyl-2-Pentene				< 0.12	58	2.8		
-Butanone (MEK)				< 2.3	< 2.9	< 2.1		
Hexanone				< 0.46	< 0.58	< 0.43		
cetone				< 2.3	< 2.9	< 2.1		
enzene				< 0.12	< 0.15	< 0.11		
enzoic Acid				< 37	< 170		< 1.8	
arbon Disulfide								
hloroform				< 0.12	< 0.15	< 0.11		
thylbenzene				< 0.12	< 0.15	< 0.11		
,p-Xylene				< 0.12	< 0.15	< 0.11		
ethylene Chloride				< 0.23	< 0.29	< 0.21		
Isopropyl Toluene				< 0.12	0.53	< 0.11		
yrene				< 0.12	< 0.15	< 0.11		
etrachloroethene (PCE)				< 0.12	< 0.15	< 0.11		
oluene				< 0.12	< 0.15	< 0.11		
chloroethene (TCE)				< 0.12	< 0.15	< 0.11		
ylenes, Total				< 0.2	< 0.3	< 0.2		
emivolatile Organics (mg/kg)								
Methylnaphthalene				< 0.4	< 5.7		< 0.36	
Chlorophenyl-phenylether				< 7.4	< 34		< 0.36	
enaphthylene				< 0.4	< 5.7		< 0.36	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-11 1160-LPB11-S1 0.0-4.0 7/9/2001	1160-LPB-11 1160-LPB11-S2 4.0-6.0 7/9/2001	1160-LPB-11 1160-LPB11-S3 6.0-9.0 7/9/2001	1160-LPB-12 1160-LPB12-S1 0.0-3.5 7/10/2001	1160-LPB-12 1160-LPB12-S2 3.5-6.5 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/11/2001	1160-LPB-13 1160-LPB13-S1 0.0-4.5 7/9/2001
nthracene				< 0.4	< 5.7		< 0.36	
enzo(a)anthracene				< 0.4	< 5.7		< 0.36	
enzo(b)fluoranthene				< 0.4	< 5.7		< 0.36	
enzo(g,h,i)perylene				< 0.4	< 5.7		< 0.36	
enzo(k)fluoranthene				< 0.4	< 5.7		< 0.36	
s(2-EthylHexyl)phthalate				33	692		6.4	
utylbenzylphthalate				< 7.4	< 34		< 0.36	
hrysene				< 0.4	< 5.7		< 0.36	
benzofuran				< 7.4	< 34		< 0.36	
ethylphthalate				< 7.4	< 34		< 0.36	
-n-butylphthalate				< 7.4	< 34		< 0.36	
-n-octylphthalate				< 7.4	< 34		< 0.36	
luoranthene				< 0.4	< 5.7		< 0.36	
luorene				< 0.4	< 5.7		< 0.36	
deno (1,2,3-cd) pyrene				< 0.4	< 5.7		< 0.36	
aphthalene				< 0.4	< 0.6		< 0.36	
-Nitrosodiphenylamine				< 7.4	60		0.27	
henanthrene				< 0.4	< 5.7		< 0.36	
henol				< 7.4	< 34		< 0.36	
yrene				< 0.4	< 5.7		< 0.36	
esticides/PCBs (mg/kg)								
4'-DDD				< 0.021	< 0.08	< 0.011		
4'-DDE				< 0.021	< 0.08	< 0.011		
4'-DDT				< 0.021	< 0.08	< 0.011		
drin				< 0.021	< 0.08	< 0.011		
pha-BHC				< 0.021	< 0.08	< 0.011		
pha-Chlordane								
ndosulfan Sulfate				< 0.021	< 0.08	< 0.011		
ndrin				< 0.021	< 0.08	< 0.011		
ndrin Aldehyde				< 0.021	< 0.08	< 0.011		
amma-BHC (Lindane)				< 0.021	< 0.08	< 0.011		
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-11 1160-LPB11-S1 0.0-4.0 7/9/2001	1160-LPB-11 1160-LPB11-S2 4.0-6.0 7/9/2001	1160-LPB-11 1160-LPB11-S3 6.0-9.0 7/9/2001	1160-LPB-12 1160-LPB12-S1 0.0-3.5 7/10/2001	1160-LPB-12 1160-LPB12-S2 3.5-6.5 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/11/2001	1160-LPB-13 1160-LPB13-S1 0.0-4.5 7/9/2001
luminum, Total								
ntimony, Total								
rsenic, Total				< 11	< 18	< 6		
arium, Total					640	50		
eryllium, Total								
admium, Total				< 2	< 4	< 1		
alcium, Total								
hromium, Total	120		1100	62	4600	1300		200
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total				< 11	19	7		
agnesium, Total								
anganese, Total								
ercury, Total					0.36	< 0.05		
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
inc, Total								
hloride								
yanide								
itrogen, Ammonia		29000		60	71000	80		
ulfate as SO4								
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)				120	5100	19		
11-C22 Aromatics, Unadjusted				120	5100	19		
19-C36 Aliphatics (PID)				43	3200	20		
9-C18 Aliphatics (FID)				8.4	1100	5.5		
PH Concentration (Total)				170	9300	45		

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-11 1160-LPB11-S1 0.0-4.0 7/9/2001	1160-LPB-11 1160-LPB11-S2 4.0-6.0 7/9/2001	1160-LPB-11 1160-LPB11-S3 6.0-9.0 7/9/2001	1160-LPB-12 1160-LPB12-S1 0.0-3.5 7/10/2001	1160-LPB-12 1160-LPB12-S2 3.5-6.5 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/10/2001	1160-LPB-12 1160-LPB12-S3 6.5-10.0 7/11/2001	1160-LPB-13 1160-LPB13-S1 0.0-4.5 7/9/2001
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)				< 2.3	44	4.9		
5-C8 Aliphatics, Unadjusted				< 2.3	44	4.9		
9-C10 Aromatics (PID)				< 2.3	45	< 2.1		
9-C12 Aliphatics (FID)				< 2.3	46	2.7		
9-C12 Aliphatics, Unadjusted				< 2.3	91	2.7		
PH Concentration (Total)				< 2.3	130	7.6		

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-13 1160-LPB13-S2 4.5-6.0 7/9/2001	1160-LPB-13 1160-LPB13-S3 6.0-7.0 7/9/2001	1160-LPB-14 1160-LPB14-S1 0.0-2.5 7/11/2001	1160-LPB-14 1160-LPB14-S2 2.5-5.0 7/11/2001	1160-LPB-14A 1160-LPB14A-S1 0.0-2.5 7/11/2001	1160-LPB-14A 1160-LPB14A-S2 2.5-5.0 7/11/2001	1160-LPB-15 1160-LPB15-S1 0.0-6.5 7/10/2001	1160-LPB-15 1160-LPB15-S2 6.5-8.5 7/10/2001
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)					< 0.12	< 0.13	< 0.12	
1-Dichloroethane					< 0.12	< 0.13	< 0.12	
2,3-Trichlorobenzene					< 0.12	< 0.13	< 0.12	
2,4-Trichlorobenzene				< 0.43	< 0.12	< 0.13	< 0.12	
2,4-Trimethylbenzene					< 0.12	< 0.13	< 0.12	
2-Dichlorobenzene				< 0.43	< 0.12	< 0.13	< 0.12	
2-Dichloroethane					< 0.12	< 0.13	< 0.12	
3,5-Trimethylbenzene					< 0.12	< 0.13	< 0.12	
3-Dichlorobenzene				< 0.43	< 0.12	< 0.13	< 0.12	
4-Dichlorobenzene				< 0.43	< 0.12	< 0.13	< 0.12	
4,4-Trimethyl-1-pentene					< 0.12	< 0.13	< 0.12	
4,4-Trimethyl-2-Pentene					< 0.12	< 0.13	< 0.12	
-Butanone (MEK)					< 2.4	< 2.7	< 2.5	
Hexanone					< 0.48	< 0.53	< 0.5	
cetone					< 2.4	< 2.7	< 2.5	
enzene					< 0.12	< 0.13	< 0.12	
enzoic Acid				< 2.1	< 1.9		< 1.8	
arbon Disulfide								
hloroform					< 0.12	< 0.13	< 0.12	
thylbenzene					< 0.12	< 0.13	< 0.12	
p-Xylene					< 0.12	< 0.13	< 0.12	
ethylene Chloride					< 0.24	< 0.27	< 0.25	
Isopropyl Toluene					< 0.12	< 0.13	< 0.12	
yrene					< 0.12	< 0.13	< 0.12	
etrachloroethene (PCE)					< 0.12	< 0.13	< 0.12	
oluene					< 0.12	< 0.13	< 0.12	
ichloroethene (TCE)					< 0.12	< 0.13	< 0.12	
ylenes, Total					< 0.2	< 0.3	< 0.2	
emivolatile Organics (mg/kg)								
Methylnaphthalene				< 0.4	< 0.38		< 0.36	
Chlorophenyl-phenylether				< 0.43	< 0.38		< 0.36	
cenaphthylene				< 0.4	< 0.38		< 0.36	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB13 1160-LPB13-S2 4.5-6.0 7/9/2001	1160-LPB13 1160-LPB13-S3 6.0-7.0 7/9/2001	1160-LPB14 1160-LPB14-S1 0.0-2.5 7/11/2001	1160-LPB14 1160-LPB14-S2 2.5-5.0 7/11/2001	1160-LPB14A 1160-LPB14A-S1 0.0-2.5 7/11/2001	1160-LPB14A 1160-LPB14A-S2 2.5-5.0 7/11/2001	1160-LPB15 1160-LPB15-S1 0.0-3.5 7/10/2001	1160-LPB16 1160-LPB16-S2 3.5-5.5 7/10/2001
nthracene				< 0.4	< 0.38		< 0.36	
enzo(a)anthracene				< 0.4	< 0.38		< 0.36	
enzo(b)fluoranthene				< 0.4	< 0.38		< 0.36	
enzo(g,h,i)perylene				< 0.4	< 0.38		< 0.36	
enzo(k)fluoranthene				< 0.4	< 0.38		< 0.36	
s(2-EthylHexyl)phthalate				0.35	2		1	
utylbenzylphthalate				< 0.43	< 0.38		< 0.36	
hrysene				< 0.4	< 0.38		< 0.36	
ibenzofuran				< 0.43	< 0.38		< 0.36	
iethylphthalate				< 0.43	< 0.38		< 0.36	
i-n-butylphthalate				< 0.43	< 0.38		< 0.36	
i-n-octylphthalate				< 0.43	< 0.38		< 0.36	
uoranthene				< 0.4	< 0.38		< 0.36	
uorene				< 0.4	< 0.38		< 0.36	
deno (1,2,3-cd) pyrene				< 0.4	< 0.38		< 0.36	
aphthalene				< 0.4	< 0.38	< 0.5	< 0.36	
-Nitrosodiphenylamine				< 0.43	< 0.38		< 0.36	
henanthrene				< 0.4	< 0.38		< 0.36	
henol				< 0.43	< 0.38		< 0.36	
yrene				< 0.4	< 0.38		< 0.36	
esticides/PCBs (mg/kg)								
4'-DDD				< 0.013	< 0.057		< 0.051	
4'-DDE				< 0.013	< 0.057		< 0.051	
4'-DDT				< 0.013	< 0.057		< 0.051	
drin				< 0.013	< 0.057		< 0.051	
pha-BHC				< 0.013	< 0.057		< 0.051	
pha-Chlordane								
ndosulfan Sulfate				< 0.013	< 0.057		< 0.051	
ndrin				< 0.013	< 0.057		< 0.051	
ndrin Aldehyde				< 0.013	< 0.057		< 0.051	
amma-BHC (Lindane)				< 0.013	< 0.057		< 0.051	
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-13 1160-LPB13-S2 4.5-6.0 7/9/2001	1160-LPB-13 1160-LPB13-S3 6.0-7.0 7/9/2001	1160-LPB-14 1160-LPB14-S1 0.0-2.5 7/11/2001	1160-LPB-14 1160-LPB14-S2 2.5-5.0 7/11/2001	1160-LPB-14A 1160-LPB14A-S1 0.0-2.5 7/11/2001	1160-LPB-14A 1160-LPB14A-S2 2.5-5.0 7/11/2001	1160-LPB-15 1160-LPB15-S1 0.0-6.5 7/10/2001	1160-LPB-15 1160-LPB15-S2 6.5-8.5 7/10/2001
luminum, Total								
ntimony, Total								
rsenic, Total				< 7	< 6		< 11	
arium, Total								
eryllium, Total								
admium, Total				< 1	< 1		< 2	
alcium, Total								
hromium, Total	700	920	690	530			150	460
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total				21	19		< 11	
agnesium, Total								
anganese, Total								
ercury, Total								
ckel, Total								
otassium, Total								
odium, Total								
allium, Total								
anadium, Total								
nc, Total								
hloride								
anide								
trogen, Ammonia				68	37		21	
lfate as SO4								
tal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)				5.2	210		31	
11-C22 Aromatics, Unadjusted				5.2	210		31	
19-C36 Aliphatics (PID)				< 4.2	13		6.5	
9-C18 Aliphatics (FID)				< 4.2	< 3.8		< 3.6	
PH Concentration (Total)				5.2	220		37	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-13 1160-LPB13-S2 4.5-6.0 7/9/2001	1160-LPB-13 1160-LPB13-S3 6.0-7.0 7/9/2001	1160-LPB-14 1160-LPB14-S1 0.0-2.5 7/11/2001	1160-LPB-14 1160-LPB14-S2 2.5-5.0 7/11/2001	1160-LPB-14A 1160-LPB14A-S1 0.0-2.5 7/10/2001	1160-LPB-14A 1160-LPB14A-S2 2.5-5.0 7/10/2001	1160-LPB-15 1160-LPB15-S1 0.0-3.5 7/10/2001	1160-LPB-15 1160-LPB15-S2 3.5-6.5 7/10/2001
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)					< 2.4	< 2.7	< 2.5	
5-C8 Aliphatics, Unadjusted					< 2.4	< 2.7	< 2.5	
9-C10 Aromatics (PID)					< 2.4	< 2.7	< 2.5	
9-C12 Aliphatics (FID)					< 2.4	< 2.7	< 2.5	
9-C12 Aliphatics, Unadjusted					< 2.4	< 2.7	< 2.5	
PH Concentration (Total)					< 2.4	< 2.7	< 2.5	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-15 1160-LPB15-S3 8.5-11.0 7/10/2001	1160-LPB-16 1160-LPB16-S1 0.0-7.5 7/10/2001	1160-LPB-16 1160-LPB16-S2 7.5-8.5 7/10/2001	1160-LPB-17 1160-LPB17-S1 0.0-5.5 7/9/2001	1160-LPB-17 1160-LPB17-S2 5.5-9.5 7/9/2001	1160-LPB-18 1160-LPB18-S1 0.0-8.0 7/10/2001	1160-LPB-18 1160-LPB18-S2 8.0-10.0 7/10/2001	1160-LPB-18 1160-LPB18-S3 10.0-10.5 7/10/2001
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)	< 0.11	< 0.12	< 0.12					
1-Dichloroethane	< 0.11	< 0.12	< 0.12					
2,3-Trichlorobenzene	< 0.11	< 0.12	< 0.12					
2,4-Trichlorobenzene	< 0.11	< 0.12	< 0.12					
2,4-Trimethylbenzene	< 0.11	< 0.12	< 0.12					
2-Dichlorobenzene	< 0.11	< 0.12	< 0.12					
2-Dichloroethane	< 0.11	< 0.12	< 0.12					
3,5-Trimethylbenzene	< 0.11	< 0.12	< 0.12					
3-Dichlorobenzene	< 0.11	< 0.12	< 0.12					
4-Dichlorobenzene	< 0.11	< 0.12	< 0.12					
4,4-Trimethyl-1-pentene	< 0.11	< 0.12	< 0.12					
4,4-Trimethyl-2-Pentene	< 0.11	< 0.12	< 0.12					
-Butanone (MEK)	< 2.2	< 2.4	< 2.4					
Hexanone	< 0.44	< 0.48	< 0.48					
cetone	< 2.2	< 2.4	< 2.4					
enzene	< 0.11	< 0.12	< 0.12					
enzoic Acid	< 1.8	< 1.9	< 75					
arbon Disulfide								
hloroform	< 0.11	< 0.12	< 0.12					
thylbenzene	< 0.11	< 0.12	< 0.12					
,p-Xylene	< 0.11	< 0.12	< 0.12					
ethylene Chloride	< 0.22	< 0.24	< 0.24					
Isopropyl Toluene	< 0.11	< 0.12	< 0.12					
tyrene	< 0.11	< 0.12	< 0.12					
etrachloroethene (PCE)	< 0.11	< 0.12	< 0.12					
oluene	< 0.11	< 0.12	< 0.12					
richloroethene (TCE)	< 0.11	< 0.12	< 0.12					
ylenes, Total	< 0.2	< 0.2	< 0.2					
emivolatile Organics (mg/kg)								
Methylnaphthalene	< 0.37	< 0.38	< 0.4					
Chlorophenyl-phenylether	< 0.37	< 0.38	< 15					
cenaphthylene	< 0.37	< 0.38	< 0.4					

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-15 1160-LPB15-S3 8.5-11.0 7/10/2001	1160-LPB-16 1160-LPB16-S1 0.0-7.5 7/10/2001	1160-LPB-16 1160-LPB16-S2 7.5-8.5 7/10/2001	1160-LPB-17 1160-LPB17-S1 0.0-5.5 7/9/2001	1160-LPB-17 1160-LPB17-S2 5.5-8.5 7/9/2001	1160-LPB-18 1160-LPB18-S1 0.0-8.0 7/10/2001	1160-LPB-18 1160-LPB18-S2 8.0-10.0 7/10/2001	1160-LPB-18 1160-LPB18-S3 10.0-10.5 7/10/2001
nthracene	< 0.37	< 0.38	< 0.4					
enzo(a)anthracene	< 0.37	< 0.38	< 0.4					
enzo(b)fluoranthene	< 0.37	< 0.38	< 0.4					
enzo(g,h,i)perylene	< 0.37	< 0.38	< 0.4					
enzo(k)fluoranthene	< 0.37	< 0.38	< 0.4					
s(2-EthylHexyl)phthalate	1.3	0.54	157					
utylbenzylphthalate	< 0.37	< 0.38	< 15					
hrysene	< 0.37	< 0.38	< 0.4					
ibenzofuran	< 0.37	< 0.38	< 15					
iethylphthalate	< 0.37	< 0.38	< 15					
i-n-butylphthalate	< 0.37	< 0.38	< 15					
i-n-octylphthalate	< 0.37	< 0.38	< 15					
luoranthene	< 0.37	< 0.38	< 0.4					
luorene	< 0.37	< 0.38	< 0.4					
deno (1,2,3-cd) pyrene	< 0.37	< 0.38	< 0.4					
aphthalene	< 0.37	< 0.38	< 0.4					
-Nitrosodiphenylamine	< 0.37	< 0.38	< 15					
henanthrene	< 0.37	< 0.38	< 0.4					
henol	< 0.37	< 0.38	< 15					
yrene	< 0.37	< 0.38	< 0.4					
esticides/PCBs (mg/kg)								
4'-DDD	< 0.01	< 0.011	< 0.011					
4'-DDE	< 0.01	< 0.011	< 0.011					
4'-DDT	< 0.01	< 0.011	< 0.011					
drin	< 0.01	< 0.011	< 0.011					
pha-BHC	< 0.01	< 0.011	< 0.011					
pha-Chlordane								
ndosulfan Sulfate	< 0.01	< 0.011	< 0.011					
ndrin	< 0.01	< 0.011	< 0.011					
ndrin Aldehyde	< 0.01	< 0.011	< 0.011					
amma-BHC (Lindane)	< 0.01	< 0.011	< 0.011					
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-15 1160-LPB15-S3 8.5-11.0 7/10/2001	1160-LPB-16 1160-LPB16-S1 0.0-7.5 7/10/2001	1160-LPB-16 1160-LPB16-S2 7.5-8.5 7/10/2001	1160-LPB-17 1160-LPB17-S1 0.0-5.5 7/9/2001	1160-LPB-17 1160-LPB17-S2 5.5-8.5 7/9/2001	1160-LPB-18 1160-LPB18-S1 0.0-8.0 7/10/2001	1160-LPB-18 1160-LPB18-S2 8.0-10.0 7/10/2001	1160-LPB-18 1160-LPB18-S3 10.0-10.5 7/10/2001
luminum, Total								
ntimony, Total								
rsenic, Total	< 12	< 11	< 12					
arium, Total	43		28					
eryllium, Total								
admium, Total	< 2	< 2	< 2					
alcium, Total								
hromium, Total	2700	37	2900	86	1000	33	7900	1200
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total	< 12	< 11	< 12					
lagnesium, Total								
langanese, Total								
ercury, Total	0.06		< 0.05					
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
inc, Total								
hloride								
yanide								
itrogen, Ammonia	12	15	55					
ulfate as SO4								
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)	6.1	9.8	330					
11-C22 Aromatics, Unadjusted	6.1	9.8	330					
19-C36 Aliphatics (PID)	< 3.6	< 3.8	390					
9-C18 Aliphatics (FID)	< 3.6	< 3.8	110					
PH Concentration (Total)	6.1	9.8	830					

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-15 / 1160-LPB16-S3 / 0.5-1.0 / 7/10/2001	1160-LPB-16 / 1160-LPB16-S1 / 0.0-0.5 / 7/10/2001	1160-LPB-16 / 1160-LPB16-S2 / 0.5-1.0 / 7/10/2001	1160-LPB-17 / 1160-LPB17-S1 / 0.0-0.5 / 7/9/2001	1160-LPB-17 / 1160-LPB17-S2 / 0.5-1.0 / 7/9/2001	1160-LPB-18 / 1160-LPB18-S1 / 0.0-0.5 / 7/10/2001	1160-LPB-18 / 1160-LPB18-S2 / 0.5-1.0 / 7/10/2001	1160-LPB-18 / 1160-LPB18-S3 / 1.0-1.0 / 7/10/2001
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)	< 2.2	< 2.4	< 2.4					
5-C8 Aliphatics, Unadjusted	< 2.2	< 2.4	< 2.4					
9-C10 Aromatics (PID)	< 2.2	< 2.4	< 2.4					
9-C12 Aliphatics (FID)	< 2.2	< 2.4	< 2.4					
9-C12 Aliphatics, Unadjusted	< 2.2	< 2.4	< 2.4					
PH Concentration (Total)	< 2.2	< 2.4	< 2.4					

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-19 1160-LPB19-S1 0.0-3.5 7/9/2001	1160-LPB-19 1160-LPB19-S2 3.5-5.5 7/9/2001	1160-LPB-19 1160-LPB19-S3 6.5-12.0 7/9/2001	1160-LPB-22 1160-LPB22-S1 0.0-4.2 7/11/2001	1160-LPB-22 1160-LPB22-S2 4.2-9.0 7/11/2001	1160-LPB-23 1160-LPB23-S1 0.0-3.0 7/11/2001	1160-LPB-23 1160-LPB23-S2 3.0-5.0 7/11/2001	1160-LPB-24 1160-LPB24-S1 0.0-2.0 7/11/2001
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)								
1-Dichloroethane								
2,3-Trichlorobenzene								
2,4-Trichlorobenzene								
2,4-Trimethylbenzene								
2-Dichlorobenzene								
2-Dichloroethane								
3,5-Trimethylbenzene								
3-Dichlorobenzene								
4-Dichlorobenzene								
4,4-Trimethyl-1-pentene								
4,4-Trimethyl-2-Pentene								
-Butanone (MEK)								
Hexanone								
cetone								
enzene								
enzoic Acid								
arbon Disulfide								
hloroform								
thylbenzene								
p-Xylene								
ethylene Chloride								
Isopropyl Toluene								
yrene								
trachloroethene (PCE)								
luene								
chloroethene (TCE)								
lenes, Total								
emivolatile Organics (mg/kg)								
Methylnaphthalene								
Chlorophenyl-phenylether								
enaphthylene								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-19 1160-LPB19-S1 0.0-3.5 7/9/2001	1160-LPB-19 1160-LPB19-S2 3.5-5.5 7/9/2001	1160-LPB-19 1160-LPB19-S3 5.5-12.0 7/9/2001	1160-LPB-22 1160-LPB22-S1 0.0-4.2 7/11/2001	1160-LPB-22 1160-LPB22-S2 4.2-9.0 7/11/2001	1160-LPB-23 1160-LPB23-S1 0.0-3.0 7/11/2001	1160-LPB-23 1160-LPB23-S2 3.0-8.0 7/11/2001	1160-LPB-24 1160-LPB24-S1 0.0-2.0 7/11/2001
nthracene								
enzo(a)anthracene								
enzo(b)fluoranthene								
enzo(g,h,i)perylene								
enzo(k)fluoranthene								
is(2-EthylHexyl)phthalate								
utylbenzylphthalate								
hrysene								
ibenzofuran								
iethylphthalate								
i-n-butylphthalate								
i-n-octylphthalate								
luoranthene								
luorene								
deno (1,2,3-cd) pyrene								
aphthalene								
-Nitrosodiphenylamine								
henanthrene								
henol								
yrene								
esticides/PCBs (mg/kg)								
4'-DDD								
4'-DDE								
4'-DDT								
drin								
pha-BHC								
pha-Chlordane								
ndosulfan Sulfate								
ndrin								
ndrin Aldehyde								
amma-BHC (Lindane)								
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-19 1160-LPB19-S1 0.0-3.5 7/9/2001	1160-LPB-19 1160-LPB19-S2 3.5-5.5 7/9/2001	1160-LPB-19 1160-LPB19-S3 5.5-12.0 7/9/2001	1160-LPB-22 1160-LPB22-S1 0.0-1.2 7/11/2001	1160-LPB-22 1160-LPB22-S2 1.2-9.0 7/11/2001	1160-LPB-23 1160-LPB23-S1 0.0-3.0 7/11/2001	1160-LPB-23 1160-LPB23-S2 3.0-8.0 7/11/2001	1160-LPB-24 1160-LPB24-S1 0.0-2.0 7/11/2001
luminum, Total								
ntimony, Total								
rsenic, Total								
arium, Total								
eryllium, Total								
admium, Total								
alcium, Total								
hromium, Total	13	660	780	6.5	8.4	12	16	18
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total								
agnesium, Total								
anganese, Total								
ercury, Total								
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
inc, Total								
hloride								
yanide								
itrogen, Ammonia								
ulfate as SO4								
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)								
11-C22 Aromatics, Unadjusted								
19-C36 Aliphatics (PID)								
9-C18 Aliphatics (FID)								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-19 1160-LPB19-S1 0.0-3.5 7/9/2001	1160-LPB-19 1160-LPB19-S2 3.5-5.5 7/9/2001	1160-LPB-19 1160-LPB19-S3 5.5-12.0 7/9/2001	1160-LPB-22 1160-LPB22-S1 0.0-4.2 7/11/2001	1160-LPB-22 1160-LPB22-S2 4.2-9.0 7/11/2001	1160-LPB-23 1160-LPB23-S1 0.0-3.0 7/11/2001	1160-LPB-23 1160-LPB23-S2 3.0-8.0 7/11/2001	1160-LPB-24 1160-LPB24-S1 0.0-2.0 7/11/2001
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)								
5-C8 Aliphatics, Unadjusted								
9-C10 Aromatics (PID)								
9-C12 Aliphatics (FID)								
9-C12 Aliphatics, Unadjusted								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-24 1160-LPB24-S2 2.0-2.5 7/11/2001	1160-LPB-24 1160-LPB24-S3 2.5-8.0 7/11/2001	1160-LPB-25 1160-LPB25-S1 0.0-2.5 7/11/2001	1160-LPB-25 1160-LPB25-S2 2.5-3.0 7/11/2001	1160-LPB-25 1160-LPB25-S3 3.0-5.0 7/11/2001	1160-LPB-26 1160-LPB26-S1 0.0-3.5 7/11/2001	1160-LPB-26 1160-LPB26-S2 3.5-7.0 7/11/2001	1160-LPB-26 1160-LPB26-S3 7.0-8.0 7/11/2001
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)								
1-Dichloroethane								
2,3-Trichlorobenzene								
2,4-Trichlorobenzene								
2,4-Trimethylbenzene								
2-Dichlorobenzene								
2-Dichloroethane								
3,5-Trimethylbenzene								
3-Dichlorobenzene								
4-Dichlorobenzene								
4,4-Trimethyl-1-pentene								
4,4-Trimethyl-2-Pentene								
-Butanone (MEK)								
-Hexanone								
cetone								
enzene								
enzoic Acid								
arbon Disulfide								
hloroform								
thylbenzene								
p-Xylene								
ethylene Chloride								
Isopropyl Toluene								
yrene								
trachloroethene (PCE)								
oluene								
ichloroethene (TCE)								
ylenes, Total								
emivolatile Organics (mg/kg)								
Methylnaphthalene								
Chlorophenyl-phenylether								
cenaphthylene								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-24 1160-LPB24-S2 2.0-2.5 7/11/2001	1160-LPB-24 1160-LPB24-S3 2.5-8.0 7/11/2001	1160-LPB-25 1160-LPB25-S1 0.0-2.5 7/11/2001	1160-LPB-25 1160-LPB25-S2 2.5-3.0 7/11/2001	1160-LPB-26 1160-LPB26-S1 3.0-8.0 7/11/2001	1160-LPB-26 1160-LPB26-S1 0.0-3.5 7/11/2001	1160-LPB-26 1160-LPB26-S2 3.5-7.0 7/11/2001	1160-LPB-26 1160-LPB26-S3 7.0-8.0 7/11/2001
nthracene								
enzo(a)anthracene								
enzo(b)fluoranthene								
enzo(g,h,i)perylene								
enzo(k)fluoranthene								
s(2-EthylHexyl)phthalate								
utylbenzylphthalate								
hrysene								
ibenzofuran								
iethylphthalate								
i-n-butylphthalate								
i-n-octylphthalate								
uoranthene								
uorene								
deno (1,2,3-cd) pyrene								
aphthalene								
-Nitrosodiphenylamine								
henanthrene								
henol								
yrene								
esticides/PCBs (mg/kg)								
4'-DDD								
4'-DDE								
4'-DDT								
drin								
pha-BHC								
pha-Chlordane								
dosulfan Sulfate								
drin								
drin Aldehyde								
amma-BHC (Lindane)								
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-24 1160-LPB24-S2 2.0-2.5 7/11/2001	1160-LPB-24 1160-LPB24-S3 2.5-3.0 7/11/2001	1160-LPB-25 1160-LPB25-S1 0.0-2.5 7/11/2001	1160-LPB-25 1160-LPB25-S2 2.5-3.0 7/11/2001	1160-LPB-25 1160-LPB25-S3 3.0-3.0 7/11/2001	1160-LPB-26 1160-LPB26-S1 0.0-3.5 7/11/2001	1160-LPB-26 1160-LPB26-S2 3.5-7.0 7/11/2001	1160-LPB-26 1160-LPB26-S3 7.0-8.0 7/11/2001
luminum, Total								
ntimony, Total								
rsenic, Total								
arium, Total								
eryllium, Total								
admium, Total								
alcium, Total								
hromium, Total	7	17	40	8	34	62	14	31
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total								
agnesium, Total								
anganese, Total								
ercury, Total								
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
inc, Total								
hloride								
yanide								
trogen, Ammonia				320				
ulfate as SO4								
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)								
11-C22 Aromatics, Unadjusted								
19-C36 Aliphatics (PID)								
9-C18 Aliphatics (FID)								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-24 1160-LPB-24-S2 20-25 7/11/2001	1160-LPB-24 1160-LPB-24-S3 25-30 7/11/2001	1160-LPB-26 1160-LPB-26-S1 0-10 7/11/2001	1160-LPB-25 1160-LPB-25-S2 [illegible] 7/11/2001	1160-LPB-25 1160-LPB-25-S3 [illegible] 7/11/2001	1160-LPB-26 1160-LPB-26-S1 0-10 7/11/2001	1160-LPB-26 1160-LPB-26-S2 [illegible]-10 7/11/2001	1160-LPB-26 1160-LPB-26-S3 [illegible]-10 7/11/2001
Volatile Petroleum Hydrocarbons (mg/kg)								
C5-C8 Aliphatics (FID)								
C5-C8 Aliphatics, Unadjusted								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								
C9-C12 Aliphatics, Unadjusted								
TPH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-27 1160-LPB27-S1 0.0-5.0 7/11/2001	1160-LPB-27 1160-LPB27-S2 5.0-7.5 7/11/2001	1160-LPB-27 1160-LPB27-S3 7.5-12.0 7/11/2001	1160-LPB-28 1160-LPB28-S1 0.0-5.0 7/11/2001	1160-LPB-28 1160-LPB28-S2 5.0-9.0 7/11/2001	1160-LPB-28 1160-LPB28-S3 9.0-10.0 7/11/2001	1160-LPB-29 1160-LPB29-S1 0.0-7.0 7/12/2001	1160-LPB-29 1160-LPB29-S2 7.0-8.0 7/12/2001
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)				< 0.12	< 0.13			
1-Dichloroethane				< 0.12	< 0.13			
2,3-Trichlorobenzene				< 0.12	< 0.13			
2,4-Trichlorobenzene				< 0.12	< 0.13			
2,4-Trimethylbenzene				< 0.12	< 0.13			
2-Dichlorobenzene				< 0.12	< 0.13			
2-Dichloroethane				< 0.12	< 0.13			
3,5-Trimethylbenzene				< 0.12	< 0.13			
3-Dichlorobenzene				< 0.12	< 0.13			
4-Dichlorobenzene				< 0.12	< 0.13			
4,4-Trimethyl-1-pentene				< 0.12	< 0.13			
4,4-Trimethyl-2-Pentene				< 0.12	< 0.13			
-Butanone (MEK)				< 2.3	< 2.5			
-Hexanone				< 0.46	< 0.5			
cetone				< 2.3	< 2.5			
enzene				< 0.12	< 0.13			
enzoic Acid				< 1.8	< 2			
arbon Disulfide								
hloroform				< 0.12	< 0.13			
thylbenzene				< 0.12	< 0.13			
,p-Xylene				< 0.12	< 0.13			
ethylene Chloride				< 0.23	< 0.25			
-Isopropyl Toluene				< 0.12	< 0.13			
tyrene				< 0.12	< 0.13			
etrachloroethene (PCE)				< 0.12	< 0.13			
oluene				< 0.12	< 0.13			
richloroethene (TCE)				< 0.12	< 0.13			
ylenes, Total				< 0.2	< 0.3			
emivolatile Organics (mg/kg)								
Methylnaphthalene				< 0.36	< 0.4			
Chlorophenyl-phenylether				< 0.36	< 0.41			
cenaphthylene				< 0.36	< 0.4			

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-27 1160-LPB27-S1 0.0-5.0 7/11/2001	1160-LPB-27 1160-LPB27-S2 5.0-7.5 7/11/2001	1160-LPB-27 1160-LPB27-S3 7.5-12.0 7/11/2001	1160-LPB-28 1160-LPB28-S1 0.0-5.0 7/11/2001	1160-LPB-28 1160-LPB28-S2 5.0-8.0 7/11/2001	1160-LPB-28 1160-LPB28-S3 9.0-10.0 7/11/2001	1160-LPB-29 1160-LPB29-S1 0.0-7.0 7/12/2001	1160-LPB-29 1160-LPB29-S2 7.0-8.0 7/12/2001
nthracene				< 0.36	< 0.4			
enzo(a)anthracene				< 0.36	< 0.4			
enzo(b)fluoranthene				< 0.36	< 0.4			
enzo(g,h,i)perylene				< 0.36	< 0.4			
enzo(k)fluoranthene				< 0.36	< 0.4			
s(2-EthylHexyl)phthalate				1.8	< 0.41			
utylbenzylphthalate				< 0.36	< 0.41			
hrysene				< 0.36	< 0.4			
ibenzofuran				< 0.36	< 0.41			
iethylphthalate				< 0.36	< 0.41			
i-n-butylphthalate				< 0.36	< 0.41			
i-n-octylphthalate				< 0.36	< 0.41			
luoranthene				< 0.36	< 0.4			
luorene				< 0.36	< 0.4			
deno (1,2,3-cd) pyrene				< 0.36	< 0.4			
aphthalene				< 0.36	< 0.4			
-Nitrosodiphenylamine				< 0.36	< 0.41			
henanthrene				< 0.36	< 0.4			
henol				< 0.36	< 0.41			
yrene				< 0.36	< 0.4			
esticides/PCBs (mg/kg)								
4'-DDD				< 0.01	< 0.012			
4'-DDE				< 0.01	< 0.012			
4'-DDT				< 0.01	< 0.012			
drin				< 0.01	< 0.012			
lpha-BHC				< 0.01	< 0.012			
pha-Chlordane								
ndosulfan Sulfate				< 0.01	< 0.012			
ndrin				< 0.01	< 0.012			
ndrin Aldehyde				< 0.01	< 0.012			
amma-BHC (Lindane)				< 0.01	< 0.012			
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-27 1160-LPB27-S1 0.0-5.0 7/11/2001	1160-LPB-27 1160-LPB27-S2 5.0-7.5 7/11/2001	1160-LPB-27 1160-LPB27-S3 7.5-12.0 7/11/2001	1160-LPB-28 1160-LPB28-S1 0.0-5.0 7/11/2001	1160-LPB-28 1160-LPB28-S2 5.0-9.0 7/11/2001	1160-LPB-28 1160-LPB28-S3 9.0-10.0 7/11/2001	1160-LPB-29 1160-LPB29-S1 0.0-7.0 7/12/2001	1160-LPB-29 1160-LPB29-S2 7.0-8.0 7/12/2001
Aluminum, Total								
Antimony, Total								
Arsenic, Total				< 12	< 13			
Barium, Total								
Beryllium, Total								
Cadmium, Total				< 2	< 2			
Calcium, Total								
Chromium, Total	140	6	13	720	780	18	120	5900
Cobalt, Total								
Copper, Total								
Hexavalent Chromium, Total								
Iron, Total								
Lead, Total				< 10	< 13			
Magnesium, Total								
Manganese, Total								
Mercury, Total								
Nickel, Total								
Potassium, Total								
Sodium, Total								
Thallium, Total								
Vanadium, Total								
Zinc, Total								
Chloride								
Cyanide								
Nitrogen, Ammonia				17	130			40000
Sulfate as SO4								
Total Organic Carbon (TOC)								
Extractable Petroleum Hydrocarbons (mg/kg)								
C11-C22 Aromatics (FID)				14	96			
C11-C22 Aromatics, Unadjusted				14	96			
C19-C36 Aliphatics (PID)				25	82			
C9-C18 Aliphatics (FID)				< 3.6	21			
TPH Concentration (Total)				39	200			

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-27 1160-LPB27-S1 0.0-5.0 7/11/2001	1160-LPB-27 1160-LPB27-S2 5.0-7.5 7/11/2001	1160-LPB-27 1160-LPB27-S3 7.5-12.0 7/11/2001	1160-LPB-28 1160-LPB28-S1 0.0-5.0 7/11/2001	1160-LPB-28 1160-LPB28-S2 5.0-9.0 7/11/2001	1160-LPB-28 1160-LPB28-S3 9.0-10.0 7/11/2001	1160-LPB-29 1160-LPB29-S1 0.0-7.0 7/12/2001	1160-LPB-29 1160-LPB29-S2 7.0-8.0 7/12/2001
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)				< 2.3	< 2.5			
5-C8 Aliphatics, Unadjusted				< 2.3	< 2.5			
9-C10 Aromatics (PID)				< 2.3	< 2.5			
9-C12 Aliphatics (FID)				< 2.3	< 2.5			
9-C12 Aliphatics, Unadjusted				< 2.3	< 2.5			
PH Concentration (Total)				< 2.3	< 2.5			

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-29 1160-LPB29-S3 8.0-10.5 7/12/2001	1160-LPB-30 1160-LPB30-S1 0.0-8.0 7/12/2001	1160-LPB-30 1160-LPB30-S2 8.0-9.0 7/12/2001	1160-LPB-30 1160-LPB30-S3 9.0-12.0 7/12/2001	1160-LPB-31 1160-LPB31-S1 0.0-8.0 7/12/2001	1160-LPB-31 1160-LPB31-S2 8.0-9.0 7/12/2001	1160-LPB-32 1160-LPB32-S1 0.0-2.0 7/12/2001	1160-LPB-32 1160-LPB32-S2 2.0-8.0 7/12/2001
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)								
1-Dichloroethane								
2,3-Trichlorobenzene								
2,4-Trichlorobenzene								
2,4-Trimethylbenzene								
2-Dichlorobenzene								
2-Dichloroethane								
3,5-Trimethylbenzene								
3-Dichlorobenzene								
4-Dichlorobenzene								
4,4-Trimethyl-1-pentene								
4,4-Trimethyl-2-Pentene								
Butanone (MEK)								
Hexanone								
cetone								
enzene								
enzoic Acid								
arbon Disulfide								
hloroform								
thylbenzene								
p-Xylene								
ethylene Chloride								
Isopropyl Toluene								
yrene								
etrachloroethene (PCE)								
oluene								
ichloroethene (TCE)								
ylenes, Total								
emivolatile Organics (mg/kg)								
Methylnaphthalene								
Chlorophenyl-phenylether								
cenaphthylene								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB29 1160-LPB29-S2 8.0-10.5 7/12/2001	1160-LPB30 1160-LPB30-S1 0.0-8.0 7/12/2001	1160-LPB30 1160-LPB30-S2 8.0-9.0 7/12/2001	1160-LPB30 1160-LPB30-S3 9.0-12.0 7/12/2001	1160-LPB31 1160-LPB31-S1 0.0-5.0 7/12/2001	1160-LPB31 1160-LPB31-S2 5.0-8.0 7/12/2001	1160-LPB32 1160-LPB32-S1 0.0-2.0 7/12/2001	1160-LPB32 1160-LPB32-S2 2.0-5.0 7/12/2001
nthracene								
enzo(a)anthracene								
enzo(b)fluoranthene								
enzo(g,h,i)perylene								
enzo(k)fluoranthene								
is(2-EthylHexyl)phthalate								
utylbenzylphthalate								
hrysene								
ibenzofuran								
iethylphthalate								
i-n-butylphthalate								
i-n-octylphthalate								
luoranthene								
luorene								
ndeno (1,2,3-cd) pyrene								
aphthalene								
-Nitrosodiphenylamine								
henanthrene								
henol								
yrene								
esticides/PCBs (mg/kg)								
4'-DDD								
4'-DDE								
4'-DDT								
drin								
pha-BHC								
pha-Chlordane								
ndosulfan Sulfate								
ndrin								
ndrin Aldehyde								
amma-BHC (Lindane)								
amma-Chlordane								
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-29 1160-LPB29-S3 8.0-10.5 7/12/2001	1160-LPB-30 1160-LPB30-S1 0.0-8.0 7/12/2001	1160-LPB-30 1160-LPB30-S2 8.0-9.0 7/12/2001	1160-LPB-30 1160-LPB30-S3 9.0-12.0 7/12/2001	1160-LPB-31 1160-LPB31-S1 0.0-8.0 7/12/2001	1160-LPB-31 1160-LPB31-S2 8.0-8.0 7/12/2001	1160-LPB-32 1160-LPB32-S1 0.0-2.0 7/12/2001	1160-LPB-32 1160-LPB32-S2 2.0-8.0 7/12/2001
luminum, Total								
ntimony, Total								
rsenic, Total								
arium, Total								
eryllium, Total								
admium, Total								
alcium, Total								
hromium, Total	2700	38	3000	740	16	1800	27	450
obalt, Total								
opper, Total								
exavalent Chromium, Total								
on, Total								
ead, Total								
lagnesium, Total								
langanese, Total								
ercury, Total								
ickel, Total								
otassium, Total								
odium, Total								
hallium, Total								
anadium, Total								
inc, Total								
hloride								
yanide								
itrogen, Ammonia			2500					
ulfate as SO4								
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)								
11-C22 Aromatics, Unadjusted								
19-C36 Aliphatics (PID)								
9-C18 Aliphatics (FID)								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-29 1160-LPB29-S3 8.0-10.5 7/12/2001	1160-LPB-30 1160-LPB30-S1 0.0-8.0 7/12/2001	1160-LPB-30 1160-LPB30-S2 8.0-9.0 7/12/2001	1160-LPB-30 1160-LPB30-S3 9.0-12.0 7/12/2001	1160-LPB-31 1160-LPB31-S1 0.0-6.0 7/12/2001	1160-LPB-31 1160-LPB31-S2 6.0-8.0 7/12/2001	1160-LPB-32 1160-LPB32-S1 0.0-2.0 7/12/2001	1160-LPB-32 1160-LPB32-S2 2.0-8.0 7/12/2001
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)								
5-C8 Aliphatics, Unadjusted								
9-C10 Aromatics (PID)								
9-C12 Aliphatics (FID)								
9-C12 Aliphatics, Unadjusted								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB33 1160-LPB33-S1 0.0-6.0 7/12/2001	1160-LPB33 1160-LPB33-S2 6.0-7.0 7/12/2001	1160-LPB33 1160-LPB33-S3 7.0-8.0 7/12/2001	1160-LPB34 1160-LPB34-S1 0.0-6.0 7/12/2001	1160-LPB34 1160-LPB34-S2 6.0-8.0 7/12/2001	BH12 4.0-6 FT 8/10/1991	BH13 4.0-6 FT 8/10/1991	BH16 4.0-6 FT 8/10/1991
Volatile Organics (mg/kg)								
1,1,1-Trichloroethane (TCA)						< 0.0055	< 0.0055	< 0.0055
1,1-Dichloroethane						< 0.0055	< 0.0055	< 0.0055
1,2,3-Trichlorobenzene								
1,2,4-Trichlorobenzene						< 0.73	< 0.76	< 0.73
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene						< 0.73	< 0.76	< 0.73
1,2-Dichloroethane						< 0.0055	< 0.0055	< 0.0055
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene						< 0.73	< 0.76	< 0.73
1,4-Dichlorobenzene						< 0.73	< 0.76	< 0.73
2,4,4-Trimethyl-1-pentene						0.01	0.006	< 0.011
2,4,4-Trimethyl-2-Pentene						< 0.011	0.002	< 0.011
2-Butanone (MEK)						< 0.016	< 0.016	< 0.016
2-Hexanone						< 0.016	< 0.016	< 0.016
Acetone						< 0.027	< 0.016	< 0.016
Benzene						< 0.0055	< 0.0055	< 0.0055
Benzoic Acid						< 3.5	< 3.7	< 3.5
Carbon Disulfide						< 0.011	< 0.011	< 0.011
Chloroform						< 0.0055	< 0.0055	0.001
Ethylbenzene						< 0.0055	< 0.0055	< 0.0055
m,p-Xylene								
Methylene Chloride						< 0.011	< 0.011	< 0.011
p-Isopropyl Toluene								
Styrene						< 0.0055	< 0.0055	< 0.0055
Tetrachloroethene (PCE)						< 0.0055	< 0.0055	< 0.0055
Toluene						0.0006	0.0008	< 0.0055
Trichloroethene (TCE)						< 0.0055	< 0.0055	< 0.0055
Xylenes, Total						< 0.0055	< 0.0055	< 0.0055
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene						0.063	< 0.76	< 0.73
4-Chlorophenyl-phenylether						< 0.73	< 0.76	< 0.73
Acenaphthylene						< 0.73	< 0.76	< 0.73

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB-33 1160-LPB33-S1 0.0-0.0 7/12/2001	1160-LPB-33 1160-LPB33-S2 6.0-7.0 7/12/2001	1160-LPB-33 1160-LPB33-S3 7.0-9.0 7/12/2001	1160-LPB-34 1160-LPB34-S1 0.0-0.0 7/12/2001	1160-LPB-34 1160-LPB34-S2 0.0-0.0 7/12/2001	[illegible]	[illegible]	[illegible]
Anthracene						< 0.73	< 0.76	< 0.73
Benzo(a)anthracene						0.052	< 0.76	< 0.73
Benzo(b)fluoranthene						0.043	0.039	< 0.73
Benzo(g,h,i)perylene						< 0.73	< 0.76	< 0.73
Benzo(k)fluoranthene						< 0.73	< 0.76	< 0.73
bis(2-EthylHexyl)phthalate						1100	70	4.9
Butylbenzylphthalate						2.2	0.5	< 0.73
Chrysene						0.089	< 0.76	< 0.73
Dibenzofuran						0.11	< 0.76	< 0.73
Diethylphthalate						< 0.73	< 0.76	< 0.73
Di-n-butylphthalate						32	< 1.3	< 0.73
Di-n-octylphthalate						0.13	0.059	< 0.73
Fluoranthene						< 0.73	0.038	< 0.73
Fluorene						< 0.73	< 0.76	< 0.73
Indeno (1,2,3-cd) pyrene						< 0.73	< 0.76	< 0.73
Naphthalene						0.16	< 0.76	< 0.73
N-Nitrosodiphenylamine						3400	20	3
Phenanthrene						0.64	0.062	< 0.73
Phenol						< 0.73	< 0.76	< 0.73
Pyrene						0.2	0.064	< 0.73
Pesticides/PCBs (mg/kg)								
4,4'-DDD						0.04	< 0.037	< 0.035
4,4'-DDE						< 0.035	< 0.037	< 0.035
4,4'-DDT						< 0.035	< 0.037	< 0.035
Aldrin						0.032	< 0.018	< 0.018
Alpha-BHC						0.024	< 0.018	< 0.018
Alpha-Chlordane						< 0.18	< 0.18	< 0.18
Endosulfan Sulfate						0.15	< 0.037	< 0.035
Endrin						0.089	< 0.037	< 0.035
Endrin Aldehyde								
Gamma-BHC (Lindane)						< 0.018	< 0.018	< 0.018
Gamma-Chlordane						< 0.18	< 0.18	< 0.18
Inorganics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	1160-LPB-33 1160-LPB33-S1 0.0-5.0 7/12/2001	1160-LPB-33 1160-LPB33-S2 6.0-7.0 7/12/2001	1160-LPB-33 1160-LPB33-S3 7.0-8.0 7/12/2001	1160-LPB-34 1160-LPB34-S1 0.0-5.0 7/12/2001	1160-LPB-34 1160-LPB34-S2 6.0-8.0 7/12/2001	BH12 4-6 FT 6/10/1991	BH14 4-6 FT 6/10/1991	BH16 4-6 FT 6/10/1991
Aluminum, Total						7100	5700	3400
Antimony, Total						41	< 20	< 20
Arsenic, Total						4.2	3.7	2.3
Barium, Total						42	15	23
Beryllium, Total						< 1.5	< 1.5	< 1.5
Cadmium, Total						< 1	1	< 1
Calcium, Total						710	740	570
Chromium, Total	18	2100	76	39	4000	2400	1300	610
Cobalt, Total						3.7	2.4	1.8
Copper, Total						7.7	10	4.5
Hexavalent Chromium, Total								
Iron, Total						8800	9900	6700
Lead, Total						< 10	40	< 10
Magnesium, Total						3400	1700	1800
Manganese, Total						100	73	62
Mercury, Total						0.3	< 0.1	0.1
Nickel, Total						6.9	7.2	< 4
Potassium, Total						1300	760	1100
Sodium, Total						190	200	82
Thallium, Total						< 0.5	< 0.5	< 0.5
Vanadium, Total						24	12	10
Zinc, Total						33	32	28
Chloride						< 40	98	< 40
Cyanide						2.3	< 2	< 2
Nitrogen, Ammonia						59	28	26
Sulfate as SO4						87	110	40
Total Organic Carbon (TOC)								
Extractable Petroleum Hydrocarbons (mg/kg)								
C11-C22 Aromatics (FID)								
C11-C22 Aromatics, Unadjusted								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
EPH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	1160-LPB33 1160-LPB33-S1 0.0-6.0 7/12/2001	1160-LPB33 1160-LPB33-S2 6.0-7.0 7/12/2001	1160-LPB33 1160-LPB33-S3 7.0-8.0 7/12/2001	1160-LPB34 1160-LPB34-S1 0.0-6.0 7/12/2001	1160-LPB34 1160-LPB34-S2 6.0-8.0 7/12/2001	BH12 [illegible] 6/10/1991	BH13 [illegible] 6/10/1991	BH16 [illegible] 6/10/1991
Volatile Petroleum Hydrocarbons (mg/kg)								
C5-C8 Aliphatics (FID)								
C5-C8 Aliphatics, Unadjusted								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								
C9-C12 Aliphatics, Unadjusted								
VPH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	BH17 8-10 FT 6/10/1991	BH18 4-6 FT 6/10/1991	BH36 4-6 FT 2/6/1992	BH37 4-6 FT 2/6/1992	BH38 3-5 FT 2/6/1992	LAKE POLY-1 12/15/1996	LAKE POLY-2 12/15/1996	LAKE POLY-3 12/15/1996
olatile Organics (mg/kg)								
1,1-Trichloroethane (TCA)	< 0.006	< 0.035	< 0.006	< 0.006	< 0.006	0.011	0.009	0.003
1-Dichloroethane	< 0.006	< 0.035	< 0.006	< 0.006	< 0.006	< 0.005	< 0.005	0.001
2,3-Trichlorobenzene								
2,4-Trichlorobenzene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
2,4-Trimethylbenzene								
2-Dichlorobenzene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
2-Dichloroethane	< 0.006	< 0.035	< 0.006	< 0.006	< 0.006	< 0.005	< 0.005	0.001
3,5-Trimethylbenzene								
3-Dichlorobenzene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
4-Dichlorobenzene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
4,4-Trimethyl-1-pentene	0.64	0.075	0.039	0.013	0.19	< 0.005	< 0.005	< 0.005
4,4-Trimethyl-2-Pentene	0.57	0.039	< 0.017	0.005	0.059	< 0.005	< 0.005	< 0.005
Butanone (MEK)	< 0.018	0.01	0.007	0.084	< 0.018	< 0.011	< 0.011	0.004
Hexanone	0.007	< 0.1	< 0.018	< 0.018	< 0.018	< 0.011	< 0.011	< 0.011
cetone	0.018	< 0.1	< 0.023	0.24	< 0.031	0.018	0.031	0.026
enzene	< 0.006	0.012	0.001	0.002	< 0.006	< 0.005	< 0.005	0.001
enzoic Acid	< 3.8	< 4.5	< 3.7	< 3.8	< 4	< 180	0.13	< 1.7
arbon Disulfide	< 0.012	< 0.07	0.013	0.005	< 0.012	< 0.005	< 0.005	< 0.005
hloroform	< 0.006	< 0.035	< 0.006	< 0.006	< 0.006	< 0.005	< 0.005	< 0.005
thylbenzene	< 0.006	0.011	< 0.006	< 0.006	< 0.006	< 0.005	< 0.005	< 0.005
p-Xylene								
ethylene Chloride	< 0.012	< 0.07	< 0.012	< 0.012	< 0.012	< 0.005	< 0.005	0.002
Isopropyl Toluene								
yrene	0.003	< 0.035	0.003	< 0.006	0.004	< 0.005	< 0.005	0.001
etrachloroethene (PCE)	< 0.006	< 0.035	< 0.006	< 0.006	< 0.006	< 0.005	< 0.005	< 0.005
oluene	0.017	0.017	0.19	0.017	< 0.006	< 0.005	0.0009	0.001
ichloroethene (TCE)	< 0.006	0.01	< 0.006	< 0.006	< 0.006	< 0.005	< 0.005	< 0.005
ylenes, Total	< 0.006	< 0.035	< 0.006	< 0.006	< 0.006	< 0.005	< 0.005	0.002
emivolatile Organics (mg/kg)								
Methylnaphthalene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
Chlorophenyl-phenylether	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
enaphthylene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	0.027	< 0.35

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	BH37 8-10FT 6/10/1991	BH18 4-8FT 6/10/1991	BH36 [illegible] 2/6/1992	BH37 4-8FT 2/6/1992	BH38 [illegible] 2/6/1992	LAKEPOLY23 12/16/1996	LAKEPOLY23 12/16/1996	LAKEPOLY9 12/16/1996
nthracene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	0.041	< 0.35
enzo(a)anthracene	< 0.79	< 0.92	< 0.76	0.048	< 0.82	< 37	0.13	0.008
enzo(b)fluoranthene	< 0.79	< 0.92	< 0.76	0.049	< 0.82	< 37	0.2	0.013
enzo(g,h,i)perylene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
enzo(k)fluoranthene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	0.17	0.019
s(2-EthylHexyl)phthalate	36	< 0.92	240	120	6700	5.1	0.65	0.18
utylbenzylphthalate	0.15	0.05	4.5	0.37	0.56	< 37	0.029	< 0.35
hrysene	< 0.79	< 0.92	< 0.76	0.058	< 0.82	< 37	0.16	0.016
ibenzofuran	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	0.016	< 0.35
iethylphthalate	< 0.79	0.057	< 0.76	< 0.79	< 0.82	< 37	0.019	< 0.35
i-n-butylphthalate	< 1.1	< 0.92	< 0.76	< 0.79	< 0.82	1	0.049	0.009
i-n-octylphthalate	< 0.79	< 0.92	0.13	0.12	0.38	< 37	< 0.39	< 0.35
luoranthene	< 0.79	< 0.92	< 0.76	0.072	< 0.82	< 37	0.3	0.022
luorene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	0.02	< 0.35
deno (1,2,3-cd) pyrene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	< 0.39	< 0.35
aphthalene	< 0.79	< 0.92	< 0.76	< 0.79	< 0.82	< 37	0.013	< 0.35
i-Nitrosodiphenylamine	14	< 0.92	< 0.76	< 0.79	11	210	0.097	< 0.35
henanthrene	0.052	< 0.92	< 0.76	< 0.79	< 0.82	< 37	0.24	< 0.35
henol	< 0.79	< 0.92	0.25	< 0.79	< 0.82	< 37	< 0.39	< 0.35
yrene	< 0.79	< 0.92	0.12	0.057	< 0.82	< 37	0.3	0.017
esticides/PCBs (mg/kg)								
4'-DDD	< 0.038	< 0.045	< 0.038	< 0.038	< 0.04	< 0.018	0.0012	< 0.0035
4'-DDE	< 0.038	< 0.045	< 0.038	< 0.038	< 0.04	< 0.018	0.0018	< 0.0035
4'-DDT	< 0.038	< 0.045	< 0.038	< 0.038	< 0.04	< 0.018	0.015	0.0023
drin	< 0.019	< 0.022	< 0.019	< 0.019	< 0.02	< 0.0094	< 0.0019	< 0.0018
pha-BHC	< 0.019	< 0.022	< 0.019	< 0.019	< 0.02	< 0.0094	< 0.0019	< 0.0018
pha-Chlordane	< 0.19	< 0.22	< 0.19	< 0.19	< 0.2	< 0.0094	0.0034	< 0.0018
ndosulfan Sulfate	< 0.038	< 0.045	< 0.038	< 0.038	< 0.04	< 0.018	< 0.0038	< 0.0035
ndrin	< 0.038	< 0.045	< 0.038	< 0.038	< 0.04	< 0.018	0.0004	< 0.0035
ndrin Aldehyde						< 0.018	< 0.0038	< 0.0035
amma-BHC (Lindane)	< 0.019	< 0.022	< 0.019	< 0.019	< 0.02	< 0.0094	< 0.0019	0.00036
amma-Chlordane	< 0.19	< 0.22	< 0.19	< 0.19	< 0.2	< 0.0094	0.0012	< 0.0018
organics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	BH17 8-10 FT 6/10/1991	BH18 4-6 FT 6/10/1991	BH36 4-5 FT 2/6/1992	BH37 4-6 FT 2/6/1992	BH38 3-5 FT 2/6/1992	LAKE POLY-1 12/15/1996	LAKE POLY-2 12/15/1996	LAKE POLY-3 12/15/1996
luminum, Total	4500	5700	5000	6500	7900	4840	5040	3440
ntimony, Total	< 20	< 20	< 20	< 20	< 20	< 1	< 1.2	< 1.2
rsenic, Total	4.4	< 2	< 2.9	7.1	4.4	4.1	4.6	3.9
arium, Total	20	2.8	13	14	22	12.9	18.8	6.5
eryllium, Total	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	0.25	0.26	0.2
admium, Total	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.2	< 0.2
alcium, Total	830	170	990	1400	1200	518	762	318
hromium, Total	1200	5.9	610	410	500	203	54.8	28.9
obalt, Total	2.5	< 1.5	1.6	4.4	3.8	2.5	3	1.5
opper, Total	12	< 2.5	10	9.7	15	6.8	20	3.7
exavalent Chromium, Total								
on, Total	9200	580	4900	8100	8500	5950	6670	5000
ead, Total	< 10	< 10	11	14	11	15	183	4.8
agnesium, Total	1600	210	830	2300	2200	1230	1450	874
anganese, Total	76	8.7	34	79	79	57.4	90.9	39.8
ercury, Total	0.1	< 0.1	< 0.1	< 0.1	< 0.11	0.14	0.14	< 0.1
ickel, Total	8.2	< 4	< 4	7.4	8.6	6.1	7.7	5.3
otassium, Total	430	130	600	860	1000	344	380	251
odium, Total	120	440	120	100	90	114	102	107
hallium, Total	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.6	2.2	< 1.6
anadium, Total	13	2.6	13	14	19	9	10.9	7.2
nc, Total	29	3.2	9.2	20	33	35.1	75.5	27.1
hloride	< 40	130	< 40	< 40	< 40			
yanide	5.4	< 2	< 2	2.3	< 2			
itrogen, Ammonia	360	70	10	140	41	66.6	25.8	42.4
ulfate as SO4	< 20	< 20	< 20	< 40	< 80	< 110	< 110	< 110
otal Organic Carbon (TOC)								
xtractable Petroleum Hydrocarbons (mg/kg)								
11-C22 Aromatics (FID)								
11-C22 Aromatics, Unadjusted								
19-C36 Aliphatics (PID)								
9-C18 Aliphatics (FID)								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	BH17 8-10 FT 6/10/1991	BH18 4-8 FT 6/10/1991	BH36 [illegible] FT 2/8/1992	BH37 [illegible] FT 2/8/1992	BH38 [illegible] FT 2/8/1992	LAKE POLY 1 12/15/1996	LAKE POLY 2 12/15/1996	LAKE POLY 3 12/15/1996
olatile Petroleum Hydrocarbons (mg/kg)								
5-C8 Aliphatics (FID)								
5-C8 Aliphatics, Unadjusted								
9-C10 Aromatics (PID)								
9-C12 Aliphatics (FID)								
9-C12 Aliphatics, Unadjusted								
PH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LP-101 101A 11/30/1998	LP-101 101B 11/30/1998	LP-101 SB101XXLPX 11/24/1998	LP-102 102A 11/30/1998	LP-102 102B 11/30/1998	LP-102 SB102XXLPX 11/24/1998	LP-102 SS101XXLPX 11/24/1998	LP-102 SS102XXLPX 11/24/1998
Volatile Organics (mg/kg)								
1,1,1-Trichloroethane (TCA)								
1,1-Dichloroethane								
1,2,3-Trichlorobenzene								
1,2,4-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene								
1,2-Dichloroethane								
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
2,4,4-Trimethyl-1-pentene								
2,4,4-Trimethyl-2-Pentene								
2-Butanone (MEK)								
2-Hexanone								
Acetone								
Benzene								
Benzoic Acid								
Carbon Disulfide								
Chloroform								
Ethylbenzene								
m,p-Xylene								
Methylene Chloride								
p-Isopropyl Toluene								
Styrene								
Tetrachloroethene (PCE)								
Toluene								
Trichloroethene (TCE)								
Xylenes, Total								
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene								
4-Chlorophenyl-phenylether								
Acenaphthylene								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LP-101 101A 11/30/1998	LP-101 101B 11/30/1998	LP-101 SB101XXLPX 11/24/1998	LP-102 102A 11/30/1998	LP-102 102B 11/30/1998	LP-102 SB102XXLPX 11/24/1998	LP-102 SS101XXLPX 11/24/1998	LP-102 SS102XXLPX 11/24/1998
Anthracene								
Benzo(a)anthracene								
Benzo(b)fluoranthene								
Benzo(g,h,i)perylene								
Benzo(k)fluoranthene								
bis(2-EthylHexyl)phthalate								
Butylbenzylphthalate								
Chrysene								
Dibenzofuran								
Diethylphthalate								
Di-n-butylphthalate								
Di-n-octylphthalate								
Fluoranthene								
Fluorene								
Indeno (1,2,3-cd) pyrene								
Naphthalene								
N-Nitrosodiphenylamine								
Phenanthrene								
Phenol								
Pyrene								
Pesticides/PCBs (mg/kg)								
4,4'-DDD								
4,4'-DDE								
4,4'-DDT								
Aldrin								
Alpha-BHC								
Alpha-Chlordane								
Endosulfan Sulfate								
Endrin								
Endrin Aldehyde								
Gamma-BHC (Lindane)								
Gamma-Chlordane								
Inorganics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	LP-101 101A 11/30/1998	LP-101 101B 11/30/1998	LP-101 SB101XXLPX 11/24/1998	LP-102 102A 11/30/1998	LP-102 102B 11/30/1998	LP-102 SB102XXLPX 11/24/1998	LP-102 SS101XXLPX 11/24/1998	LP-102 SS102XXLPX 11/24/1998
Aluminum, Total								
Antimony, Total								
Arsenic, Total								
Barium, Total								
Beryllium, Total								
Cadmium, Total								
Calcium, Total								
Chromium, Total	1440	2130	1270	117	624	322	41	101
Cobalt, Total								
Copper, Total								
Hexavalent Chromium, Total	11.1	19.9	14.5	2.29	12.7	2.78	0.43	1.22
Iron, Total								
Lead, Total								
Magnesium, Total								
Manganese, Total								
Mercury, Total								
Nickel, Total								
Potassium, Total								
Sodium, Total								
Thallium, Total								
Vanadium, Total								
Zinc, Total								
Chloride								
Cyanide								
Nitrogen, Ammonia								
Sulfate as SO4								
Total Organic Carbon (TOC)			4700			3840	10100	10900
Extractable Petroleum Hydrocarbons (mg/kg)								
C11-C22 Aromatics (FID)								
C11-C22 Aromatics, Unadjusted								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
EPH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LP-101 101A 11/30/1998	LP-101 101B 11/30/1998	LP-101 SB101XXLPX 11/24/1998	LP-102 102A 11/30/1998	LP-102 102B 11/30/1998	LP-102 SB102XXLPX 11/24/1998	LP-102 SS101XXLPX 11/24/1998	LP-102 SS102XXLPX 11/24/1998
Volatile Petroleum Hydrocarbons (mg/kg)								
C5-C8 Aliphatics (FID)								
C5-C8 Aliphatics, Unadjusted								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								
C9-C12 Aliphatics, Unadjusted								
VPH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LP-103 SB103XXLPX 11/24/1998	LP-103 SS103XXLPX 11/24/1998	LP-104 104A 11/30/1998	LP-104 104B 11/30/1998	LP-104 SB104XXLPX 11/24/1998	LP-104 SS104XXLPX 11/24/1998	LP-105 SB105XXLPX 11/24/1998	LP-106 SS106XXLPX 11/24/1998
Volatile Organics (mg/kg)								
1,1,1-Trichloroethane (TCA)								
1,1-Dichloroethane								
1,2,3-Trichlorobenzene								
1,2,4-Trichlorobenzene								
1,2,4-Trimethylbenzene								
1,2-Dichlorobenzene								
1,2-Dichloroethane								
1,3,5-Trimethylbenzene								
1,3-Dichlorobenzene								
1,4-Dichlorobenzene								
2,4,4-Trimethyl-1-pentene								
2,4,4-Trimethyl-2-Pentene								
2-Butanone (MEK)								
2-Hexanone								
Acetone								
Benzene								
Benzoic Acid								
Carbon Disulfide								
Chloroform								
Ethylbenzene								
m,p-Xylene								
Methylene Chloride								
p-Isopropyl Toluene								
Styrene								
Tetrachloroethene (PCE)								
Toluene								
Trichloroethene (TCE)								
Xylenes, Total								
Semivolatile Organics (mg/kg)								
2-Methylnaphthalene								
4-Chlorophenyl-phenylether								
Acenaphthylene								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LP-103 SB103XXLPX 11/24/1998	LP-103 SS103XXLPX 11/24/1998	LP-104 104A 11/30/1998	LP-104 104B 11/30/1998	LP-104 SB104XXLPX 11/24/1998	LP-104 SS104XXLPX 11/24/1998	LP-105 SB105XXLPX 11/24/1998	LP-105 SS105XXLPX 11/24/1998
Anthracene								
Benzo(a)anthracene								
Benzo(b)fluoranthene								
Benzo(g,h,i)perylene								
Benzo(k)fluoranthene								
bis(2-EthylHexyl)phthalate								
Butylbenzylphthalate								
Chrysene								
Dibenzofuran								
Diethylphthalate								
Di-n-butylphthalate								
Di-n-octylphthalate								
Fluoranthene								
Fluorene								
Indeno (1,2,3-cd) pyrene								
Naphthalene								
N-Nitrosodiphenylamine								
Phenanthrene								
Phenol								
Pyrene								
Pesticides/PCBs (mg/kg)								
4,4'-DDD								
4,4'-DDE								
4,4'-DDT								
Aldrin								
Alpha-BHC								
Alpha-Chlordane								
Endosulfan Sulfate								
Endrin								
Endrin Aldehyde								
Gamma-BHC (Lindane)								
Gamma-Chlordane								
Inorganics (mg/kg)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LP-103 SB103XXLPX 11/24/1998	LP-103 SS103XXLPX 11/24/1998	LP-104 104A 11/30/1998	LP-104 104B 11/30/1998	LP-104 SB104XXLPX 11/24/1998	LP-104 SS104XXLPX 11/24/1998	LP-105 SB105XXLPX 11/24/1998	LP-105 SS105XXLPX 11/24/1998
Aluminum, Total								
Antimony, Total								
Arsenic, Total								
Barium, Total								
Beryllium, Total								
Cadmium, Total								
Calcium, Total								
Chromium, Total	407	13.5	33.3	524	2610	27.6	9.4	29.8
Cobalt, Total								
Copper, Total								
Hexavalent Chromium, Total	1.76	0.41	0.88	5.36	16.2	0.59	0.47	0.42
Iron, Total								
Lead, Total								
Magnesium, Total								
Manganese, Total								
Mercury, Total								
Nickel, Total								
Potassium, Total								
Sodium, Total								
Thallium, Total								
Vanadium, Total								
Zinc, Total								
Chloride								
Cyanide								
Nitrogen, Ammonia								
Sulfate as SO4								
Total Organic Carbon (TOC)	13600	8680			3340	2550	2370	4600
Extractable Petroleum Hydrocarbons (mg/kg)								
C11-C22 Aromatics (FID)								
C11-C22 Aromatics, Unadjusted								
C19-C36 Aliphatics (PID)								
C9-C18 Aliphatics (FID)								
EPH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LP-103 SB103XXLPX 11/24/1998	LP-103 SS103XXLPX 11/24/1998	LP-104 104A 11/30/1998	LP-104 104B 11/30/1998	LP-104 SB104XXLPX 11/24/1998	LP-104 SS104XXLPX 11/24/1998	LP-105 SB105XXLPX 11/24/1998	LP-105 SS105XXLPX 11/24/1998
Volatile Petroleum Hydrocarbons (mg/kg)								
C5-C8 Aliphatics (FID)								
C5-C8 Aliphatics, Unadjusted								
C9-C10 Aromatics (PID)								
C9-C12 Aliphatics (FID)								
C9-C12 Aliphatics, Unadjusted								
VPH Concentration (Total)								

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	LPB-2 LPB-2(7-8) 7-8 Ft 1/18/1995	LPB-2 LPB-2(8-9) 8-9 Ft 1/18/1995	SWMU-27-101 SS101XX27X 11/23/1998	SWMU-27-101 SS101XX27X 11/30/1998
Volatile Organics (mg/kg)				
1,1,1-Trichloroethane (TCA)	< 0.006	< 0.006	< 0.009	< 0.66
1,1-Dichloroethane	< 0.006	< 0.006	< 0.009	< 0.66
1,2,3-Trichlorobenzene			< 0.009	< 0.66
1,2,4-Trichlorobenzene	< 0.4	0.088	< 0.009	< 0.66
1,2,4-Trimethylbenzene			0.025	< 0.66
1,2-Dichlorobenzene	< 0.4	0.17	< 0.009	< 0.66
1,2-Dichloroethane	< 0.006	0.002	< 0.009	< 0.66
1,3,5-Trimethylbenzene			< 0.009	< 0.66
1,3-Dichlorobenzene	< 0.4	< 0.83	< 0.009	< 0.66
1,4-Dichlorobenzene	< 0.4	0.23	< 0.009	< 0.66
2,4,4-Trimethyl-1-pentene	0.93	10	< 0.009	
2,4,4-Trimethyl-2-Pentene	0.28	3.3	< 0.009	
2-Butanone (MEK)	0.021	< 0.017	< 0.18	< 13
2-Hexanone	< 0.018	< 0.017	< 0.036	< 2.7
Acetone	0.14	0.026	< 0.18	< 13
Benzene	< 0.006	< 0.006	< 0.009	< 0.66
Benzoic Acid			< 2.1	
Carbon Disulfide	< 0.012	< 0.011		
Chloroform	< 0.006	< 0.006	< 0.009	< 0.66
Ethylbenzene	0.015	0.057	< 0.009	< 0.66
m,p-Xylene				
Methylene Chloride	0.004	0.002	< 0.009	< 0.66
p-Isopropyl Toluene			< 0.009	< 0.66
Styrene	0.001	< 0.006	< 0.009	< 0.66
Tetrachloroethene (PCE)	< 0.006	< 0.006	0.0093	< 0.66
Toluene	0.004	0.007	< 0.009	< 0.66
Trichloroethene (TCE)	< 0.006	< 0.006	< 0.009	< 0.66
Xylenes, Total	0.003	0.091		
Semivolatile Organics (mg/kg)				
2-Methylnaphthalene	< 0.4	< 0.83	< 0.42	
4-Chlorophenyl-phenylether	< 0.4	0.17	< 0.42	
Acenaphthylene	< 0.4	< 0.83	< 0.42	

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

Parameter Name	LPB-2 LPB-2(7-8) 7-8 Ft 7/18/1995	LPB-2 LPB-2(8-9) 8-9 Ft 7/18/1995	SWMU-27-101 SS101&27X 7/25/1995	SWMU-27-101 SS101&27X 11/30/1995
Anthracene	< 0.4	< 0.83	< 0.42	
Benzo(a)anthracene	< 0.4	< 0.83	< 0.42	
Benzo(b)fluoranthene	< 0.4	< 0.83	< 0.42	
Benzo(g,h,i)perylene	< 0.4	< 0.83	< 0.42	
Benzo(k)fluoranthene	< 0.4	< 0.83	< 0.42	
bis(2-EthylHexyl)phthalate	1.8	260	1.4	
Butylbenzylphthalate	< 0.4	< 0.83	< 0.42	
Chrysene	< 0.4	< 0.83	< 0.42	
Dibenzofuran	< 0.4	0.095	< 0.42	
Diethylphthalate	< 0.4	< 0.83	< 0.42	
Di-n-butylphthalate	0.032	9.1	< 0.42	
Di-n-octylphthalate	< 0.4	0.11	< 0.42	
Fluoranthene	< 0.4	0.082	< 0.42	
Fluorene	< 0.4	< 0.83	< 0.42	
Indeno (1,2,3-cd) pyrene	< 0.4	< 0.83	< 0.42	
Naphthalene	< 0.4	0.092	< 0.09	< 6.6
N-Nitrosodiphenylamine	140	300	< 0.42	
Phenanthrene	< 0.4	0.28	< 0.42	
Phenol	< 0.4	0.055	< 0.42	
Pyrene	< 0.4	0.098	< 0.42	
Pesticides/PCBs (mg/kg)				
4,4'-DDD				
4,4'-DDE				
4,4'-DDT				
Aldrin				
Alpha-BHC				
Alpha-Chlordane				
Endosulfan Sulfate				
Endrin				
Endrin Aldehyde				
Gamma-BHC (Lindane)				
Gamma-Chlordane				
Inorganics (mg/kg)				

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LPB-2 LPB-2(7-8) 7-8 FT 1/18/1995	LPB-2 LPB-2(8-9) 8-9 FT 1/18/1995	SWMU-27-101 SS101XX27X 11/23/1998	SWMU-27-101 SS101XX27X 11/30/1998
Aluminum, Total	4700	2500	6200	
Antimony, Total	< 0.5	< 0.5	< 3	
Arsenic, Total	4	2.5	3	
Barium, Total	8.4	13	13	
Beryllium, Total	< 0.5	< 0.5	< 0.3	
Cadmium, Total	< 1	< 1	< 0.3	
Calcium, Total	480	420	620	
Chromium, Total	68	1300	260	
Cobalt, Total	< 3	< 3	2	
Copper, Total	3.4	3.9	8.4	
Hexavalent Chromium, Total				
Iron, Total	5300	5200	6000	
Lead, Total	5.7	13	14	
Magnesium, Total	1300	880	910	
Manganese, Total	44	41	62	
Mercury, Total	< 0.1	0.52	< 0.06	
Nickel, Total	< 4	4.7	4.1	
Potassium, Total	290	260	660	
Sodium, Total	76	39	74	
Thallium, Total	< 0.5	< 0.5	< 2	
Vanadium, Total	6.8	4.8	13	
Zinc, Total	13	28	19	
Chloride	< 40	< 40	26.1	
Cyanide				
Nitrogen, Ammonia	390	170	52	
Sulfate as SO4	44	85	6.8	
Total Organic Carbon (TOC)				
Extractable Petroleum Hydrocarbons (mg/kg)				
C11-C22 Aromatics (FID)				
C11-C22 Aromatics, Unadjusted				
C19-C36 Aliphatics (PID)				
C9-C18 Aliphatics (FID)				
EPH Concentration (Total)				

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date

Table A-1
Analytical Results for the Lake Poly Area

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, MA

ParameterName	LPB-2 LPB-2(7-8) 7-8 FT 1/18/1995	LPB-2 LPB-2(8-9) 8-9 FT 1/18/1995	SWMU-27-101 SS101XX27X 11/23/1998	SWMU-27-101 SS101XX27X 11/30/1998
Volatile Petroleum Hydrocarbons (mg/kg)				
C5-C8 Aliphatics (FID)				
C5-C8 Aliphatics, Unadjusted				
C9-C10 Aromatics (PID)				
C9-C12 Aliphatics (FID)				
C9-C12 Aliphatics, Unadjusted				
VPH Concentration (Total)				

Note:
Sample headings include the Location Id, Sample Id (if different from Location Id), Depth Interval (if available), and Sample Date.

APPENDIX B

TOXICITY PROFILES FOR ADDITIONAL OHM OF POTENTIAL CONCERN

TOXICITY PROFILES FOR SELECTED OHM OF POTENTIAL CONCERN DETECTED DURING THE JULY 2001 SAMPLING EVENT

Petroleum Hydrocarbons

Chemical surrogates were chosen to represent the different aliphatic and aromatic fractions of TPH. Appropriate surrogates are referenced below for each fraction. Surrogates were identified by the Massachusetts Department of Environmental Protection (MADEP) in the Guidance Document "Characterizing Risk Posed by Petroleum Contaminated Sites" (MADEP, 1997).

C5-C8 Aliphatics. n-hexane is the reference compound for the TPH fraction containing C5-C8 alkanes/cycloalkanes. Through epidemiological studies on n-hexane-exposed workers, sensorimotor polyneuropathy has been observed as the main toxic effect of long-term exposure. Other noted effects include cranial neuropathy, blurred vision, and abnormal color vision. The onset of symptoms may be delayed for several months to a year after exposure. Affected individuals may recover completely, but some may retain sensorimotor deficits. A number of animal studies have been conducted that document n-hexane's neuropathic effects.

Reference:
MADEP, 1994. Interim Final Petroleum Report: Development of Health-Based Alternative to the Total Petroleum Hydrocarbon (TPH) Parameter. August.

C9-C12 Aliphatics. See profile for n-hexane provided for C5-C8 Aliphatics above.

C9-C18 Aliphatics. See profile for n-hexane provided for C5-C8 Aliphatics above.

C19-C36 Aliphatics. See profile for n-hexane provided for C5-C8 Aliphatics above.

C9-C10 Aromatics. See profiles for xylene and pyrene (below).

C11-C22 Aromatics. See profiles for naphthalene and pyrene (below).

Naphthalene. Naphthalene is a member of the polycyclic aromatic hydrocarbons (PAH) class of compounds which contain two or more aromatic rings. PAHs are ubiquitous in nature and are also manmade. Naphthalene occurs naturally in coal tar, crude oil, and is formed from incomplete combustion of organic material. It is also product of pyrolysis in tobacco smoke. Naphthalene is used for the production of phthalic anhydride, which is used for the production of plasticizers. Naphthalene is also used in moth balls, for the production of the insecticide carbaryl, and in numerous resins, dyes, pharmaceuticals, and other organic materials.

Naphthalene is absorbed through the inhalation, oral, and dermal routes, and appears to be more toxic to humans than laboratory animals. The principal toxic effect of naphthalene in humans and animals is hemolysis of red blood cells, which can lead to anemia, decreased oxygen carrying capacity, and jaundice. Humans pre-disposed to anemia, such as those with G6DP enzyme deficiency, may be particularly sensitive to naphthalene toxicity. Exposure to naphthalene has also been correlated with increased risk of cataract formation. Animal studies were negative for naphthalene reproductive toxicity. Although no human epidemiological data are available for assessing naphthalene carcinogenicity, animal data investigating naphthalene toxicity are equivocal. The USEPA has placed naphthalene in weight-of-evidence Group D, not classifiable as to human carcinogenicity.

Reference:
Agency for Toxic Substances and Disease Registry (ATSDR), 1990. "Toxicological Profile for Naphthalene"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service. October, 1990.

Pyrene. Pyrene is a member of the polycyclic aromatic hydrocarbons (PAH) class of compounds which contain two or more aromatic rings. They are ubiquitous in nature and are also man made. It occurs naturally in coal tar, crude oil, and is formed from incomplete combustion of organic material. Pyrene is reported to be a skin irritant to

humans. Rats administered pyrene exhibited blood chemistry changes, as well as liver and kidney damage. Pyrene was shown to be inactive as an initiating agent and thus has been classified as a D carcinogen.

Reference:
ATSDR, 1989. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, October, 1989.

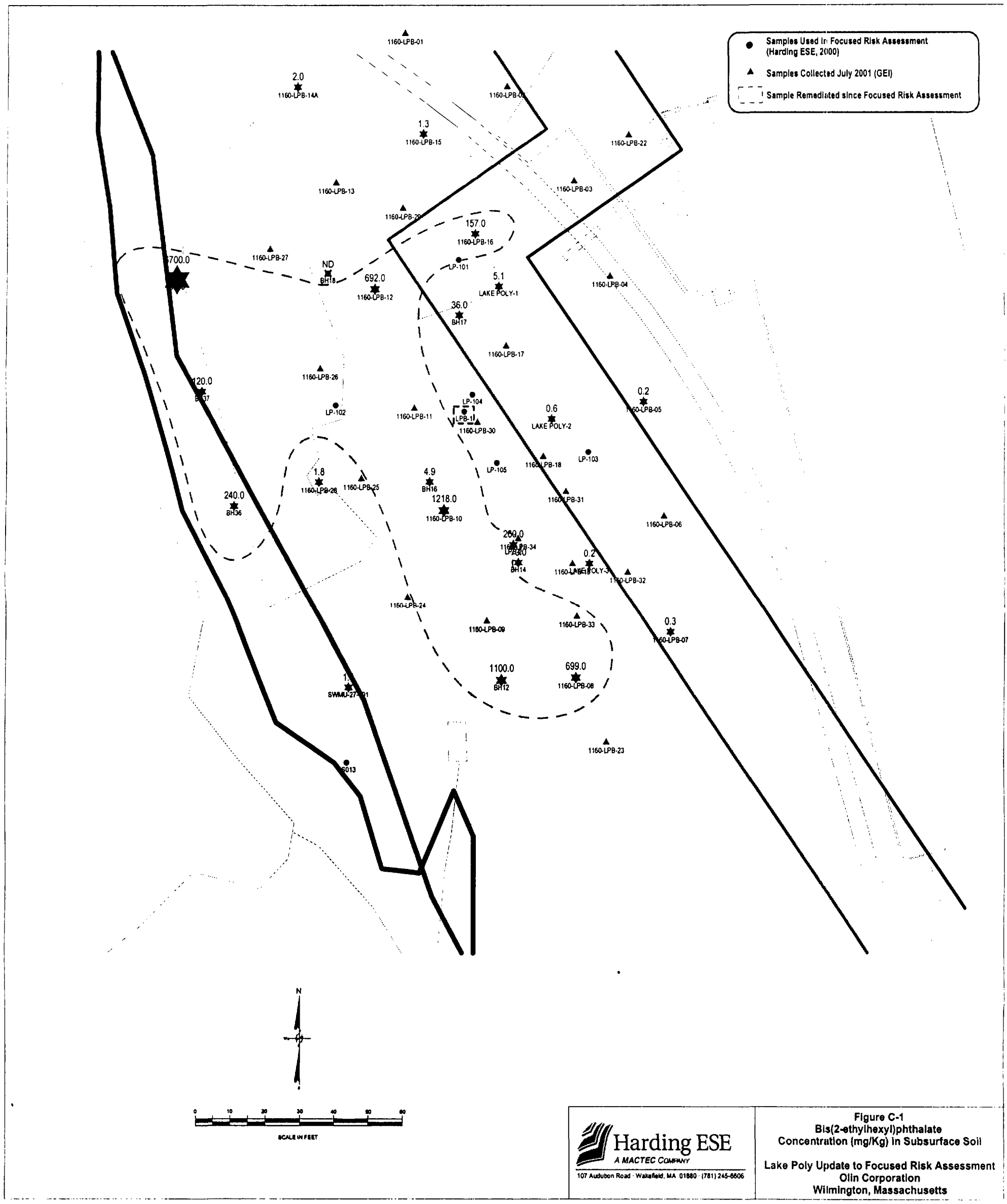
Xylenes. Xylene is a volatile organic compound that is generally composed of a mixture of the meta, ortho, and para isomers. Xylenes are used as solvents, in paints, thinners, cleaners, degreasers, and as a component in gasoline.

Xylenes are absorbed by oral, inhalation, and dermal exposures, and distribute to all tissues, particularly those with high fat contents. All three isomers produce similar effects, although the potency with which various effects are produced may vary from effect to effect with each isomer. In both humans and animals, xylene exposure has been associated with central nervous system depression, impaired learning and memory, and tremors. In humans, inhalation of xylene may produce prolonged respiratory tract inflammation and edema. In laboratory animals, exposures to xylenes have produced adverse reproductive effects, including increased fetal death rate and retarded development. There is no evidence of carcinogenicity in humans or animals.

Reference:
MADEP, 1992. "Risk Assessment Shortform Residential Exposure Scenario, Version 1.6"; Policy #WSC/ORS-142-92; Office of Research and Standards and the Bureau of Waste Site Cleanup, Boston, MA; September 1992.

APPENDIX C

SUPPORT FOR THE HOT SPOT ANALYSIS



Harding ESE
A MACTEC COMPANY
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Figure C-1
Bis(2-ethylhexyl)phthalate
Concentration (mg/Kg) in Subsurface Soil

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

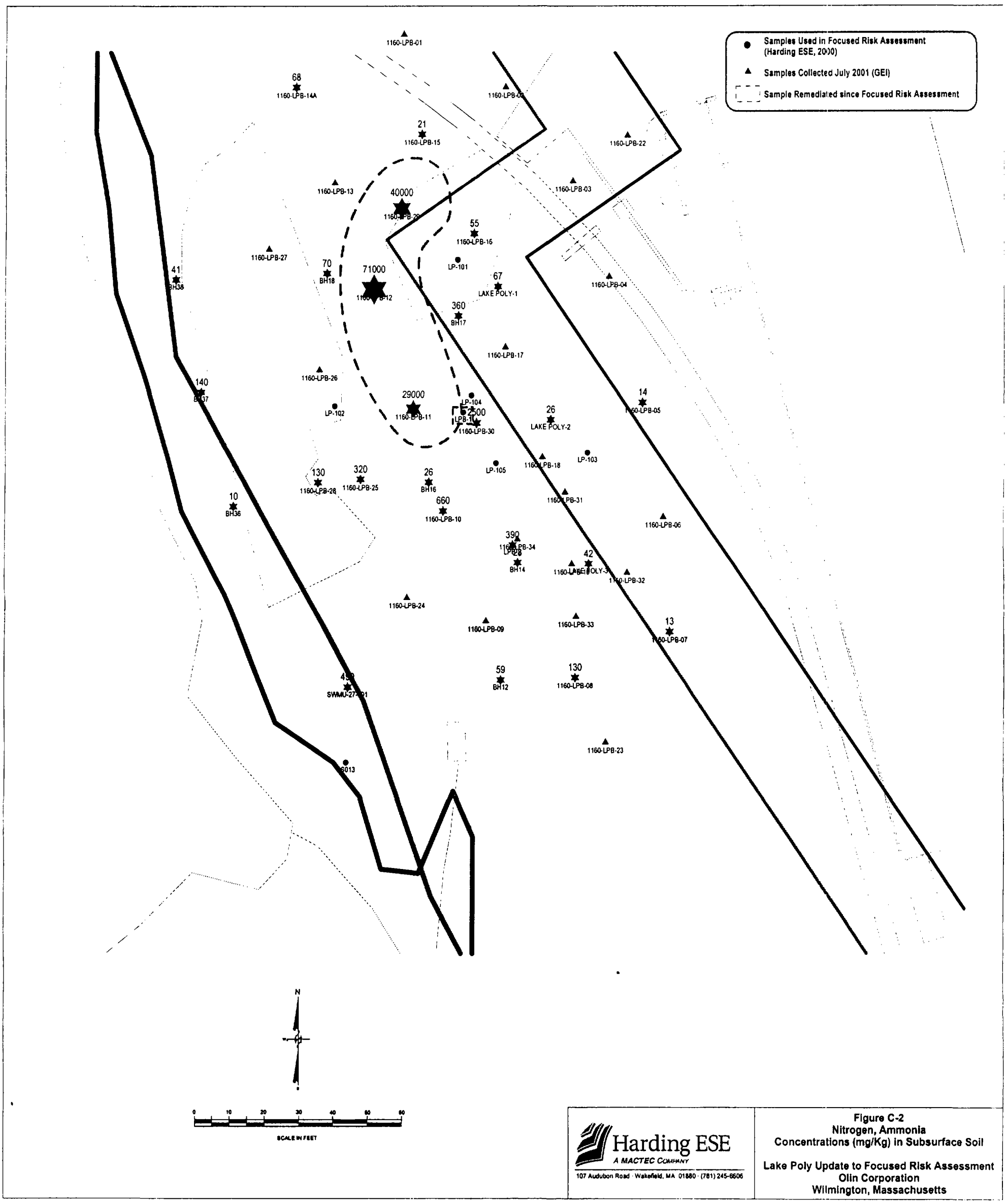

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Figure C-2
Nitrogen, Ammonia
Concentrations (mg/Kg) in Subsurface Soil

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

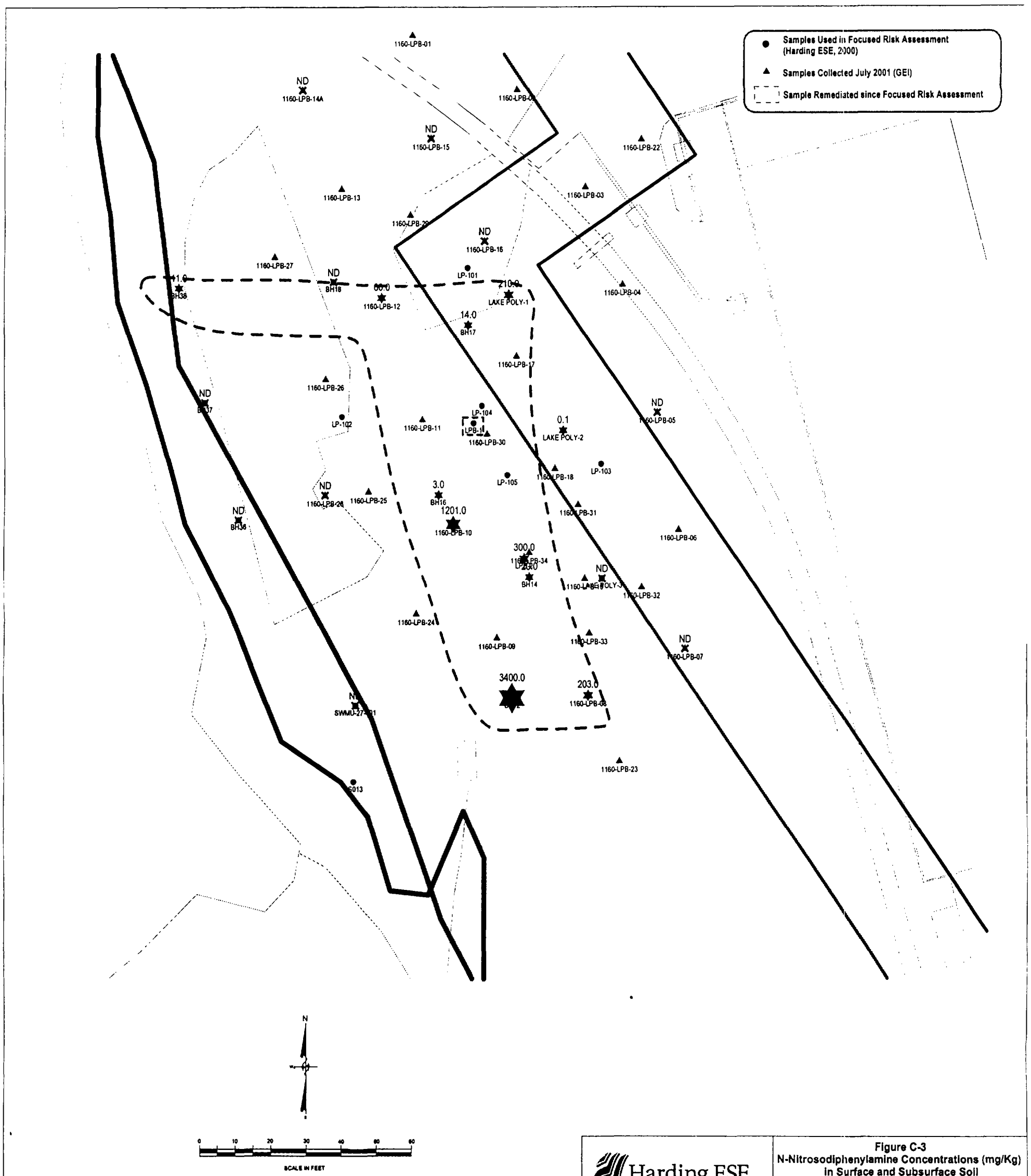

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Figure C-3
N-Nitrosodiphenylamine Concentrations (mg/Kg) in Surface and Subsurface Soil

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

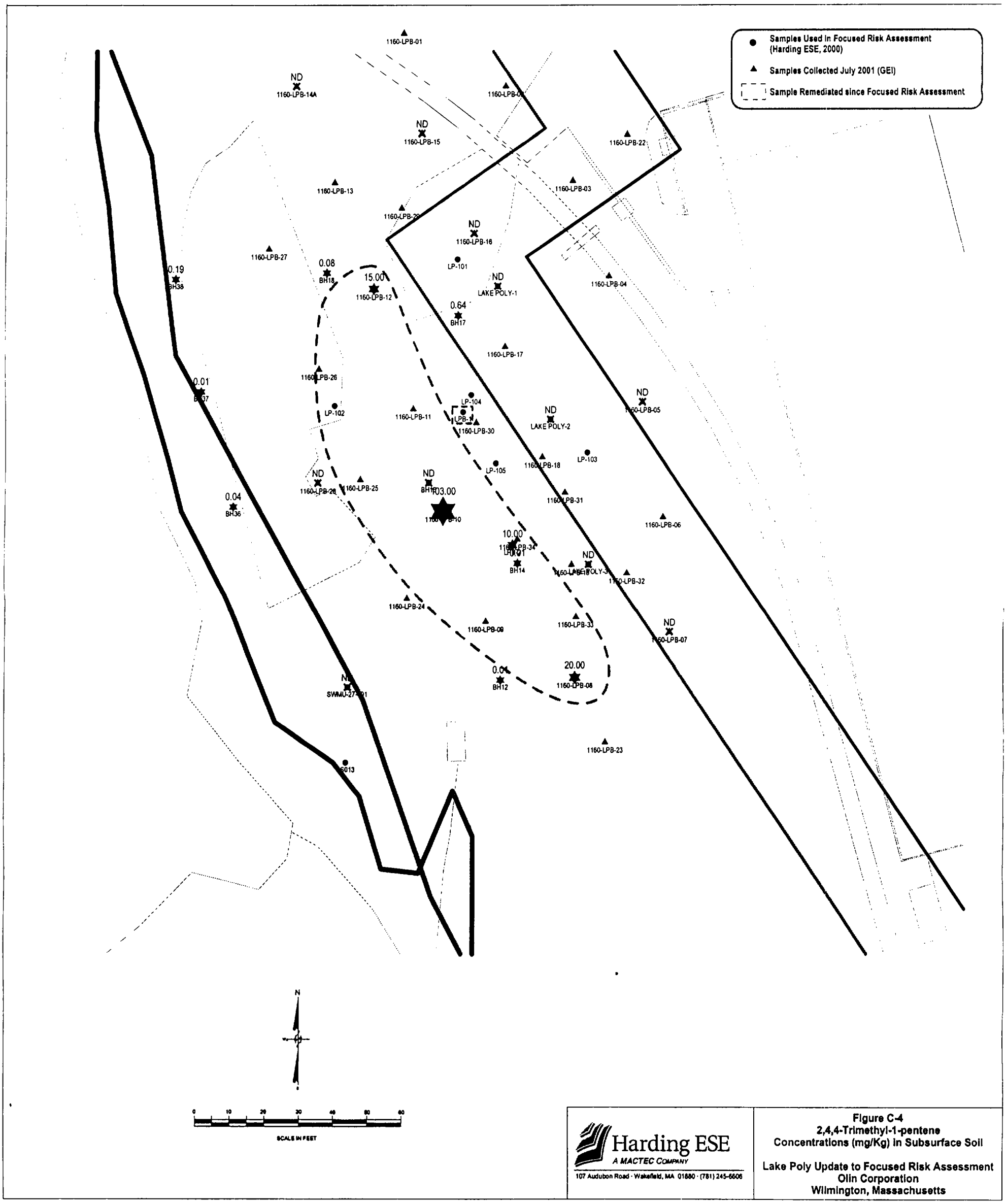

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Figure C-4
2,4,4-Trimethyl-1-pentene
Concentrations (mg/Kg) in Subsurface Soil

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

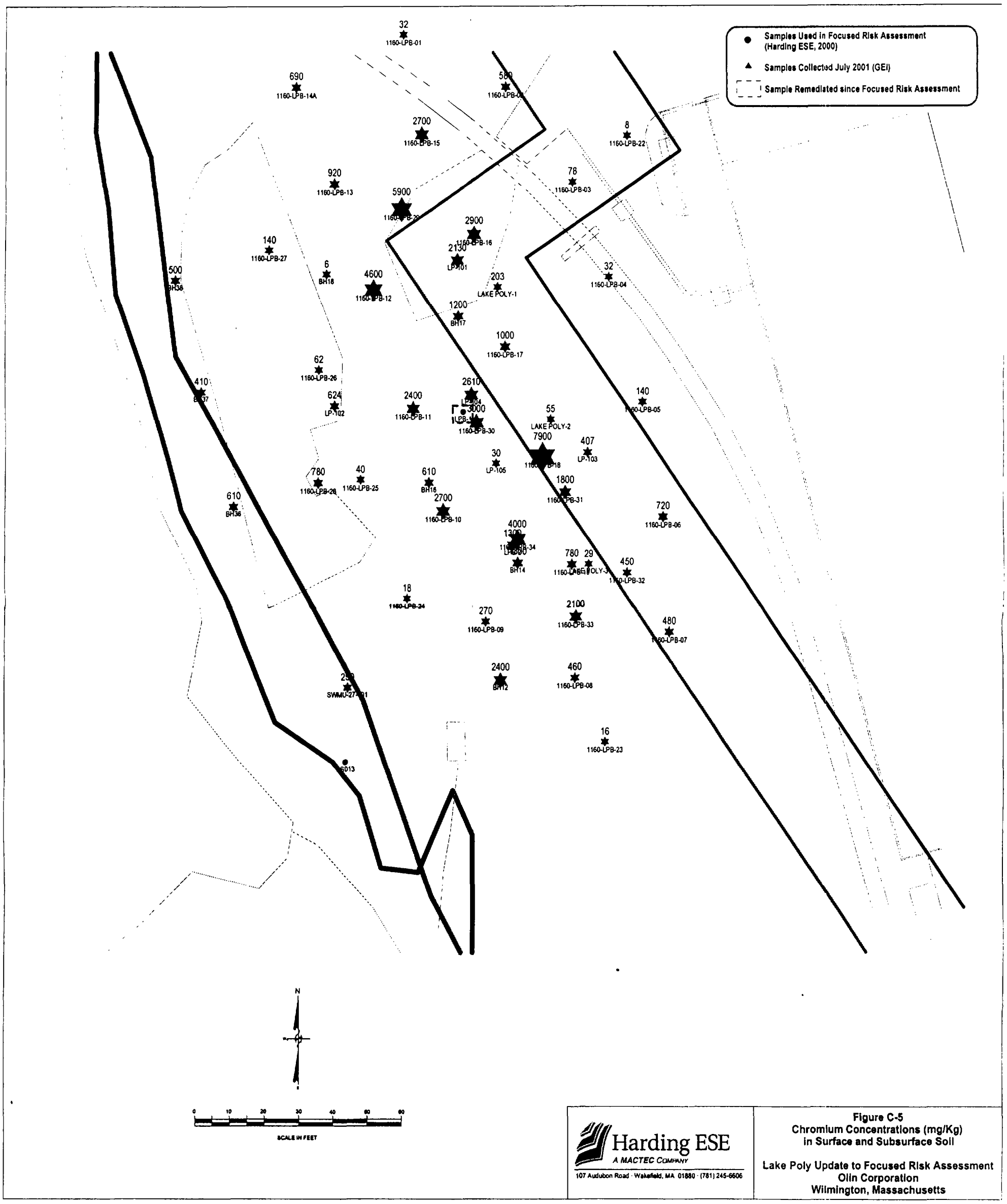

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Figure C-5
Chromium Concentrations (mg/Kg) in Surface and Subsurface Soil

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

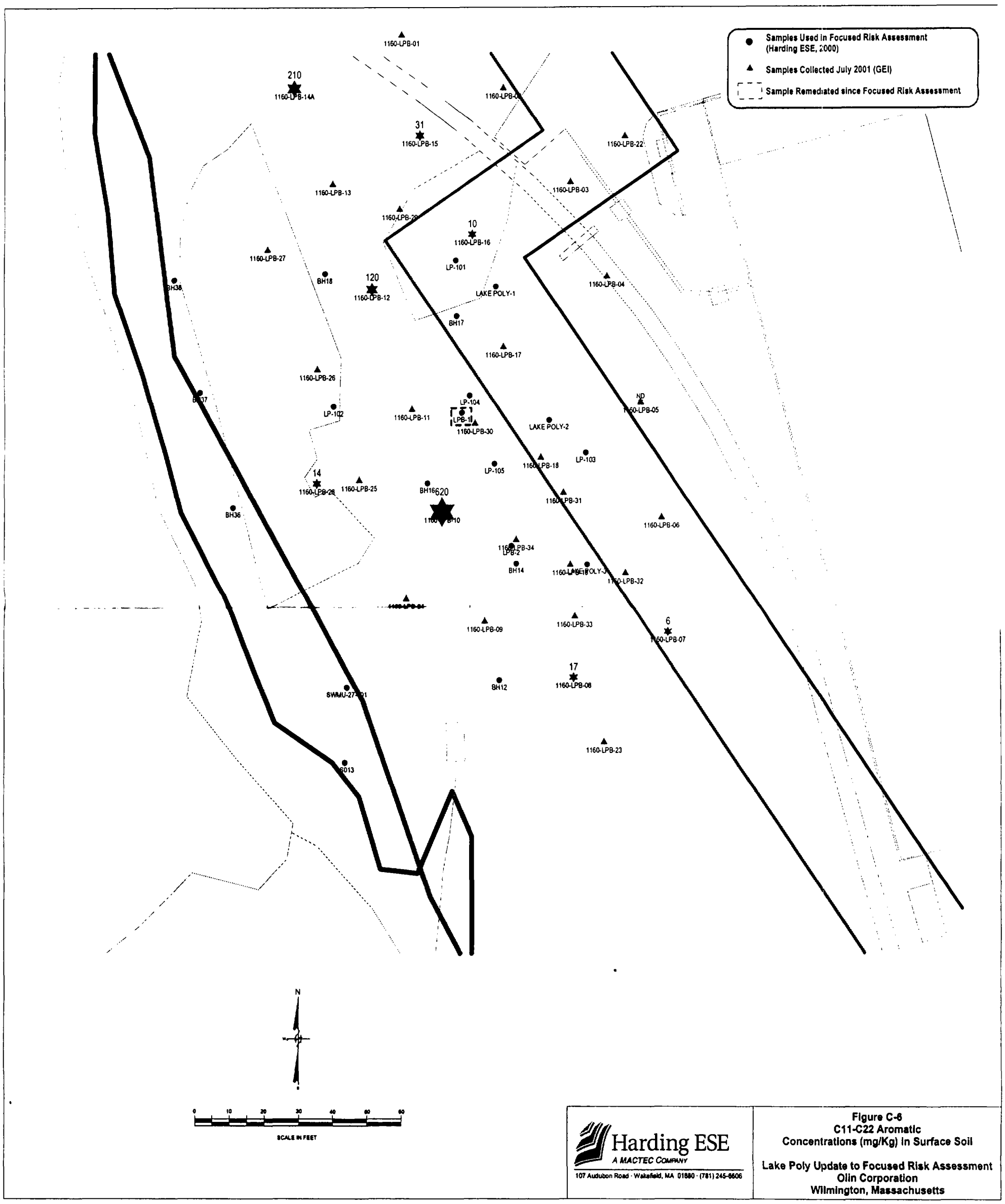

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Figure C-6
C11-C22 Aromatic Concentrations (mg/Kg) in Surface Soil

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

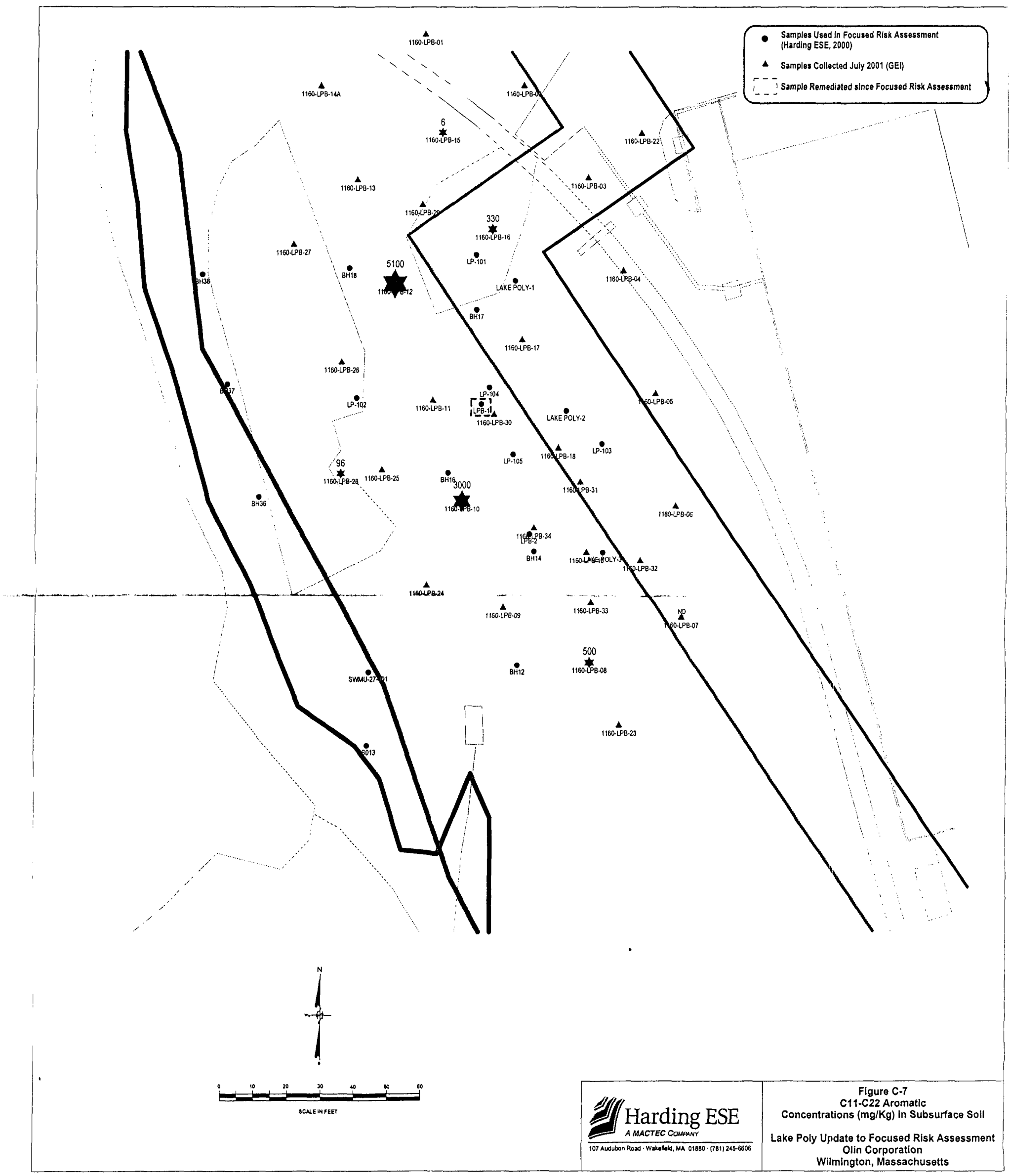

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Figure C-7
C11-C22 Aromatic
Concentrations (mg/Kg) in Subsurface Soil

Lake Poly Update to Focused Risk Assessment
Olin Corporation
Wilmington, Massachusetts

APPENDIX D

REVISED SPREADSHEETS

TABLE D-1 (FRA TABLE G1-15 REVISED)
INHALATION OF SOIL PARTICULATES - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: OFF-SITE DOWNWIND RESIDENT (AGES 0 TO 6) - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SOIL	[OHM]soil	chemical-specific	mg/kg	
CONCENTRATION OF RP IN AIR	[RP]air	35.4	ug/m3	MADEP, 1995
EXPOSURE TIME	ET	0.018	day/event	
EXPOSURE FREQUENCY	EF	246	event/yr	Assumption [1]
EXPOSURE DURATION	ED	0.5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	0.5	yr	Assumption
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = AIR AVG. CONC. x CANCER UNIT RISK

$$\text{HAZARD QUOTIENT} = \frac{\text{AIR AVG.CONC.}}{\text{REFERENCE CONCENTRATION}}$$

$$\text{AIR AVG. CONC.} = \frac{[\text{OHM}]\text{soil} \times [\text{RP}]\text{air} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
RP = Respirable Particulates
[1] Children 0-6 are assumed to spend 350 days per year at home (which accounts for two weeks vacation time). Exposure frequency is also adjusted based on frequency of rainfall.
Per NTIS (1985), rain (of at least 0.01 inches) falls in the northeast about 104 days per year.

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. LIFETIME (ug/m^3)	INHALATION CANCER UNIT RISK ($(ug/m^3)^{-1}$)	CANCER RISK-INHALATION
1,2-Dichloroethane	2.0E-03	5.7E-12	2.6E-05	1.5E-16
1,4-Dichlorobenzene	2.0E+00	5.8E-09	1.1E-05	6.4E-14
Benzene	2.0E-03	5.7E-12	7.8E-06	4.5E-17
Chloroform	1.0E-03	2.9E-12	2.3E-05	6.6E-17
Methylene Chloride	4.0E-03	1.1E-11	4.7E-07	5.4E-18
Styrene	4.0E-03	1.1E-11	5.7E-07	6.5E-18
Benzo(a)anthracene	5.2E-02	1.5E-10	1.1E-04	1.6E-14
Benzo(b)fluoranthene	4.9E-02	1.4E-10	1.1E-04	1.5E-14
bis(2-EthylHexyl)phthalate	6.7E+03	1.9E-05	2.4E-06	4.6E-11
Butylbenzylphthalate	4.5E+00	1.3E-08		
Chrysene	8.9E-02	2.5E-10	1.1E-06	2.8E-16
Indeno (1,2,3-cd) pyrene	1.0E+01	2.9E-08	1.1E-04	3.1E-12
Naphthalene	1.6E-01	4.6E-10		
N-Nitrosodiphenylamine	3.4E+03	9.7E-06	2.6E-06	2.5E-11
4,4'-DDD	4.0E-02	1.1E-10	6.9E-05	7.9E-15
Aldrin	3.2E-02	9.2E-11	4.9E-03	4.5E-13
Alpha-BHC	2.4E-02	6.9E-11	1.8E-03	1.2E-13
Beryllium, Total	2.5E-01	7.2E-10	2.4E-03	1.7E-12
Cadmium, Total	1.0E+00	2.9E-09	1.8E-03	5.2E-12
Hexavalent Chromium, Total	5.8E+00	1.7E-08	1.2E-02	2.0E-10
Lead, Total	1.1E+01	3.2E-08		
Mercury, Total	6.3E-01	1.8E-09		
Nickel, Total	5.5E+00	1.6E-08	2.4E-04	3.8E-12
			SUMMARY CANCER RISK:	3E-10

Notes:
ND = no data available
NA = not applicable

TABLE D-1 (FRA TABLE G1-15 REVISED)
INHALATION OF SOIL PARTICULATES - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: OFF-SITE DOWNWIND RESIDENT (AGES 0 TO 6) - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. FOR TIME PERIOD (ug/m³)	INHALATION SUBCHRONIC REFERENCE CONCENTRATION (ug/m³)	HAZARD QUOTIENT-INHALATION
1,1,1-Trichloroethane (TCA)	1.1E-02	4.7E-09	1.0E+04	4.7E-13
1,2,3-Trichlorobenzene	3.6E-01	1.5E-07	2.0E+03	7.7E-11
1,2,4-Trichlorobenzene	8.8E-02	3.8E-08	2.0E+03	1.9E-11
1,2,4-Trimethylbenzene	3.9E-01	1.7E-07	3.0E+02	5.6E-10
1,2-Dichlorobenzene	1.8E+00	7.9E-07	2.0E+03	4.0E-10
1,2-Dichloroethane	2.0E-03	8.6E-10	5.5E+01	1.6E-11
1,3,5-Trimethylbenzene	1.1E-01	4.7E-08	3.0E+02	1.6E-10
1,3-Dichlorobenzene	7.4E-01	3.2E-07	2.0E+03	1.6E-10
1,4-Dichlorobenzene	2.0E+00	8.7E-07	2.5E+03	3.5E-10
2,4,4-Trimethyl-1-pentene	1.0E+02	4.4E-05	7.2E+01	6.1E-07
2,4,4-Trimethyl-2-Pentene	5.8E+01	2.5E-05	7.2E+01	3.5E-07
2-Butanone (MEK)	8.4E-02	3.6E-08	1.0E+03	3.6E-11
2-Hexanone	7.0E-03	3.0E-09	5.0E+01	6.0E-11
Acetone	2.4E-01	1.0E-07	8.0E+02	1.3E-10
Benzene	2.0E-03	8.6E-10	3.2E+01	2.7E-11
Carbon Disulfide	6.1E-03	2.6E-09	7.0E+02	3.7E-12
Chloroform	1.0E-03	4.3E-10	6.6E+02	6.5E-13
Ethylbenzene	6.7E+00	2.9E-06	1.0E+03	2.9E-09
m,p-Xylene	2.0E-01	8.6E-08	3.0E+02	2.9E-10
Methylene Chloride	4.0E-03	1.7E-09	3.0E+03	5.7E-13
p-Isopropyl Toluene	1.3E+00	5.4E-07		
Styrene	4.0E-03	1.7E-09	3.0E+03	5.7E-13
Toluene	1.9E-01	8.2E-08	4.0E+02	2.0E-10
Xylenes, Total	4.6E+00	2.0E-06	3.0E+02	6.6E-09
2-Methylnaphthalene	6.3E-02	2.7E-08	3.0E+00	9.0E-09
4-Chlorophenyl-phenylether	1.7E-01	7.3E-08		
Benzo(a)anthracene	5.2E-02	2.2E-08	3.0E+00	7.4E-09
Benzo(b)fluoranthene	4.9E-02	2.1E-08	3.0E+00	7.0E-09
Benzo(g,h,i)perylene	6.6E-01	2.8E-07	3.0E+00	9.4E-08
bis(2-EthylHexyl)phthalate	6.7E+03	2.9E-03	7.0E+00	4.1E-04
Butylbenzylphthalate	4.5E+00	1.9E-06	7.0E+00	2.8E-07
Chrysene	8.9E-02	3.8E-08	3.0E+00	1.3E-08
Di-n-butylphthalate	3.2E+01	1.4E-05	7.0E+00	2.0E-06
Di-n-octylphthalate	3.8E-01	1.6E-07	7.0E+00	2.3E-08
Dibenzofuran	1.1E-01	4.7E-08		
Fluoranthene	5.7E+00	2.4E-06	3.0E+00	8.2E-07
Indeno (1,2,3-cd) pyrene	1.0E+01	4.3E-06	3.0E+00	1.4E-06
N-Nitrosodiphenylamine	3.4E+03	1.5E-03		
Naphthalene	1.6E-01	6.9E-08	3.0E+00	2.3E-08
Phenanthrene	6.4E-01	2.7E-07	3.0E+00	9.2E-08
Phenol	2.5E-01	1.1E-07	2.6E+02	4.1E-10
Pyrene	2.0E-01	8.6E-08	3.0E+00	2.9E-08
4,4'-DDD	4.0E-02	1.7E-08		
Aldrin	3.2E-02	1.4E-08		
Alpha-BHC	2.4E-02	1.0E-08	7.0E-01	1.5E-08
Endosulfan Sulfate	1.5E-01	6.4E-08		
Endrin	8.9E-02	3.8E-08		
Aluminum, Total	5.2E+03	2.2E-03		
Antimony, Total	4.1E+01	1.8E-05	1.0E+01	1.8E-06

CONTINUED ON NEXT PAGE

Notes:
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-1 (FRA TABLE G1-15 REVISED)
INHALATION OF SOIL PARTICULATES - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: OFF-SITE DOWNWIND RESIDENT (AGES 0 TO 6) - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS, CONTINUED

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. FOR TIME PERIOD (ug/m^3)	INHALATION SUBCHRONIC REFERENCE CONCENTRATION (ug/m^3)	HAZARD QUOTIENT-INHALATION
Barium, Total	6.6E+01	2.8E-05	5.0E+00	5.7E-06
Beryllium, Total	2.5E-01	1.1E-07	2.0E-02	5.4E-06
Cadmium, Total	1.0E+00	4.3E-07	1.5E-02	2.9E-05
Calcium, Total	7.9E+02	3.4E-04		
Chromium, Total	5.9E+03	2.5E-03	1.0E-01	2.5E-02
Cobalt, Total	2.6E+00	1.1E-06		
Copper, Total	8.3E+00	3.6E-06	2.7E+00	1.3E-06
Hexavalent Chromium, Total	5.8E+00	2.5E-06	1.0E-01	2.5E-05
Iron, Total	7.3E+03	3.1E-03		
Lead, Total	1.1E+01	4.7E-06	7.0E-01	6.8E-06
Manganese, Total	6.5E+01	2.8E-05	5.0E-02	5.5E-04
Mercury, Total	6.3E-01	2.7E-07	3.0E-01	9.0E-07
Nickel, Total	5.5E+00	2.4E-06	2.0E-01	1.2E-05
Potassium, Total	6.9E+02	3.0E-04		
Sodium, Total	1.1E+02	4.9E-05		
Thallium, Total	1.6E+00	6.9E-07		
Vanadium, Total	1.3E+01	5.4E-06	6.0E+00	9.0E-07
Zinc, Total	2.6E+01	1.1E-05		
Chloride	9.8E+01	4.2E-05		
Cyanide	2.0E+00	8.6E-07	7.0E+00	1.2E-07
Nitrogen, Ammonia	7.1E+04	3.0E-02	1.0E+02	3.0E-04
Sulfate as SO4	5.0E+01	2.2E-05		
C11-C22 Aromatics (FID)	1.7E+03	7.4E-04	7.1E+01	1.0E-05
C19-C36 Aliphatics (PID)	1.1E+03	4.8E-04		
C9-C18 Aliphatics (FID)	1.1E+03	4.7E-04	2.0E+03	2.4E-07
C5-C8 Aliphatics (FID)	3.3E+01	1.4E-05	2.0E+02	7.0E-08
C9-C10 Aromatics (PID)	1.5E+01	6.6E-06	6.0E+01	1.1E-07
C9-C12 Aliphatics (FID)	1.5E+01	6.3E-06	2.0E+03	3.1E-09
			SUMMARY HAZARD INDEX:	0.03

Notes:
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-2 (FRA TABLE G1-16 REVISED)
DIRECT CONTACT AND INCIDENTAL INGESTION OF SOIL - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: REDEVELOPMENT CONSTRUCTION WORKER - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SOIL	[OHM]soil	chemical-specific	mg/kg	
SOIL INGESTION RATE	IR s	110	mg/day	Appendix E
SKIN SURFACE AREA	SA	5834	cm2/day	MADEP, 1996 [1]
ADHERENCE FACTOR	AF	0 51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DER	RAF-D	chemical-specific	unitless	
VOLUME WEIGHTING FACTOR	AWF	0.018	unitless	Assumption
BODY WEIGHT	BW	70	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	250	day/yr	MADEP, 1996
EXPOSURE DURATION	ED	0.5	yr	MADEP, 1996
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	0.5	yr	MADEP, 1996
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
MADEP, 1996. Draft Commercial/Industrial Shortform.
[1] Corresponds to surface area for the face, neck, hands, forearms, lower legs, and feet.

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{soil} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{soil} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK DERMAL	TOTAL CANCER RISK
1,2-Dichloroethane	2.0E-03	1	2.6E-13	0.1	7.0E-13	9.1E-02	2.4E-14	6.4E-14	8.7E-14
1,4-Dichlorobenzene	2.0E+00	1	2.6E-10	0.1	7.1E-10	2.4E-02	6.3E-12	1.7E-11	2.3E-11
Benzene	2.0E-03	1	2.6E-13	0.08	5.6E-13	5.5E-02	1.4E-14	3.1E-14	4.5E-14
Chloroform	1.0E-03	1	1.3E-13	0.1	3.5E-13	6.1E-03	7.9E-16	2.1E-15	*2.9E-15
Methylene Chloride	4.0E-03	1	5.2E-13	0.1	1.4E-12	7.5E-03	3.9E-15	1.0E-14	1.4E-14
Styrene	4.0E-03					3.0E-02			
Benzo(a)anthracene	5.2E-02	1	6.7E-12	0.04	7.3E-12	7.3E-01	4.9E-12	5.3E-12	1.0E-11
Benzo(b)fluoranthene	4.9E-02	1	6.3E-12	0.04	6.8E-12	7.3E-01	4.6E-12	5.0E-12	9.6E-12
bis(2-EthylHexyl)phthalate	6.7E+03	1	8.7E-07	0.02	4.7E-07	1.4E-02	1.2E-08	6.6E-09	1.9E-08
Butylbenzylphthalate	4.5E+00								
Chrysene	8.9E-02	1	1.1E-11	0.04	1.2E-11	7.3E-03	8.4E-14	9.1E-14	1.7E-13
Indeno (1,2,3-cd) pyrene	1.0E+01	1	1.3E-09	0.04	1.4E-09	7.3E-01	9.4E-10	1.0E-09	2.0E-09
Naphthalene	1.6E-01			0.04	2.2E-11				
N-Nitrosodiphenylamine	3.4E+03	0.91	4.0E-07	0.17	2.0E-06	4.9E-03	2.0E-09	9.9E-09	1.2E-08
4,4'-DDD	4.0E-02	1	5.2E-12	0.2	2.8E-11	2.4E-01	1.2E-12	6.7E-12	7.9E-12
Aldrin	3.2E-02	1	4.1E-12	0.25	2.8E-11	1.7E+01	7.0E-11	4.8E-10	5.5E-10
Alpha-BHC	2.4E-02	0.96	3.0E-12	0.18	1.5E-11	6.3E+00	1.9E-11	9.5E-11	1.1E-10
Cadmium, Total	1.0E+00								
Lead, Total	1.1E+01								
Mercury, Total	6.3E-01								
						SUMMARY CANCER RISK:	2E-08	2E-08	3E-08

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE D-2 (FRA TABLE G1-16 REVISED)
DIRECT CONTACT AND INCIDENTAL INGESTION OF SOIL - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: REDEVELOPMENT CONSTRUCTION WORKER - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	NONCARCINOGENIC SUBCHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC SUBCHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	SUBCHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
1,1,1-Trichloroethane (TCA)	1.1E-02	1	2.1E-10	0.1	5.8E-10	9.0E-02	2.4E-09	6.4E-09	8.8E-09
1,2,3-Trichlorobenzene	3.6E-01	1	7.0E-09	0.08	1.5E-08	1.0E-02	7.0E-07	1.5E-06	2.2E-06
1,2,4-Trichlorobenzene	8.8E-02	1	1.7E-09	0.08	3.7E-09	1.0E-02	1.7E-07	3.7E-07	5.4E-07
1,2,4-Trimethylbenzene	3.9E-01	1	7.6E-09	0.12	2.5E-08	5.0E-02	1.5E-07	4.9E-07	6.4E-07
1,2-Dichlorobenzene	1.8E+00	1	3.6E-08	0.1	9.7E-08	9.0E-02	4.0E-07	1.1E-06	1.5E-06
1,2-Dichloroethane	2.0E-03	1	3.9E-11	0.1	1.0E-10	2.0E-02	1.9E-09	5.2E-09	7.2E-09
1,3,5-Trimethylbenzene	1.1E-01	1	2.1E-09	0.12	6.9E-09	5.0E-02	4.3E-08	1.4E-07	1.8E-07
1,3-Dichlorobenzene	7.4E-01	0.96	1.4E-08	0.18	7.0E-08	9.0E-01	1.5E-08	7.8E-08	9.3E-08
1,4-Dichlorobenzene	2.0E+00	0.96	3.8E-08	0.18	1.9E-07	9.0E-01	4.2E-08	2.1E-07	2.5E-07
2,4,4-Trimethyl-1-pentene	1.0E+02	0.99	2.0E-06	0.11	5.9E-06	2.1E-01	9.4E-06	2.8E-05	3.8E-05
2,4,4-Trimethyl-2-Pentene	5.8E+01	0.99	1.1E-06	0.11	3.3E-06	2.1E-01	5.3E-06	1.6E-05	2.1E-05
2-Butanone (MEK)	8.4E-02	1	1.6E-09	0.1	4.4E-09	2.0E+00	8.1E-10	2.2E-09	3.0E-09
2-Hexanone	7.0E-03	1	1.4E-10	0.1	3.7E-10	4.0E-02	3.4E-09	9.2E-09	1.3E-08
Acetone	2.4E-01	1	4.6E-09	0.1	1.3E-08	1.0E+00	4.6E-09	1.3E-08	1.7E-08
Benzene	2.0E-03	1	3.9E-11	0.08	8.4E-11	5.0E-02	7.7E-10	1.7E-09	2.5E-09
Carbon Disulfide	6.1E-03	1.09	1.3E-10	0.12	3.8E-10	1.0E-01	1.3E-09	3.8E-09	5.1E-09
Chloroform	1.0E-03	1	1.9E-11	0.1	5.2E-11	1.0E-02	1.9E-09	5.2E-09	7.2E-09
Ethylbenzene	6.7E+00	1	1.3E-07	0.2	7.0E-07	1.0E+00	1.3E-07	7.0E-07	8.3E-07
m,p-Xylene	2.0E-01	1	3.9E-09	0.12	1.3E-08	4.0E+00	9.7E-10	3.1E-09	4.1E-09
Methylene Chloride	4.0E-03	1	7.7E-11	0.1	2.1E-10	6.0E-02	1.3E-09	3.5E-09	4.8E-09
p-Isopropyl Toluene	1.3E+00								
Styrene	4.0E-03	1	7.7E-11	0.2	4.2E-10	2.0E+00	3.9E-11	2.1E-10	2.5E-10
Toluene	1.9E-01	1	3.7E-09	0.12	1.2E-08	2.0E+00	1.8E-09	6.0E-09	7.8E-09
Xylenes, Total	4.6E+00	1	8.9E-08	0.12	2.9E-07	4.0E+00	2.2E-08	7.2E-08	9.5E-08
2-Methylnaphthalene	6.3E-02	1	1.2E-09	0.04	1.3E-09	2.0E-02	6.1E-08	6.6E-08	1.3E-07
4-Chlorophenyl-phenylether	1.7E-01								
Benzo(a)anthracene	5.2E-02	0.91	9.2E-10	0.04	1.1E-09	3.0E-01	3.1E-09	3.6E-09	6.7E-09
Benzo(b)fluoranthene	4.9E-02	0.91	8.6E-10	0.04	1.0E-09	3.0E-01	2.9E-09	3.4E-09	6.3E-09
Benzo(g,h,i)perylene	6.6E-01	0.91	1.2E-08	0.04	1.4E-08	3.0E-01	3.9E-08	4.6E-08	8.5E-08
bis(2-EthylHexyl)phthalate	6.7E+03	1	1.3E-04	0.02	7.0E-05	2.0E-02	6.5E-03	3.5E-03	1.0E-02
Butylbenzylphthalate	4.5E+00	0.96	8.4E-08	0.18	4.2E-07	2.0E+00	4.2E-08	2.1E-07	2.5E-07
Chrysene	8.9E-02	0.91	1.6E-09	0.04	1.9E-09	3.0E-01	5.2E-09	6.2E-09	1.1E-08
Di-n-butylphthalate	3.2E+01	0.96	6.0E-07	0.18	3.0E-06	1.0E+00	6.0E-07	3.0E-06	3.6E-06
Di-n-octylphthalate	3.8E-01	0.96	7.1E-09	0.18	3.6E-08	2.0E-02	3.5E-07	1.8E-06	2.1E-06
Dibenzofuran	1.1E-01	1	2.1E-09	0.19	1.1E-08	4.0E-03	5.3E-07	2.7E-06	3.3E-06
Fluoranthene	5.7E+00	1	1.1E-07	0.04	1.2E-07	4.0E-01	2.8E-07	3.0E-07	5.7E-07
Indeno (1,2,3-cd) pyrene	1.0E+01	0.91	1.8E-07	0.04	2.1E-07	3.0E-01	5.9E-07	7.0E-07	1.3E-06
N-Nitrosodiphenylamine	3.4E+03	0.96	6.3E-05	0.18	3.2E-04				
Naphthalene	1.6E-01	1	3.1E-09	0.04	3.4E-09	2.0E-02	1.5E-07	1.7E-07	3.2E-07
Phenanthrene	6.4E-01	0.91	1.1E-08	0.04	1.3E-08	3.0E-01	3.8E-08	4.5E-08	8.2E-08
Phenol	2.5E-01	1	4.8E-09	0.26	3.4E-08	6.0E-01	8.1E-09	5.7E-08	6.5E-08
Pyrene	2.0E-01	1	3.9E-09	0.04	4.2E-09	3.0E-01	1.3E-08	1.4E-08	2.7E-08
4,4'-DDD	4.0E-02	0.96	7.4E-10	0.18	3.8E-09	5.0E-04	1.5E-06	7.5E-06	9.0E-06
Aldrin	3.2E-02	1	6.2E-10	0.25	4.2E-09	3.0E-05	2.1E-05	1.4E-04	1.6E-04
Alpha-BHC	2.4E-02	0.96	4.5E-10	0.18	2.3E-09	1.0E-02	4.5E-08	2.3E-07	2.7E-07
Endosulfan Sulfate	1.5E-01	0.96	2.8E-09	0.18	1.4E-08	6.0E-03	4.6E-07	2.4E-06	2.8E-06
Endrin	8.9E-02	1	1.7E-09	0.25	1.2E-08	3.0E-04	5.7E-06	3.9E-05	4.5E-05
Aluminum, Total	5.2E+03					1.0E+00			
Antimony, Total	4.1E+01	1	7.9E-07	0.1	2.1E-06	4.0E-04	2.0E-03	5.4E-03	7.4E-03

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Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = *not applicable*
**Where subchronic values are unavailable, chronic values are used.*

TABLE D-2 (FRA TABLE G1-16 REVISED)
DIRECT CONTACT AND INCIDENTAL INGESTION OF SOIL - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: REDEVELOPMENT CONSTRUCTION WORKER - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS, CONTINUED

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	NONCARCINOGENIC SUBCHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC SUBCHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	SUBCHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
Barium, Total	6.6E+01	0.71	9.1E-07	0.05	1.7E-06	7.0E-02	1.3E-05	2.5E-05	3.8E-05
Beryllium, Total	2.5E-01	1	4.8E-09	0.03	3.9E-09	2.0E-03	2.4E-06	2.0E-06	4.4E-06
Cadmium, Total	1.0E+00	1.86	3.6E-08	0.14	7.3E-08	1.0E-03	3.6E-05	7.3E-05	1.1E-04
Calcium, Total	7.9E+02					5.3E+01			
Chromium, Total	5.9E+03	1	1.1E-04	0.09	2.8E-04	2.0E-02	5.7E-03	1.4E-02	2.0E-02
Cobalt, Total	2.6E+00	1.86	9.3E-08	0.14	1.9E-07	1.8E-01	5.1E-07	1.0E-06	1.6E-06
Copper, Total	8.3E+00					4.0E-02			
Hexavalent Chromium, Total	5.8E+00	1	1.1E-07	0.09	2.7E-07	2.0E-02	5.6E-06	1.4E-05	1.9E-05
Iron, Total	7.3E+03					6.7E-01			
Lead, Total	1.1E+01	0.5	1.1E-07	0.006	3.5E-08	7.5E-04	1.4E-04	4.6E-05	1.9E-04
Manganese, Total	6.5E+01	1.86	2.3E-06	0.14	4.7E-06	4.7E-02	4.9E-05	1.0E-04	1.5E-04
Mercury, Total	6.3E-01	1	1.2E-08	0.05	1.7E-08	3.0E-03	4.1E-06	5.5E-06	9.6E-06
Nickel, Total	5.5E+00	1	1.1E-07	0.35	1.0E-06	2.0E-02	5.3E-06	5.1E-05	5.6E-05
Potassium, Total	6.9E+02					1.5E+01			
Sodium, Total	1.1E+02					2.0E+01			
Thallium, Total	1.6E+00	1	3.1E-08	0.01	8.4E-09	8.0E-04	3.9E-05	1.0E-05	4.9E-05
Vanadium, Total	1.3E+01	0.71	1.7E-07	0.05	3.3E-07	7.0E-03	2.5E-05	4.7E-05	7.2E-05
Zinc, Total	2.6E+01	1	5.0E-07	0.02	2.7E-07	3.0E-01	1.7E-06	9.1E-07	2.6E-06
Chloride	9.8E+01					7.0E+00			
Cyanide	2.0E+00	1	3.9E-08	0.3	3.1E-07	2.0E-02	1.9E-06	1.6E-05	1.8E-05
Nitrogen, Ammonia	7.1E+04	0.71	9.8E-04	0.05	1.9E-03	9.7E-01	1.0E-03	1.9E-03	2.9E-03
Sulfate as SO4	5.0E+01					1.4E+01			
C11-C22 Aromatics (FID)	1.7E+03	0.91	3.1E-05	0.18	1.6E-04	3.0E-01	1.0E-04	5.4E-04	6.5E-04
C19-C36 Aliphatics (FID)	1.1E+03	0.91	2.0E-05	0.1	5.9E-05	6.0E+01	3.3E-07	9.8E-07	1.3E-06
C9-C18 Aliphatics (FID)	1.1E+03	0.91	1.9E-05	0.2	1.2E-04	6.0E+00	3.2E-06	1.9E-05	2.2E-05
C5-C8 Aliphatics (FID)	3.3E+01	0.91	5.7E-07	0.5	8.5E-06	6.0E-01	9.6E-07	1.4E-05	1.5E-05
C9-C10 Aromatics (PID)	1.5E+01	0.91	2.7E-07	0.18	1.5E-06	3.0E-01	9.1E-07	4.9E-06	5.8E-06
C9-C12 Aliphatics (FID)	1.5E+01	0.91	2.6E-07	0.2	1.5E-06	6.0E+00	4.3E-08	2.6E-07	3.0E-07
						SUMMARY HAZARD INDEX:	0.02	0.03	0.04

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-3 (FRA TABLE G1-17 REVISED)
INHALATION OF SOIL PARTICULATES - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: REDEVELOPMENT CONSTRUCTION WORKER - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SOIL	[OHM]soil	chemical-specific	mg/kg	
CONCENTRATION OF RP IN AIR	[RP]air	46	ug/m3	MADEP, 1995
EXPOSURE TIME	ET	0 00594	day/event	
EXPOSURE FREQUENCY	EF	176	event/yr	Assumption [1]
EXPOSURE DURATION	ED	0.5	yr	MADEP, 1996
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	0.5	yr	MADEP, 1996
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = AIR AVG. CONC. x CANCER UNIT RISK

$$\text{HAZARD QUOTIENT} = \frac{\text{AIR AVG.CONC.}}{\text{REFERENCE CONCENTRATION}}$$

$$\text{AIR AVG. CONC.} = \frac{[\text{OHM}]\text{soil} \times [\text{RP}]\text{air} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
MADEP, 1996. Draft Commercial/Industrial Shortform.
[1] Workers are assumed to spend 250 days per year at work (which accounts for two weeks vacation time). Exposure frequency is also adjusted based on frequency of rainfall.
RP = Respirable Particulates

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. LIFETIME (ug/m^3)	INHALATION CANCER UNIT RISK ($(ug/m^3)^{-1}$)	CANCER RISK-INHALATION
1,2-Dichloroethane	2.0E-03	1.8E-12	2.6E-05	4.6E-17
1,4-Dichlorobenzene	2.0E+00	1.8E-09	1.1E-05	2.0E-14
Benzene	2.0E-03	1.8E-12	7.8E-06	1.4E-17
Chloroform	1.0E-03	8.8E-13	2.3E-05	2.0E-17
Methylene Chloride	4.0E-03	3 5E-12	4.7E-07	1.7E-18
Styrene	4.0E-03	3.5E-12	5.7E-07	2.0E-18
Benzo(a)anthracene	5.2E-02	4.6E-11	1.1E-04	5.0E-15
Benzo(b)fluoranthene	4.9E-02	4.3E-11	1.1E-04	4.7E-15
bis(2-EthylHexyl)phthalate	6.7E+03	5.9E-06	2.4E-06	1.4E-11
Butylbenzylphthalate	4.5E+00	4.0E-09		
Chrysene	8.9E-02	7.8E-11	1.1E-06	8.6E-17
Indeno (1,2,3-cd) pyrene	1.0E+01	8.8E-09	1.1E-04	9.7E-13
Naphthalene	1.6E-01	1.4E-10		
N-Nitrosodiphenylamine	3.4E+03	3.0E-06	2.6E-06	7.8E-12
4,4'-DDD	4.0E-02	3.5E-11	6.9E-05	2.4E-15
Aldrin	3.2E-02	2.8E-11	4.9E-03	1.4E-13
Alpha-BHC	2.4E-02	2.1E-11	1.8E-03	3 8E-14
Beryllium, Total	2.5E-01	2.2E-10	2.4E-03	5.3E-13
Cadmium, Total	1.0E+00	8.8E-10	1.8E-03	1.6E-12
Hexavalent Chromium, Total	5.8E+00	5.1E-09	1.2E-02	6.1E-11
Lead, Total	1.1E+01	9.7E-09		
Mercury, Total	6.3E-01	5.5E-10		
Nickel, Total	5.5E+00	4.8E-09	2.4E-04	1.2E-12
			SUMMARY CANCER RISK:	9E-11

Notes:
ND = no data available
NA = not applicable

TABLE D-3 (FRA TABLE G1-17 REVISED)
INHALATION OF SOIL PARTICULATES - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: REDEVELOPMENT CONSTRUCTION WORKER - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. FOR TIME PERIOD (ug/m^3)	INHALATION SUBCHRONIC REFERENCE CONCENTRATION (ug/m^3)	HAZARD QUOTIENT-INHALATION
1,1,1-Trichloroethane (TCA)	1.1E-02	1.4E-09	1.0E+04	1.4E-13
1,2,3-Trichlorobenzene	3.6E-01	4.7E-08	2.0E+03	2.4E-11
1,2,4-Trichlorobenzene	8.8E-02	1.2E-08	2.0E+03	5.8E-12
1,2,4-Trimethylbenzene	3.9E-01	5.1E-08	3.0E+02	1.7E-10
1,2-Dichlorobenzene	1.8E+00	2.4E-07	2.0E+03	1.2E-10
1,2-Dichloroethane	2.0E-03	2.6E-10	5.5E+01	4.8E-12
1,3,5-Trimethylbenzene	1.1E-01	1.4E-08	3.0E+02	4.8E-11
1,3-Dichlorobenzene	7.4E-01	9.7E-08	2.0E+03	4.9E-11
1,4-Dichlorobenzene	2.0E+00	2.7E-07	2.5E+03	1.1E-10
2,4,4-Trimethyl-1-pentene	1.0E+02	1.4E-05	7.2E+01	1.9E-07
2,4,4-Trimethyl-2-Pentene	5.8E+01	7.6E-06	7.2E+01	1.1E-07
2-Butanone (MEK)	8.4E-02	1.1E-08	1.0E+03	1.1E-11
2-Hexanone	7.0E-03	9.2E-10	5.0E+01	1.8E-11
Acetone	2.4E-01	3.2E-08	8.0E+02	4.0E-11
Benzene	2.0E-03	2.6E-10	3.2E+01	8.2E-12
Carbon Disulfide	6.1E-03	8.0E-10	7.0E+02	1.1E-12
Chloroform	1.0E-03	1.3E-10	6.6E+02	2.0E-13
Ethylbenzene	6.7E+00	8.8E-07	1.0E+03	8.8E-10
m,p-Xylene	2.0E-01	2.6E-08	3.0E+02	8.8E-11
Methylene Chloride	4.0E-03	5.3E-10	3.0E+03	1.8E-13
p-Isopropyl Toluene	1.3E+00	1.7E-07		
Styrene	4.0E-03	5.3E-10	3.0E+03	1.8E-13
Toluene	1.9E-01	2.5E-08	4.0E+02	6.3E-11
Xylenes, Total	4.6E+00	6.1E-07	3.0E+02	2.0E-09
2-Methylnaphthalene	6.3E-02	8.3E-09	3.0E+00	2.8E-09
4-Chlorophenyl-phenylether	1.7E-01	2.2E-08		
Benzo(a)anthracene	5.2E-02	6.9E-09	3.0E+00	2.3E-09
Benzo(b)fluoranthene	4.9E-02	6.5E-09	3.0E+00	2.2E-09
Benzo(g,h,i)perylene	6.6E-01	8.7E-08	3.0E+00	2.9E-08
bis(2-EthylHexyl)phthalate	6.7E+03	8.8E-04	7.0E+00	1.3E-04
Butylbenzylphthalate	4.5E+00	5.9E-07	7.0E+00	8.5E-08
Chrysene	8.9E-02	1.2E-08	3.0E+00	3.9E-09
Di-n-butylphthalate	3.2E+01	4.2E-06	7.0E+00	6.0E-07
Di-n-octylphthalate	3.8E-01	5.0E-08	7.0E+00	7.2E-09
Dibenzofuran	1.1E-01	1.4E-08		
Fluoranthene	5.7E+00	7.5E-07	3.0E+00	2.5E-07
Indeno (1,2,3-cd) pyrene	1.0E+01	1.3E-06	3.0E+00	4.4E-07
N-Nitrosodiphenylamine	3.4E+03	4.5E-04		
Naphthalene	1.6E-01	2.1E-08	3.0E+00	7.0E-09
Phenanthrene	6.4E-01	8.4E-08	3.0E+00	2.8E-08
Phenol	2.5E-01	3.3E-08	2.6E+02	1.3E-10
Pyrene	2.0E-01	2.6E-08	3.0E+00	8.8E-09
4,4'-DDD	4.0E-02	5.3E-09		
Aldrin	3.2E-02	4.2E-09		
Alpha-BHC	2.4E-02	3.2E-09	7.0E-01	4.5E-09
Endosulfan Sulfate	1.5E-01	2.0E-08		
Endrin	8.9E-02	1.2E-08		
Aluminum, Total	5.2E+03	6.9E-04		
Antimony, Total	4.1E+01	5.4E-06	1.0E+01	5.4E-07

CONTINUED ON NEXT PAGE

Notes:
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-3 (FRA TABLE G1-17 REVISED)
INHALATION OF SOIL PARTICULATES - REVISED LAKE POLY REGION (HOT EP 9)
RECEPTOR: REDEVELOPMENT CONSTRUCTION WORKER - PLANNED LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS, CONTINUED

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. FOR TIME PERIOD (ug/m^3)	INHALATION SUBCHRONIC REFERENCE CONCENTRATION (ug/m^3)	HAZARD QUOTIENT-INHALATION
Barium, Total	6.6E+01	8.7E-06	5.0E+00	1.7E-06
Beryllium, Total	2.5E-01	3.3E-08	2.0E-02	1.6E-06
Cadmium, Total	1.0E+00	1.3E-07	1.5E-02	8.8E-06
Calcium, Total	7.9E+02	1.0E-04		
Chromium, Total	5.9E+03	7.8E-04	1.0E-01	7.8E-03
Cobalt, Total	2.6E+00	3.4E-07		
Copper, Total	8.3E+00	1.1E-06	2.7E+00	4.1E-07
Hexavalent Chromium, Total	5.8E+00	7.7E-07	1.0E-01	7.7E-06
Iron, Total	7.3E+03	9.6E-04		
Lead, Total	1.1E+01	1.5E-06	7.0E-01	2.1E-06
Manganese, Total	6.5E+01	8.5E-06	5.0E-02	1.7E-04
Mercury, Total	6.3E-01	8.3E-08	3.0E-01	2.8E-07
Nickel, Total	5.5E+00	7.3E-07	2.0E-01	3.6E-06
Potassium, Total	6.9E+02	9.1E-05		
Sodium, Total	1.1E+02	1.5E-05		
Thallium, Total	1.6E+00	2.1E-07		
Vanadium, Total	1.3E+01	1.7E-06	6.0E+00	2.8E-07
Zinc, Total	2.6E+01	3.4E-06		
Chloride	9.8E+01	1.3E-05		
Cyanide	2.0E+00	2.6E-07	7.0E+00	3.8E-08
Nitrogen, Ammonia	7.1E+04	9.4E-03	1.0E+02	9.4E-05
Sulfate as SO4	5.0E+01	6.6E-06		
C11-C22 Aromatics (FID)	1.7E+03	2.3E-04	7.1E+01	3.2E-06
C19-C36 Aliphatics (PID)	1.1E+03	1.5E-04		
C9-C18 Aliphatics (FID)	1.1E+03	1.4E-04	2.0E+03	7.2E-08
C5-C8 Aliphatics (FID)	3.3E+01	4.3E-06	2.0E+02	2.1E-08
C9-C10 Aromatics (PID)	1.5E+01	2.0E-06	6.0E+01	3.4E-08
C9-C12 Aliphatics (FID)	1.5E+01	1.9E-06	2.0E+03	9.6E-10
			SUMMARY HAZARD INDEX:	0.008

Notes:
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-4 (FRA TABLE G2-35 REVISED)
DIRECT CONTACT AND INCIDENTAL INGESTION OF SOIL - LAKE POLY REGION (HOT EP 9)
RECEPTOR: CONSTRUCTION WORKER - UNSPECIFIED FUTURE LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SOIL	[OHM]soil	chemical-specific	mg/kg	
SOIL INGESTION RATE	IR s	110	mg/day	Appendix E
SKIN SURFACE AREA	SA	5804	cm2/day	MADEP, 1996 [1]
ADHERENCE FACTOR	AF	0.51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DER	RAF-D	chemical-specific	unitless	
VOLUME WEIGHTING FACTOR	AWF	0.01	unitless	Assumption
BODY WEIGHT	BW	70	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	250	day/yr	MADEP, 1996
EXPOSURE DURATION	ED	0.5	yr	MADEP, 1996
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	0.5	yr	MADEP, 1996
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{soil} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{soil} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
MADEP, 1996. Draft Commercial/Industrial Shortform.
[1] Corresponds to surface area for the face, neck, hands, forearms, lower legs, and feet.

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK DERMAL	TOTAL CANCER RISK
1,2-Dichloroethane	2.0E-03	1	1.4E-13	0.1	3.9E-13	9.1E-02	1.3E-14	3.5E-14	4.8E-14
1,4-Dichlorobenzene	2.0E+00	1	1.5E-10	0.1	3.9E-10	2.4E-02	3.5E-12	9.5E-12	1.3E-11
Benzene	2.0E-03	1	1.4E-13	0.08	3.1E-13	5.5E-02	7.9E-15	1.7E-14	2.5E-14
Chloroform	1.0E-03	1	7.2E-14	0.1	1.9E-13	6.1E-03	4.4E-16	1.2E-15	1.6E-15
Methylene Chloride	4.0E-03	1	2.9E-13	0.1	7.8E-13	7.5E-03	2.2E-15	5.8E-15	8.0E-15
Styrene	4.0E-03					3.0E-02			
Benzo(a)anthracene	5.2E-02	1	3.7E-12	0.04	4.0E-12	7.3E-01	2.7E-12	2.9E-12	5.7E-12
Benzo(b)fluoranthene	4.9E-02	1	3.5E-12	0.04	3.8E-12	7.3E-01	2.6E-12	2.8E-12	5.3E-12
bis(2-EthylHexyl)phthalate	6.7E+03	1	4.8E-07	0.02	2.6E-07	1.4E-02	6.7E-09	3.6E-09	1.0E-08
Butylbenzylphthalate	4.5E+00								
Chrysene	8.9E-02	1	6.4E-12	0.04	6.9E-12	7.3E-03	4.7E-14	5.0E-14	9.7E-14
Indeno (1,2,3-cd) pyrene	1.0E+01	1	7.2E-10	0.04	7.8E-10	7.3E-01	5.2E-10	5.7E-10	1.1E-09
Naphthalene	1.6E-01			0.04	1.2E-11				
N-Nitrosodiphenylamine	3.4E+03	0.91	2.2E-07	0.17	1.1E-06	4.9E-03	1.1E-09	5.5E-09	6.6E-09
4,4'-DDD	4.0E-02	1	2.9E-12	0.2	1.6E-11	2.4E-01	6.9E-13	3.7E-12	4.4E-12
Aldrin	3.2E-02	1	2.3E-12	0.25	1.6E-11	1.7E+01	3.9E-11	2.6E-10	3.0E-10
Alpha-BHC	2.4E-02	0.96	1.7E-12	0.18	8.4E-12	6.3E+00	1.0E-11	5.3E-11	6.3E-11
Cadmium, Total	1.0E+00								
Lead, Total	1.1E+01								
Mercury, Total	6.3E-01								
						SUMMARY CANCER RISK:	8E-09	1E-08	2E-08

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE D-4 (FRA TABLE G2-35 REVISED)
DIRECT CONTACT AND INCIDENTAL INGESTION OF SOIL - LAKE POLY REGION (HOT EP 9)
RECEPTOR: CONSTRUCTION WORKER - UNSPECIFIED FUTURE LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	NONCARCINOGENIC SUBCHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC SUBCHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	SUBCHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
1,1,1-Trichloroethane (TCA)	1.1E-02	1	1.2E-10	0.1	3.2E-10	9.0E-02	1.3E-09	3.6E-09	4.9E-09
1,2,3-Trichlorobenzene	3.6E-01	1	3.9E-09	0.08	8.4E-09	1.0E-02	3.9E-07	8.4E-07	1.2E-06
1,2,4-Trichlorobenzene	8.8E-02	1	9.5E-10	0.08	2.0E-09	1.0E-02	9.5E-08	2.0E-07	3.0E-07
1,2,4-Trimethylbenzene	3.9E-01	1	4.2E-09	0.12	1.4E-08	5.0E-02	8.4E-08	2.7E-07	3.6E-07
1,2-Dichlorobenzene	1.8E+00	1	2.0E-08	0.1	5.4E-08	9.0E-02	2.2E-07	6.0E-07	8.2E-07
1,2-Dichloroethane	2.0E-03	1	2.2E-11	0.1	5.8E-11	2.0E-02	1.1E-09	2.9E-09	4.0E-09
1,3,5-Trimethylbenzene	1.1E-01	1	1.2E-09	0.12	3.8E-09	5.0E-02	2.4E-08	7.7E-08	1.0E-07
1,3-Dichlorobenzene	7.4E-01	0.96	7.6E-09	0.18	3.9E-08	9.0E-01	8.5E-09	4.3E-08	5.2E-08
1,4-Dichlorobenzene	2.0E+00	0.96	2.1E-08	0.18	1.1E-07	9.0E-01	2.3E-08	1.2E-07	1.4E-07
2,4,4-Trimethyl-1-pentene	1.0E+02	0.99	1.1E-06	0.11	3.3E-06	2.1E-01	5.2E-06	1.6E-05	2.1E-05
2,4,4-Trimethyl-2-Pentene	5.8E+01	0.99	6.2E-07	0.11	1.9E-06	2.1E-01	2.9E-06	8.8E-06	1.2E-05
2-Butanone (MEK)	8.4E-02	1	9.0E-10	0.1	2.4E-09	2.0E+00	4.5E-10	1.2E-09	1.7E-09
2-Hexanone	7.0E-03	1	7.5E-11	0.1	2.0E-10	4.0E-02	1.9E-09	5.1E-09	7.0E-09
Acetone	2.4E-01	1	2.6E-09	0.1	7.0E-09	1.0E+00	2.6E-09	7.0E-09	9.6E-09
Benzene	2.0E-03	1	2.2E-11	0.08	4.7E-11	5.0E-02	4.3E-10	9.3E-10	1.4E-09
Carbon Disulfide	6.1E-03	1.09	7.1E-11	0.12	2.1E-10	1.0E-01	7.1E-10	2.1E-09	2.8E-09
Chloroform	1.0E-03	1	1.1E-11	0.1	2.9E-11	1.0E-02	1.1E-09	2.9E-09	4.0E-09
Ethylbenzene	6.7E+00	1	7.2E-08	0.2	3.9E-07	1.0E+00	7.2E-08	3.9E-07	4.6E-07
m,p-Xylene	2.0E-01	1	2.2E-09	0.12	7.0E-09	4.0E+00	5.4E-10	1.7E-09	2.3E-09
Methylene Chloride	4.0E-03	1	4.3E-11	0.1	1.2E-10	6.0E-02	7.2E-10	1.9E-09	2.7E-09
p-Isopropyl Toluene	1.3E+00								
Styrene	4.0E-03	1	4.3E-11	0.2	2.3E-10	2.0E+00	2.2E-11	1.2E-10	1.4E-10
Toluene	1.9E-01	1	2.0E-09	0.12	6.6E-09	2.0E+00	1.0E-09	3.3E-09	4.3E-09
Xylenes, Total	4.6E+00	1	5.0E-08	0.12	1.6E-07	4.0E+00	1.2E-08	4.0E-08	5.3E-08
2-Methylnaphthalene	6.3E-02	1	6.8E-10	0.04	7.3E-10	2.0E-02	3.4E-08	3.7E-08	7.1E-08
4-Chlorophenyl-phenylether	1.7E-01								
Benzo(a)anthracene	5.2E-02	0.91	5.1E-10	0.04	6.1E-10	3.0E-01	1.7E-09	2.0E-09	3.7E-09
Benzo(b)fluoranthene	4.9E-02	0.91	4.8E-10	0.04	5.7E-10	3.0E-01	1.6E-09	1.9E-09	3.5E-09
Benzo(g,h,i)perylene	6.6E-01	0.91	6.5E-09	0.04	7.7E-09	3.0E-01	2.2E-08	2.6E-08	4.7E-08
bis(2-EthylHexyl)phthalate	6.7E+03	1	7.2E-05	0.02	3.9E-05	2.0E-02	3.6E-03	2.0E-03	5.6E-03
Butylbenzylphthalate	4.5E+00	0.96	4.6E-08	0.18	2.4E-07	2.0E+00	2.3E-08	1.2E-07	1.4E-07
Chrysene	8.9E-02	0.91	8.7E-10	0.04	1.0E-09	3.0E-01	2.9E-09	3.5E-09	6.4E-09
Di-n-butylphthalate	3.2E+01	0.96	3.3E-07	0.18	1.7E-06	1.0E+00	3.3E-07	1.7E-06	2.0E-06
Di-n-octylphthalate	3.8E-01	0.96	3.9E-09	0.18	2.0E-08	2.0E-02	2.0E-07	1.0E-06	1.2E-06
Dibenzofuran	1.1E-01	1	1.2E-09	0.19	6.1E-09	4.0E-03	3.0E-07	1.5E-06	1.8E-06
Fluoranthene	5.7E+00	1	6.1E-08	0.04	6.6E-08	4.0E-01	1.5E-07	1.7E-07	3.2E-07
Indeno (1,2,3-cd) pyrene	1.0E+01	0.91	9.8E-08	0.04	1.2E-07	3.0E-01	3.3E-07	3.9E-07	7.1E-07
N-Nitrosodiphenylamine	3.4E+03	0.96	3.5E-05	0.18	1.8E-04				
Naphthalene	1.6E-01	1	1.7E-09	0.04	1.9E-09	2.0E-02	8.6E-08	9.3E-08	1.8E-07
Phenanthrene	6.4E-01	0.91	6.3E-09	0.04	7.5E-09	3.0E-01	2.1E-08	2.5E-08	4.6E-08
Phenol	2.5E-01	1	2.7E-09	0.26	1.9E-08	6.0E-01	4.5E-09	3.2E-08	3.6E-08
Pyrene	2.0E-01	1	2.2E-09	0.04	2.3E-09	3.0E-01	7.2E-09	7.8E-09	1.5E-08
4,4'-DDD	4.0E-02	0.96	4.1E-10	0.18	2.1E-09	5.0E-04	8.3E-07	4.2E-06	5.0E-06
Aldrin	3.2E-02	1	3.4E-10	0.25	2.3E-09	3.0E-05	1.1E-05	7.8E-05	8.9E-05
Alpha-BHC	2.4E-02	0.96	2.5E-10	0.18	1.3E-09	1.0E-02	2.5E-08	1.3E-07	1.5E-07
Endosulfan Sulfate	1.5E-01	0.96	1.5E-09	0.18	7.9E-09	6.0E-03	2.6E-07	1.3E-06	1.6E-06
Endrin	8.9E-02	1	9.6E-10	0.25	6.5E-09	3.0E-04	3.2E-06	2.2E-05	2.5E-05
Aluminum, Total	5.2E+03					1.0E+00			
Antimony, Total	4.1E+01	1	4.4E-07	0.1	1.2E-06	4.0E-04	1.1E-03	3.0E-03	4.1E-03

CONTINUED ON NEXT PAGE

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-4 (FRA TABLE G2-35 REVISED)
DIRECT CONTACT AND INCIDENTAL INGESTION OF SOIL - LAKE POLY REGION (HOT EP 9)
RECEPTOR: CONSTRUCTION WORKER - UNSPECIFIED FUTURE LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS, CONTINUED

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	NONCARCINOGENIC SUBCHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC SUBCHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	SUBCHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
Barium, Total	6.6E+01	0.71	5.1E-07	0.05	9.6E-07	7.0E-02	7.2E-06	1.4E-05	2.1E-05
Beryllium, Total	2.5E-01	1	2.7E-09	0.03	2.2E-09	2.0E-03	1.3E-06	1.1E-06	2.4E-06
Cadmium, Total	1.0E+00	1.86	2.0E-08	0.14	4.1E-08	1.0E-03	2.0E-05	4.1E-05	6.1E-05
Calcium, Total	7.9E+02					5.3E+01			
Chromium, Total	5.9E+03	1	6.4E-05	0.09	1.5E-04	2.0E-02	3.2E-03	7.7E-03	1.1E-02
Cobalt, Total	2.6E+00	1.86	5.1E-08	0.14	1.0E-07	1.8E-01	2.9E-07	5.8E-07	8.7E-07
Copper, Total	8.3E+00					4.0E-02			
Hexavalent Chromium, Total	5.8E+00	1	6.3E-08	0.09	1.5E-07	2.0E-02	3.1E-06	7.6E-06	1.1E-05
Iron, Total	7.3E+03					6.7E-01			
Lead, Total	1.1E+01	0.5	5.9E-08	0.006	1.9E-08	7.5E-04	7.9E-05	2.6E-05	1.0E-04
Manganese, Total	6.5E+01	1.86	1.3E-06	0.14	2.6E-06	4.7E-02	2.7E-05	5.6E-05	8.3E-05
Mercury, Total	6.3E-01	1	6.8E-09	0.05	9.2E-09	3.0E-03	2.3E-06	3.1E-06	5.3E-06
Nickel, Total	5.5E+00	1	5.9E-08	0.35	5.6E-07	2.0E-02	3.0E-06	2.8E-05	3.1E-05
Potassium, Total	6.9E+02					1.5E+01			
Sodium, Total	1.1E+02					2.0E+01			
Thallium, Total	1.6E+00	1	1.7E-08	0.01	4.7E-09	8.0E-04	2.2E-05	5.8E-06	2.7E-05
Vanadium, Total	1.3E+01	0.71	9.6E-08	0.05	1.8E-07	7.0E-03	1.4E-05	2.6E-05	4.0E-05
Zinc, Total	2.6E+01	1	2.8E-07	0.02	1.5E-07	3.0E-01	9.3E-07	5.1E-07	1.4E-06
Chloride	9.8E+01					7.0E+00			
Cyanide	2.0E+00	1	2.2E-08	0.3	1.7E-07	2.0E-02	1.1E-06	8.7E-06	9.8E-06
Nitrogen, Ammonia	7.1E+04	0.71	5.4E-04	0.05	1.0E-03	9.7E-01	5.6E-04	1.1E-03	1.6E-03
Sulfate as SO4	5.0E+01					1.4E+01			
C11-C22 Aromatics (FID)	1.7E+03	0.91	1.7E-05	0.18	9.1E-05	3.0E-01	5.6E-05	3.0E-04	3.6E-04
C19-C36 Aliphatics (PID)	1.1E+03	0.91	1.1E-05	0.1	3.3E-05	6.0E+01	1.8E-07	5.5E-07	7.3E-07
C9-C18 Aliphatics (FID)	1.1E+03	0.91	1.1E-05	0.2	6.4E-05	6.0E+00	1.8E-06	1.1E-05	1.2E-05
C5-C8 Aliphatics (FID)	3.3E+01	0.91	3.2E-07	0.5	4.7E-06	6.0E-01	5.3E-07	7.9E-06	8.4E-06
C9-C10 Aromatics (PID)	1.5E+01	0.91	1.5E-07	0.18	8.1E-07	3.0E-01	5.0E-07	2.7E-06	3.2E-06
C9-C12 Aliphatics (FID)	1.5E+01	0.91	1.4E-07	0.2	8.5E-07	6.0E+00	2.4E-08	1.4E-07	1.7E-07
						SUMMARY HAZARD INDEX:	0.009	0.01	0.02

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-5 (FRA TABLE G2-36 REVISED)
INHALATION OF SOIL PARTICULATES - LAKE POLY REGION (HOT EP 9)
RECEPTOR: CONSTRUCTION WORKER - UNSPECIFIED FUTURE LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SOIL	[OHM]soil	chemical-specific	mg/kg	
CONCENTRATION OF RP IN AIR	[RP]air	46	ug/m3	MADEP, 1995
EXPOSURE TIME	ET	0.0033	day/event	
EXPOSURE FREQUENCY	EF	176	event/yr	MADEP, 1996
EXPOSURE DURATION	ED	0.5	yr	MADEP, 1996
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	0.5	yr	MADEP, 1996
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = AIR AVG. CONC. x CANCER UNIT RISK

HAZARD QUOTIENT = $\frac{\text{AIR AVG.CONC.}}{\text{REFERENCE CONCENTRATION}}$

AIR AVG. CONC. = $\frac{[\text{OHM}]\text{soil} \times [\text{RP}]\text{air} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{AT} \times \text{CF2}}$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
MADEP, 1996. Draft Commercial/Industrial Shortform.
[1] Worker is assumed to work 250 days per year (which accounts for two weeks vacation time). Exposure frequency is also adjusted based on frequency of rainfall.
RP = Respirable Particulates

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. LIFETIME (ug/m^3)	INHALATION CANCER UNIT RISK ($ug/m^3)^{-1}$	CANCER RISK-INHALATION
1,2-Dichloroethane	2.0E-03	9.8E-13	2.6E-05	2.5E-17
1,4-Dichlorobenzene	2.0E+00	9.9E-10	1.1E-05	1.1E-14
Benzene	2.0E-03	9.8E-13	7.8E-06	7.6E-18
Chloroform	1.0E-03	4.9E-13	2.3E-05	1.1E-17
Methylene Chloride	4.0E-03	2.0E-12	4.7E-07	9.2E-19
Styrene	4.0E-03	2.0E-12	5.7E-07	1.1E-18
Benzo(a)anthracene	5.2E-02	2.5E-11	1.1E-04	2.8E-15
Benzo(b)fluoranthene	4.9E-02	2.4E-11	1.1E-04	2.6E-15
bis(2-EthylHexyl)phthalate	6.7E+03	3.3E-06	2.4E-06	7.8E-12
Butylbenzylphthalate	4.5E+00	2.2E-09		
Chrysene	8.9E-02	4.3E-11	1.1E-06	4.8E-17
Indeno (1,2,3-cd) pyrene	1.0E+01	4.9E-09	1.1E-04	5.4E-13
Naphthalene	1.6E-01	7.8E-11		
N-Nitrosodiphenylamine	3.4E+03	1.7E-06	2.6E-06	4.3E-12
4,4'-DDD	4.0E-02	2.0E-11	6.9E-05	1.3E-15
Aldrin	3.2E-02	1.6E-11	4.9E-03	7.7E-14
Alpha-BHC	2.4E-02	1.2E-11	1.8E-03	2.1E-14
Beryllium, Total	2.5E-01	1.2E-10	2.4E-03	2.9E-13
Cadmium, Total	1.0E+00	4.9E-10	1.8E-03	8.8E-13
Hexavalent Chromium, Total	5.8E+00	2.8E-09	1.2E-02	3.4E-11
Lead, Total	1.1E+01	5.4E-09		
Mercury, Total	6.3E-01	3.1E-10		
Nickel, Total	5.5E+00	2.7E-09	2.4E-04	6.5E-13
			SUMMARY CANCER RISK:	5E-11

Notes:
ND = no data available
NA = not applicable

TABLE D-5 (FRA TABLE G2-36 REVISED)
INHALATION OF SOIL PARTICULATES - LAKE POLY REGION (HOT EP 9)
RECEPTOR: CONSTRUCTION WORKER - UNSPECIFIED FUTURE LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. FOR TIME PERIOD (ug/m^3)	INHALATION SUBCHRONIC REFERENCE CONCENTRATION (ug/m^3)	HAZARD QUOTIENT-INHALATION
1,1,1-Trichloroethane (TCA)	1.1E-02	8.1E-10	1.0E+04	8.1E-14
1,2,3-Trichlorobenzene	3.6E-01	2.6E-08	2.0E+03	1.3E-11
1,2,4-Trichlorobenzene	8.8E-02	6.4E-09	2.0E+03	3.2E-12
1,2,4-Trimethylbenzene	3.9E-01	2.9E-08	3.0E+02	9.5E-11
1,2-Dichlorobenzene	1.8E+00	1.4E-07	2.0E+03	6.8E-11
1,2-Dichloroethane	2.0E-03	1.5E-10	5.5E+01	2.7E-12
1,3,5-Trimethylbenzene	1.1E-01	8.1E-09	3.0E+02	2.7E-11
1,3-Dichlorobenzene	7.4E-01	5.4E-08	2.0E+03	2.7E-11
1,4-Dichlorobenzene	2.0E+00	1.5E-07	2.5E+03	5.9E-11
2,4,4-Trimethyl-1-pentene	1.0E+02	7.5E-06	7.2E+01	1.0E-07
2,4,4-Trimethyl-2-Pentene	5.8E+01	4.2E-06	7.2E+01	5.9E-08
2-Butanone (MEK)	8.4E-02	6.1E-09	1.0E+03	6.1E-12
2-Hexanone	7.0E-03	5.1E-10	5.0E+01	1.0E-11
Acetone	2.4E-01	1.8E-08	8.0E+02	2.2E-11
Benzene	2.0E-03	1.5E-10	3.2E+01	4.6E-12
Carbon Disulfide	6.1E-03	4.4E-10	7.0E+02	6.3E-13
Chloroform	1.0E-03	7.3E-11	6.6E+02	1.1E-13
Ethylbenzene	6.7E+00	4.9E-07	1.0E+03	4.9E-10
m,p-Xylene	2.0E-01	1.5E-08	3.0E+02	4.9E-11
Methylene Chloride	4.0E-03	2.9E-10	3.0E+03	9.8E-14
p-Isopropyl Toluene	1.3E+00	9.2E-08		
Styrene	4.0E-03	2.9E-10	3.0E+03	9.8E-14
Toluene	1.9E-01	1.4E-08	4.0E+02	3.5E-11
Xylenes, Total	4.6E+00	3.4E-07	3.0E+02	1.1E-09
2-Methylnaphthalene	6.3E-02	4.6E-09	3.0E+00	1.5E-09
4-Chlorophenyl-phenylether	1.7E-01	1.2E-08		
Benzo(a)anthracene	5.2E-02	3.8E-09	3.0E+00	1.3E-09
Benzo(b)fluoranthene	4.9E-02	3.6E-09	3.0E+00	1.2E-09
Benzo(g,h,i)perylene	6.6E-01	4.8E-08	3.0E+00	1.6E-08
bis(2-EthylHexyl)phthalate	6.7E+03	4.9E-04	7.0E+00	7.0E-05
Butylbenzylphthalate	4.5E+00	3.3E-07	7.0E+00	4.7E-08
Chrysene	8.9E-02	6.5E-09	3.0E+00	2.2E-09
Di-n-butylphthalate	3.2E+01	2.3E-06	7.0E+00	3.3E-07
Di-n-octylphthalate	3.8E-01	2.8E-08	7.0E+00	4.0E-09
Dibenzofuran	1.1E-01	8.1E-09		
Fluoranthene	5.7E+00	4.2E-07	3.0E+00	1.4E-07
Indeno (1,2,3-cd) pyrene	1.0E+01	7.3E-07	3.0E+00	2.4E-07
N-Nitrosodiphenylamine	3.4E+03	2.5E-04		
Naphthalene	1.6E-01	1.2E-08	3.0E+00	3.9E-09
Phenanthrene	6.4E-01	4.7E-08	3.0E+00	1.6E-08
Phenol	2.5E-01	1.8E-08	2.6E+02	7.0E-11
Pyrene	2.0E-01	1.5E-08	3.0E+00	4.9E-09
4,4'-DDD	4.0E-02	2.9E-09		
Aldrin	3.2E-02	2.3E-09		
Alpha-BHC	2.4E-02	1.8E-09	7.0E-01	2.5E-09
Endosulfan Sulfate	1.5E-01	1.1E-08		
Endrin	8.9E-02	6.5E-09		
Aluminum, Total	5.2E+03	3.8E-04		
Antimony, Total	4.1E+01	3.0E-06	1.0E+01	3.0E-07

CONTINUED ON NEXT PAGE

Notes:
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

TABLE D-5 (FRA TABLE G2-36 REVISED)
INHALATION OF SOIL PARTICULATES - LAKE POLY REGION (HOT EP 9)
RECEPTOR: CONSTRUCTION WORKER - UNSPECIFIED FUTURE LAND USE
LAKE POLY UPDATE TO FOCUSED RISK ASSESSMENT
OLIN CORPORATION
WILMINGTON, MA

NONCARCINOGENIC EFFECTS, CONTINUED

CHEMICALS OF POTENTIAL CONCERN	SOIL CONCENTRATION (mg/kg)	AIR AVG. CONC. FOR TIME PERIOD (ug/m^3)	INHALATION SUBCHRONIC REFERENCE CONCENTRATION (ug/m^3)	HAZARD QUOTIENT-INHALATION
Barium, Total	6.6E+01	4.8E-06	5.0E+00	9.7E-07
Beryllium, Total	2.5E-01	1.8E-08	2.0E-02	9.1E-07
Cadmium, Total	1.0E+00	7.3E-08	1.5E-02	4.9E-06
Calcium, Total	7.9E+02	5.8E-05		
Chromium, Total	5.9E+03	4.3E-04	1.0E-01	4.3E-03
Cobalt, Total	2.6E+00	1.9E-07		
Copper, Total	8.3E+00	6.1E-07	2.7E+00	2.3E-07
Hexavalent Chromium, Total	5.8E+00	4.3E-07	1.0E-01	4.3E-06
Iron, Total	7.3E+03	5.3E-04		
Lead, Total	1.1E+01	8.1E-07	7.0E-01	1.2E-06
Manganese, Total	6.5E+01	4.7E-06	5.0E-02	9.4E-05
Mercury, Total	6.3E-01	4.6E-08	3.0E-01	1.5E-07
Nickel, Total	5.5E+00	4.0E-07	2.0E-01	2.0E-06
Potassium, Total	6.9E+02	5.1E-05		
Sodium, Total	1.1E+02	8.3E-06		
Thallium, Total	1.6E+00	1.2E-07		
Vanadium, Total	1.3E+01	9.2E-07	6.0E+00	1.5E-07
Zinc, Total	2.6E+01	1.9E-06		
Chloride	9.8E+01	7.2E-06		
Cyanide	2.0E+00	1.5E-07	7.0E+00	2.1E-08
Nitrogen, Ammonia	7.1E+04	5.2E-03	1.0E+02	5.2E-05
Sulfate as SO4	5.0E+01	3.7E-06		
C11-C22 Aromatics (FID)	1.7E+03	1.3E-04	7.1E+01	1.8E-06
C19-C36 Aliphatics (PID)	1.1E+03	8.2E-05		
C9-C18 Aliphatics (FID)	1.1E+03	8.1E-05	2.0E+03	4.0E-08
C5-C8 Aliphatics (FID)	3.3E+01	2.4E-06	2.0E+02	1.2E-08
C9-C10 Aromatics (PID)	1.5E+01	1.1E-06	6.0E+01	1.9E-08
C9-C12 Aliphatics (FID)	1.5E+01	1.1E-06	2.0E+03	5.4E-10
			SUMMARY HAZARD INDEX:	0.005

Notes:
ND = no data available
NA = not applicable
*Where subchronic values are unavailable, chronic values are used.

Φ

Appendix C

Field Investigation Methods/Procedures

Field Procedures

Soil Investigation

On July 9, 2001, six borings were advanced using a truck-mounted auger rig. Drilling was conducted with 4.25-inch ID hollow-stem augers and a 2-inch split-spoon sampler. Split spoon samples were collected and Standard Penetration Test N-values were recorded continuously to the bottom of the boring. The split spoons were decontaminated with Alkanox™/water solution, methanol, and de-ionized water between samples. From July 10 to July 12, 2001, an additional 26 borings were advanced using a Geoprobe rig. The disposable Geoprobe sample cores were hollow plastic tubes, four feet long and 2 inches in diameter. Used sample cores were rinsed with Alkanox™/water solution and deposited in an Olin disposal dumpster located at the North end of the property.

Soil samples were collected from each primary stratum encountered in each boring in general accordance with the Quality Assurance Project Plan (QAPP) for the Olin site [August 1999]. A total of 83 soil samples were collected from the 32 borings. Each sample was screened in the field for volatile organic compounds by jar headspace analysis using a photo-ionization detector (PID) and submitted to Severn-Trent Laboratory (STL) of Westfield, Massachusetts for expedited analysis of chromium and, in some cases, ammonia. The photo-ionization detector utilized a 10.0 eV lamp and was calibrated daily to an Isobutylene standard (103 parts-per-million).

Generally most soil from the borings was placed in jars for laboratory analysis. Any surplus soil was used to backfill the original boring.

Groundwater Investigation

On July 9, 2001, boring LPB-11 was completed as a 2-inch PVC monitoring well (GW-LPB11). A well installation log is presented in Appendix D. GEI developed the well on July 18, 2001; in accordance with GEI standard procedure SS-005 and the Quality Assurance Project Plan (QAPP) for the Olin site [August 1999].

On July 27, 2001, GEI collected groundwater samples from monitoring wells GW-29D, GW-29S, GW-34D, and GW-LPB11. Samples were collected in general accordance with the U.S. Environmental Protection Agency Low Stress Purging and Sampling Procedure and were submitted to STL for analysis of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total metals, pesticides, ammonia, and pH. A sample from each well was submitted to Lancaster Laboratories of Lancaster, Pennsylvania for analysis of Kempore and Opex.

Purge water Disposal Characterization

Purge water generated on July 18 and July 27, 2001 was placed in four 55-gallon steel drums and stored in the East Warehouse pending off-site disposal. On October 8, 2001, GEI collected samples from the drums for disposal characterization. A PID was used to screen the headspace of each drum. A discrete sample was collected from the drum registering the greatest PID reading and submitted to STL for VOC analysis. A composite sample from the four drums was submitted to STL for analysis of VOCs, SVOCs, metals, sulfate, chloride, ammonia, calcium, iron, magnesium, potassium and sodium.

SPLIT-SPOON SAMPLING

Objective

The objective of this SOP is to standardize the collection of soil samples obtained during the installation of exploratory overburden soil borings.

Procedures

1. Select the size of split-spoon sampler based on the amount of soil that is needed for characterization. 1 3/8-inch-I.D. is ASTM standard for N-values.

2. Select a soft or stiff basket for the spoon (a softer basket works better for loose or soft material). Specify spoon size and basket type to driller prior to mobilization to the site.

3. At the designated soil elevation interval, direct drillers to put sampler (split-spoon) down the hole. Ensure that the drill string is not allowed to free fall to the bottom of the hole. Have the drillers use a slide plate to lower the drill string to the bottom of the hole.

4. Prior to retrieving sample, observe that the split-spoon is less than or approximately 6 inches above the desired depth. If the split-spoon is greater than 6 inches, clean out the hole. Record all depth information, at a minimum, on boring log.

5. Follow Soil Boring SOP for advancing the split-spoon. Record the number of blows to advance the spoon. Record hammer weight. Should be 140 lbs.

6. After the split-spoon has been removed, open the split-spoon by unscrewing the nose/shoe (holds basket) and gently pull apart the spoon using hands so as not to disturb the sample. Sometimes it may be necessary to tap the spoon with a hammer to enable the spoon to split open. Note any material in the nose (shoe) of the spoon.

7. Immediately collect a sample for VOCs if required by the site-specific Field Plan by collecting soil from the entire length of the split-spoon. See step 10e.

8. Screen the soil sample for VOCs (see *VOC Field Screening* SOP) or other instrument as indicated in the site-specific field sampling plan.

9. Record features (strata change, contamination, etc.) of the spoon on field boring log. Measure the recovery (amount of material in the spoon) in the spoon and in the nose (shoe). Measure and record strata differences in the spoon.

10. Collect sample for laboratory analysis in the following manner:

    a) Put on a clean pair of protective gloves, generally disposable vinyl gloves.

    b) If using drive and wash techniques, clean fluid from surface of sample with a stainless steel spatula.

    c) Place samples in laboratory-prepared glassware in accordance with the *Sample Handling* SOP.

    d) Collect material from the entire length of the spoon rather than taking the entire sample from one point.

    e) If distinct horizons exist, either geologic or chemical, collect a sample from each horizon.

    f) Decontaminate all sampling equipment (see *Equipment Decontamination* SOP) prior to obtaining samples.

    g) Store samples on ice or refrigerate from the time of collection until delivery at the laboratory.

11. Collect Driller Jar Soil Samples in the following manner:

    a) Save a representative sample of the soil and place it in a driller's jar. Project Manager may require saving of entire sample for grain size/classification purposes.

    b) Label jars even if they contain no sample material. Label jars with project #, boring #, sample #, sample depth, blow counts, and recovery.

12. Describe soil according to *Soil Classification* SOP.

13. Decontaminate the spoon using the *Equipment Decontamination* SOP.

Precautions

- At all times, follow safety procedures as defined in the site-specific Health & Safety Plan.

- Be aware of the length of the drill string, the sample depth, and the required stickup of the drill string.

- If drilling with hollow-stem augers, the removal of the drill string from the hole, prior to attaching the split-spoon samples, may have acted to suction soils up into the augers (blow-in/running sands). Upon recovery, determine what is blow-in. In general, blow-in is more unconsolidated than the rest of the sample and lacks stratification (do not include blow-in for recovery or sample collection).

- If soils are loose sands or soft clay, the drill string and the sampler may advance slightly under its own weight giving a false depth for soil collection.

- Never sample more than two spoons consecutively unless material is tight. Do not let the split-spoon penetrate more than it can hold.

References

1. Standard Method for Penetration Test and Split-Barrel Sampling of Soils (1984), American Society for Testing and Materials (ASTM) D1586-84.

2. Field Sampling Procedures Manual (May 1992), New Jersey Department of Environmental Protection and Energy.

3. Standard Reference for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.

GROUND WATER SAMPLING

Objective

To outline a method to collect ground water samples which accurately and precisely represent the aquifer conditions.

Procedures

1. Record all activities in the field notebook (see *Field Notebook* SOP) and on the Ground Water Sampling Form (attached). Use a separate form for each sampling location and event.

2. Calibrate PID, pH/temperature, and specific conductance (SC) meters (see respective SOPs).

3. Purge Well

   a) Unlock well cap and, if required by the Health & Safety Plan, measure organic vapor concentration in the well pipe (see *H&S Monitoring for VOCs* SOP).

   b) Measure (water level probe and/or oil water interface probe) depth to water and overall well depth to the nearest 0.01 foot from the top of casing and the highest point (or "V" notch) on the PVC. If the top of casing cannot be used, note the reference location. Mark the datum point with an indelible marker and note reference location in field book.

   c) Calculate one well volume. $V = \pi r^2 h$ or use conversions on ground water sampling form.

   d) Purge well to remove stagnant water from sampling zone. Generally, water should be drawn down from the upper portion of the water column in high formations and the bottom of the water column in low yield formations. Record the volume purged.

   e) Monitor and record the ground water parameters (pH, temperature, and SC) from the first bailer and after each well volume (see SOPs).

   f) Purging is complete when one of the following has been achieved:

      i) A minimum of three well volumes have been purged or on the reference ground water parameter has stabilized.
      ($\pm$0.2 for pH, $\pm$ 0.1 for temp., $\pm$0.1 for SC); or

ii) The well has been pumped/purged dry.

g) Dispose of purge water according to the field plan.

h) Collect samples as soon as the volume of water is sufficient to fill the intended sample containers.

4. Collect Samples

a) Begin sampling at the least contaminated well and work toward the most contaminated well.

b) To achieve comparable results, use a similar method to collect all samples whenever possible.

c) Lower sampling device slowly into ground water to the middle of the screened interval or water depth. Determine sampling location based upon project specifics.

d) Fill sample containers directly from the sampling device in order of decreasing volatility (see *Sampling Handling* SOP).

e) Remove sampling device and decontaminate (see *Equipment Decontamination* SOP).

f) Store samples in cooler between 2°C and 6°C for transport to the laboratory.

g) Secure well cap.

Precautions

- At all times, follow safety procedures as defined in the site-specific Health & Safety Plan.

- Prior to departure for the field, obtain available on information on well construction for use in field investigation (i.e., screen and riser material, well diameter and depth, and screened interval).

- When purging a well with a pump, the pump may require lowering to the middle of the screened interval to obtain a reasonable flow on the basis of operational requirements of the pump. If possible, the pumping rate should match the natural aquifer yield rate.

- Measure ground water elevation twice.

- Be aware of any preservatives in the sample bottles and handle with care, in accordance with the Health & Safety Plan.

References

1. Characterization of Hazardous Waste Sites - A Methods Manual: Volume II (December 1984), U.S. EPA (EPA-600/4-84-076).

2. Draft Ground Water Monitoring Guidance for Owners and Operators of Interim Status Facilities (1983), U.S. EPA.

3. Procedures Manual for Groundwater Monitoring at Solid Waste Disposal Facilities (December 1980), U.S. EPA, (EPA-530/SW-611).

4. Test Methods for Evaluating Solid Waste (1986), U.S. EPA (SW-846).

5. Barcelona, Michael J.; Gibb, James. P.; and Miller, Robin A., A Guide to the Selection of Materials for Monitoring Well Construction and Ground Water Sampling (August 1983), Illinois State Water Survey Contract Report (ISWS) #327 (EPA Contract No. EPA CR-809966-01).

6. Standard Reference for Monitoring Wells (April 19, 1991), Massachusetts DEP, DEP Publication #WSC-310-91.

7. Groundwater Sampling Procedures Guidelines (1987), Wisconsin Department of Natural Resources (WR-153-87).

Project		Date	
Well ID		Start Time	
Weather		End Time	
Sampling Personnel			

Well Construction		Water Level		Well Volume Conversion	
Well Diameter		Well Depth		Diam. (in)	Factor (gal/ft)
Roadbox		Water Depth	-	1.5	0.09
Top of Casing		Water Height	=	2	0.16
Top of Screen		Conversion Factor	x	4	0.65
Bottom of Screen		One Well Volume	=	6	1.5
Bottom of Well					
Place 1 for 1st step, 2 for 2nd step, etc.		Volume Purged			

Decontamination		Calibration Dates		Equipment Used	Purge	Sample
Ethyl Alcohol		PID		Teflon Bailer		
Deionized Water		S.C. Meter		PVC Bailer		
Alconox & DI H_2O		pH/Temp.		Submersible Pump		
Tap Water		Other:		Peristaltic Pump		
Solvent _____				Tubing _____		
Other:				Other:		

Check the equipment which applies.
D - dedicated equipment.

Field Analysis Data

VOA Screening (ppm as Benzene):	Ambient Air	
	Well Mouth	

Well Purge Data

Volume Evacuated		gal	gal	gal	gal	gal
Temperature	(C)					
pH	(std units)					
Specific Cond.	(umho/cm)					
Well VOAs	(ppm)					
EH	(mV)					
Dissolved Oxygen	(ppm)					
Other: _____	( )					

Samples Collected for Laboratory Analysis

Samples Collected	
VOA 8240	
VOA 8010	
TPH	
ABN	
PCB	
ALK/COD/BOD	
Metals	
Other:	

Sample Bottle ID	
Time Sampled	
Color	
Turbidity	
Filtered in Field ?	yes / no
Type of filter membrane	

Additional Observations:

VOC FIELD SCREENING

Objective

The objective of field screening of soils is to obtain a site-specific measure of the relative concentrations of VOCs present in soil at a site. This information can be used: 1) to segregate soil based on degree of contamination, 2) to identify samples for quantitative analysis of VOCs, or 3) as a qualitative method to evaluate the presence or absence of VOCs in soil. A PID or FID instrument may be used.

Procedure

1. Prior to a sampling event, the instrument must be calibrated to the appropriate standard and have an appropriate detector for the contaminants expected to be encountered at the site. The type of standard and detector used should be recorded in the field notebook.

2. Record background readings of atmospheric conditions in the work area while walking across the working area. The highest meter response should be recorded.

3. Half-fill a clean, glass jar with the sample to be analyzed using a clean trowel or soil spatula. Quickly cover the open top with one or two sheets of clean aluminum foil and screw on the cap to tightly seal the jar. Each jar should be labeled to indicate the location and depth from which the sample was collected.

4. Allow headspace development for at least 10 minutes. Vigorously shake the jar for 15 seconds both at the beginning and end of the headspace development period. When ambient temperatures are below 50°F, headspace development should occur, if possible, within a heated van or building.

5. After headspace development, remove the screw cap and expose the foil seal. Quickly puncture the foil seal with the instruments sampling probe to a point about one-half of the headspace depth.

6. Following probe insertion through the foil seal, record the highest meter response as the jar headspace concentration. Maximum response should occur between 2 and 5 seconds after probe insertion.

Precautions

- At all times, follow safety procedures as defined in the site-specific Health & Safety Plan.

- The various instruments may work poorly in the rain and below freezing temperatures. Under such conditions, it should be operated from within a heated vehicle or building.

- Care must be taken to prevent water or soil particles from entering the tip of the instrument probe. If this occurs, the tip should be removed and cleaned/dried before further use.

- While establishing background conditions and performing jar headspace screening, care should be taken to avoid extraneous VOC sources such as vehicle emissions which are not site related.

- Erratic meter response may occur at high organic vapor concentrations or conditions of elevated headspace moisture.

- Caution must be exercised when interpreting VOC headspace screening data. Results are dependent on site conditions. Screening results may differ by orders of magnitude from analytical testing results.

- **Note that states may have specific procedures for field monitoring. In Massachusetts, the Massachusetts DEP requires that screening of gasoline-contaminated soil be performed in accordance with Attachment II of the DEP's policy #WSC-400-89 Management Procedures for Excavated Soils Contaminated with Virgin Petroleum Oils. Under this policy, two samples need to be taken at each sampling point and compared; replicate values should be consistent to plus or minus 20%. The instrument should be calibrated to read ppm as benzene with a 10.0 (+/-) eV lamp source. Instrument calibration should be checked/adjusted once every 10 samples, or daily, whichever is greater.**

References

1. Management Procedures for Excavated Soils Contaminated with Virgin Petroleum Oils (August 1990), Massachusetts Department of Environmental Protection, Policy #WSC-400-89.

OVERBURDEN SOIL BORING DRILLING: HOLLOW-STEM AUGERS

Objective

The objective of this SOP is to standardize the drilling of overburden soil borings for environmental investigations. This SOP addresses the use of hollow-stem augers to drill the soil boring.

Procedure

1. Contact Owner to determine the locations of underground utilities/ obstructions. Verify with contractor that utility clearance service in particular state has been contacted. Ask subcontractor to provide you with utility clearance authorization number and time of clearance to proceed and record the number in the fieldbook.

2. Inspect the drilling rig to make sure it is clean and that the down-hole equipment has been steam-cleaned. Check that the steam-cleaner is working properly (i.e., that steam is being produced). Measure and record lengths of all down-hole drilling equipment, including the drilling heads and miscellaneous rods and attachments. Record all observations and measurements in fieldbook.

3. If a surface soil sample is desired, collect this sample with a split-spoon sampler prior to setting the first flight of augers up over the borehole. For all soil samples, use a 140-lb hammer to drive the sampler, unless conditions necessitate using a 300-lb hammer (see the *Split-Spoon* and *Soil Classification* SOP for details). Count and record the number of blow counts per 6-inch increments (confirm blow counts with driller if necessary).

4. Decontaminate the split-spoon sampler after each use (see *Equipment Decontamination* SOP) or use another decontaminated split-spoon sampler.

5. Direct the drillers to drill the borehole to the top of the next sampling interval. Remove the auger cutting bit/plug and insert the split-spoon sampler into the interior of the augers (drillers responsible for this activity). Measure the stick-up of the rods attached to the sampler to ensure that the nose of the spoon is in virgin soils below the augers.

6. Watch for signs of a soil strata change at depth during drilling (i.e., change in blow counts change in soil color, soil wetness, soil contamination, bouncing of the drill rig, etc.). If important to the investigation, stop drilling and collect a soil sample.

7. Follow steps 4-7 until the borehole has been drilled to the desired depth. If bedrock confirmation is required and refusal is encountered, a 5-foot core of the rock (at a minimum) is required to verify the bedrock surface.

8. If a monitoring well is not installed in the soil boring, fill the boring with either cement/bentonite grout or properly-tamped and hydrated bentonite. Do not backfill the boring with drill cuttings.

10. Complete boring log and, if necessary, well installation logs (*Boring/Rock Coring Logs* SOP).

11. Record boring locations on a site map and in field book sketch. Measure each location from on-site reference points in the field book so that enough information can be obtained to recreate the location.

Precautions

- At all times, follow safety procedures as defined in the site-specific Health & Safety Plan.

- In areas of significant soil contamination, hollow-stem augers may cross-contaminate upper soil layers as contaminated cuttings move up the auger flights. The potential also exists for contaminated augers to carry contamination to deeper soil strata.

- If *in-situ* borehole permeability tests are to be performed prior to installation of the monitoring well, the hollow-stem auger method is not appropriate due to water loss at the auger junctions.

- If significant unanticipated contamination is encountered during drilling, stop drilling to confer with the project manager and evaluate health and safety conditions. If the borehole is to be advanced below the contaminated strata, use telescoping techniques (see *Borehole Telescoping Techniques* SOP) to avoid cross-contaminating underlying geologic strata.

- When drilling below the ground water table in fine- to medium-sands, the potential exists for the phenomenon of "running sands" or "blow in" to occur. Frequent measurements inside the hollow-stem augers after the drill bit/plug is removed will indicate if running sands are present. If sands start to flow into the auger, pour clean water into the augers and keep the augers filled during sampling.

- If necessary, arrange for the storage of contaminated soil cuttings and water in drums or other appropriate containers in a secure place at the site. Containers should be labeled.

- Plan the drilling program to drill borings from the least- to most-contaminated areas. Be prepared in advance and know where alternative drilling locations are in the event that problems are encountered at each planned soil boring location. Alternative locations will need to have utility clearance.

References

1. Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

2. Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.

3. Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.

MONITORING WELL INSTALLATION

Objective

The objective of this SOP is to standardize the installation of shallow overburden monitoring wells for environmental investigations. This SOP addresses the installation of monitoring wells screened across the ground water table and assumes the monitoring wells will be constructed of flush-joint PVC pipe; the screened section will have factory-slotted openings. Well dimensions (well diameter, screen length, and screen slot-diameters) will be specified in the Work Plan.

Procedure

1. Using a weighted tape, measure and record the depth of the completed soil boring before beginning the well installation.

2. Measure the depth to ground water in the borehole over a 10 to 15-minute period to ensure that the ground water elevation has approximately stabilized. Compare the saturated soil depth estimated from split-spoon samples to the measured water level in the borehole. If drilling water has been used during boring advancement, pump the water out of the borehole to the static water depth (based on examination of the soil samples) and monitor the recovery of ground water until the level has stabilized.

3. Choose the monitoring well screen and riser lengths so that the slotted section of the screen intersects the ground water table. If the borehole is deeper than the desired well depth, then fill the base of the borehole with bentonite.

4. Install a plug just below the lowest slotted section of screen.

5. Place at least 12 inches of clean uniformly-graded medium quartz filter sand pack into the base of the borehole. Measure and record the depth of the boring. Temporarily cover the top of riser pipe and lower the complete well plus riser into the borehole, with the base resting on the sand pack.

6. Add adequate sand to surround the area around the slotted section. The filter sand should extend at least 2 feet above the top of the slotted section.

7. Remove the drilling casing/augers from the borehole slowly, at a maximum of 2-foot intervals. As the drillers pour or use tamping rods to place the filter sand in the borehole, take frequent measurements of the depth-to-sand. Do not let the sand "bridge" in the annular space. Continue to observe the water level in the borehole.

8. Place at least 1 foot of bentonite seal (chips or balls or slurry) above the filter pack. If the seal is above the water table, use at least 5 gallons of potable water to hydrate the bentonite.

9. If necessary, pump bentonite-cement grout into the annular space to the ground surface. Grout should be mixed in approximately the following proportions: 7.5 gallons water to one 94-lb. bag of cement to 2-4 lbs pulverized bentonite. The grout must be mixed using the pump on the rig to ensure proper mixing. The protective casing should be set in the grout before it sets.

10. The protective surface casing will be either a flush-mounted roadbox or a steel guardpipe. The base of either type of casing must extend at least 1 foot into the grout below the ground surface (below the frost line) whenever possible.

11. Cut the monitoring well riser flat and place a mark or "V"-notch or an arrow on the casing with an indelible marker at one point for surveying and ground water measurements. Cut the well riser so that the top of the well is 3 to 6 inches below the top of the top of the protective casing.

12. Set bentonite-cement grout in the annular space between the protective casing and the borehole up to the ground surface. Slope the concrete radially away from the protective casing at the ground surface to promote surface water runoff. In areas of high traffic or areas of parking lots and/or roadways where plowing occurs, set the roadbox FLUSH with the ground surface to avoid damage to the well.

13. If the well is installed in a high-traffic area with a guardpipe, additional protection such as steel pole bumpers around the guardpipe may be necessary.

14. Place a locking cap on the well pipe. Either drill a hole in well cap or cut a slit in the top of the well pipe to prevent pressure from building up in the well.

15. Label the protective well casing with a paint pen and tape out the location to nearby landmarks so that the well may be located in the future (enter this information in the Field Book). If possible, place a brightly colored stake or other identifier adjacent to the well.

16. Develop the well (see *Well Development* SOP).

Precautions

- At all times, follow safety procedures as defined in the site-specific Health & Safety Plan.

- Site-specific conditions must be evaluated to determine appropriate materials/slot sizes and screen lengths.

- The water table will fluctuate seasonally and from year-to-year. Try and estimate the maximum high and low elevations of the water table from the current water table elevation and the season. Place the 10-foot screen so that at least 2 feet of the screen will extend above the top of the screen when water is at its highest. If very substantial fluctuations in the ground water table are expected, a 15-foot screen is acceptable.

- Do not screen across different hydrostratigraphic units if possible (for example, outwash sands and till) unless specified in the Work Plan or approved by the Project Manager.

- If formation is composed of a material that is uniformly coarser than the filter sand, than the grain size of the filter sand must be increased. Consideration should also be given to changing the slot size on the well screen. Differences in average grain size should generally not be greater than a factor of two to four times.

- Do not use borehole/auger cuttings for backfill during monitoring well installation. If the cuttings are suspected to contain contamination which was identified during drilling, do not use cuttings for filter pack materials.

- Do not screen across a confining (e.g., silt or clay) layer. Backfill all confining layers with hydrated bentonite or grout.

References

1. Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

2. Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.

3. Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.

MONITORING WELL DEVELOPMENT

Objective

The objective of this SOP is to standardize the development of monitoring wells for environmental investigations. The purposes of developing a monitoring well are to remove fluids introduced during drilling and to maximize the movement of water into the well by reducing the fines which may be trapped in the sand pack around the screen, in order to reduce siltation during sampling.

Procedure

1. Decontaminate all development equipment prior to use (see *Equipment Decontamination* SOP).

2. Calculate or estimate the amount of water introduced to the borehole during drilling. At a minimum, this is the amount of water that must be removed during development. In addition, compute the volume of water in the monitoring well.

3. Place a 12-volt submersible pump (or grundfos pump) attached to a power source into the borehole or use a manual sampling device such as a bailer or waterra pump. Collect a sample of the standing water in the borehole and record the physical properties (color, turbidity, etc.). Then, at a minimum, remove the greater of the following two amounts of ground water:

   a) ten well volumes
   b) the amount of water introduced during drilling

4. Pump the ground water into a 5-gallon pail so that the volumetric flow rate and water volume from the pump or bailer can be calculated.

5. Monitor the ground water level in the well as the water is being pumped to determine if the pumping rate is sufficient to create a drawdown in the well. The "over-pumping" development method requires that the well be developed/stressed at a faster rate than the well would normally be pumped or bailed for sample collection.

6. Collect ground water samples every few well volumes during the pumping and record the physical properties (color, turbidity, etc.) (see respective SOPs).

7. Once half the desired volume of water has been pumped, request that the drillers attach surge blocks on a rod into the well. This surge block apparatus may be operated by hand or be attached to the drill stem on the drill rig and is operated by the driller. Slowly move the surge block up and down in the upper portion of the well. Start at a slow pace and progress to a faster surging action further down the well screen.

8. During surging, remove the surge block periodically to pump more water from the well to remove accumulated fines.

9. Monitor the turbidity and color of the water during this procedure. The well is considered fully-developed when all of the following criteria have been met:

   a) the volume of water introduced during drilling has been removed
   b) the water removed from the well is relatively free of fine-grained materials.

10. Record the final amount of water removed and the physical properties (color, turbidity) of the well water.

Precautions

- At all times, follow safety procedures as defined in the site-specific Health & Safety Plan.

- Always remove ground water with fines from the well before surging, as these fines may be forced into the well screen otherwise by the surging action.

- If the ground water in the monitoring well is contaminated, the water removed during well development will need to placed in a properly-labelled drum (see *IDW* SOP).

- If the soils around the well screen are composed of fine-grained silts and clays, over-pumping and mechanical surging is not recommended since these more vigorous techniques can cause mixing of the fines into the filter pack. To develop these wells, use of a bailer is recommended.

References

1. Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers (October 1990), American Society for Testing and Materials [ASTM] D5092-90.

2. Nielsen, D.M. (1993), "Correct Well Design Improves Monitoring," Environmental Protection, July, pp. 38-49.

3. "The Methods & Mechanics of Well Development, Part 2 of 5," National Drillers Buyers Guide, March 1993, p. 17.

4. Standard References for Monitoring Wells (April 1991), Commonwealth of Massachusetts Department of Environmental Protection, WSC-310-91.

TEST PIT EXCAVATION

Objective

The test pit is used to characterize geologic strata and collect representative soil samples from these strata.

Procedure

1. Have contractors steam clean equipment before beginning field activities.

2. Contact the owner to determine the location of underground utilities. Verify with contractor that local/regional utility clearance service has been contacted. Ask subcontractor to provide you with local/regional utility clearance service authorization number and record in the field notebook. Mark out/stake out the approximate excavation extent. Clearance may require marking of subsurface explorations prior to contacting utility clearance service.

3. Excavate the designated area using a backhoe to the dimensions indicated in the Field Plan. Place excavated material that has suspected and/or visible contamination on a plastic liner away from the excavation.

4. During excavation, monitor ambient air for VOCs or other contaminants of concern. Record readings in field notebook (see *Field Notebook* SOP).

5. Describe sidewall strata, test pit dimensions, and soil classifications on test pit log (see *Soil Classification* SOP). Record the presence and size of existing obstructions and any existing foundations. Take photographs of excavation sidewalls.

6. Label sample bottles (see *Sample Handling* SOP).

7. Collect soil samples from the test pit sidewalls and bottom at designated depths, at strata changes, or based upon field screening using equipment (backhoe bucket, stainless steel remote sampler, etc.) designated in the field plan. Do not enter a test pit unless side slopes satisfy OSHA regulations and other H&S concerns have been addressed.

8. Transfer sample to the appropriate glassware with a decontaminated stainless steel trowel or spatula (see *Equipment Decontamination* SOP).

9. Store samples on ice in a cooler (see *Sample Handling and Chain-of-Custody* SOPs).

10. Screen soil samples for VOCs or other contaminants of concern. Record results in field notebook.

11. Backfill excavation as soon as possible with material designated in field plan. Segregate contaminated soil as necessary (see *IDW SOP*). Properly identify segregated material and secure as designated in the field plan.

12. Measure dimensions of excavation. Record in field notebook.

13. Sketch dimension and location of the test pit relative to a site reference point. Record in field notebook. Note the sample locations by number on a cross section sketch and plan view sketch.

Precautions

- At all times, follow safety procedures as defined in the site-specific Health & Safety Plan.

- NEVER CLIMB INTO THE EXCAVATION TO COLLECT A SOIL SAMPLE unless the excavation is shored or the sidewalls are sloped in accordance with OSHA regulations and all proper personal protective safety precautions have been considered and implemented.

- Terminate excavation if flow of ground water into the excavation adversely affects the stability of the excavation (i.e., slumping). Note in field notebook the depth to ground water.

- Terminate excavation if drums, tanks, or other potential sources of contamination are observed. Record visible drum markings, labels, and any other pertinent information on test pit log and in the field notebook. Photograph drums and materials.

- Do not leave an open excavation unattended without isolating it from passerby and vehicular traffic.

References

1. Earth Manual (1968), United States Department of the Interior, Bureau of Reclamation, United States Government Printing Office, Washington, D.C., pp. 134-139.

2. OSHA Standards for Excavations, Department of Labor, Federal Register, 29 CFR Part 1926, 1989.

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I

LOW STRESS (low flow) PURGING AND SAMPLING PROCEDURE FOR THE COLLECTION OF GROUND WATER SAMPLES FROM MONITORING WELLS

July 30, 1996
Revision 2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION I

LOW STRESS (low flow) PURGING AND SAMPLING PROCEDURE FOR THE COLLECTION OF GROUND WATER SAMPLES FROM MONITORING WELLS

I. SCOPE & APPLICATION

This standard operating procedure (SOP) provides a general framework for collecting ground water samples that are indicative of mobile organic and inorganic loads at ambient flow conditions (both the dissolved fraction and the fraction associated with mobile particulates). The SOP emphasizes the need to minimize stress by low water-level drawdowns, and low pumping rates (usually less than 1 liter/min) in order to collect samples with minimal alterations to water chemistry. This SOP is aimed primarily at sampling monitoring wells that can accept a submersible pump and have a screen, or open interval length of 10 feet or less (this is the most common situation). However, this procedure is flexible and can be used in a variety of well construction and ground-water yield situations. Samples thus obtained are suitable for analyses of ground water contaminants (volatile and semi-volatile organic analytes, pesticides, PCBs, metals and other inorganics), or other naturally occurring analytes.

This procedure does not address the collection of samples from wells containing light or dense non-aqueous phase liquids (LNAPLs and DNAPLs). For this the reader may wish to check: Cohen, R.M. and J.W. Mercer, 1993, DNAPL Site Evaluation; C.K. Smoley (CRC Press), Boca Raton, Florida and U.S. Environmental Protection Agency, 1992, RCRA Ground-Water Monitoring: Draft Technical Guidance; Washington, DC (EPA/530-R-93-001).

The screen, or open interval of the monitoring well should be optimally located (both laterally and vertically) to intercept existing contaminant plume(s) or along flowpaths of potential contaminant releases. It is presumed that the analytes of interest move (or potentially move) primarily through the more permeable zones within the screen, or open interval.

Use of trademark names does not imply endorsement by U.S.EPA but is intended only to assist in identification of a specific type of device.

Proper well construction and development cannot be overemphasized, since the use of installation techniques that are appropriate to the hydrogeologic setting often prevents "problem well" situations from occurring. It is also recommended that as part of development or redevelopment the well should be tested to determine the appropriate pumping rate to obtain stabilization of field indicator parameters with minimal drawdown in shortest amount of time. With this information field crews can then conduct purging and sampling in a more expeditious manner.

The mid-point of the saturated screen length (which should not exceed 10 feet) is used by convention as the location of the pump intake. However, significant chemical or permeability contrast(s) within the screen may require additional field work to determine the optimum vertical location(s) for the intake, and appropriate pumping rate(s) for purging and sampling more localized target zone(s). Primary flow zones (high(er) permealability and/or high(er) chemical concentrations) should be identified in wells with screen lengths longer than 10 feet, or in wells with open boreholes in bedrock. Targeting these zones for water sampling will help insure that the low stress procedure will not underestimate contaminant concentrations. The Sampling and Analysis Plan must provide clear instructions on how the pump intake depth(s) will be selected, and reason(s) for the depth(s) selected.

Stabilization of indicator field parameters is used to indicate that conditions are suitable for sampling to begin. Achievement of turbidity levels of less than 5 NTU and stable drawdowns of less than 0.3 feet, while desirable, are not mandatory. Sample collection may still take place provided the remaining criteria in this procedure are met. If after 4 hours of purging indicator field parameters have not stabilized, one of 3 optional courses of action may be taken: a) continue purging until stabilization is achieved, b) discontinue purging, do not collect any samples, and record in log book that stabilization could not be achieved (documentation must describe attempts to achieve stabilization) c) discontinue purging, collect samples and provide full explanation of attempts to achieve stabilization (note: there is a risk that the analytical data obtained, especially metals and strongly hydrophobic organic analytes, may not meet the sampling objectives).

Changes to this SOP should be proposed and discussed when the site Sampling and Analysis Plan is submitted for approval. Subsequent requests for modifications of an approved plan must include adequate technical justification for proposed changes. All changes and modifications must be approved before implementation in field.

II. EQUIPMENT

A. Extraction device

Adjustable rate, submersible pumps are preferred (for example, centrifugal or bladder pump constructed of stainless steel or

Teflon).

Adjustable rate, peristaltic pumps (suction) may be used with caution. Note that EPA guidance states: "Suction pumps are not recommended because they may cause degassing, pH modification, and loss of volatile compounds" (EPA/540/P-87/001, 1987, page 8.5-11).

The use of inertial pumps is discouraged. These devices frequently cause greater disturbance during purging and sampling and are less easily controlled than the pumps listed above. This can lead to sampling results that are adversely affected by purging and sampling operations, and a higher degree of data variability.

B. Tubing

Teflon or Teflon lined polyethylene tubing are preferred when sampling is to include VOCs, SVOCs, pesticides, PCBs and inorganics.

PVC, polypropylene or polyethylene tubing may be used when collecting samples for inorganics analyses. However, these materials should be used with caution when sampling for organics. If these materials are used, the equipment blank (which includes the tubing) data must show that these materials do not add contaminants to the sample.

Stainless steel tubing may be used when sampling for VOCs, SVOCs, pesticides, and PCBs. However, it should be used with caution when sampling for metals.

The use of 1/4 inch or 3/8 inch (inner diameter) tubing is preferred. This will help ensure the tubing remains liquid filled when operating at very low pumping rates.

Pharmaceutical grade (Pharmed) tubing should be used for the section around the rotor head of a peristaltic pump, to minimize gaseous diffusion.

C. Water level measuring device(s), capable of measuring to 0.01 foot accuracy (electronic "tape", pressure transducer). Recording pressure transducers, mounted above the pump, are especially helpful in tracking water levels during pumping operations, but their use must include check measurements with a water level "tape" at the start and end of each record.

D. Flow measurement supplies (e.g., graduated cylinder and stop watch).

E. Interface probe, if needed.

F. Power source (generator, nitrogen tank, etc.). If a gasoline generator is used, it must be located downwind and at least 30 feet from the well so that the exhaust fumes do not contaminate the samples.

G. Indicator field parameter monitoring instruments - pH, Eh, dissolved oxygen (DO), turbidity, specific conductance, and temperature. Use of a flow-through-cell is required when measuring all listed parameters, except turbidity. Standards to perform field calibration of instruments. Analytical methods are listed in 40 CFR 136, 40 CFR 141, and SW-846. For Eh measurements, follow manufacturer's instructions.

H. Decontamination supplies (for example, non-phosphate detergent, distilled/deionized water, isopropyl alcohol, etc.).

I. Logbook(s), and other forms (for example, well purging forms).

J. Sample Bottles.

K. Sample preservation supplies (as required by the analytical methods).

L. Sample tags or labels.

M. Well construction data, location map, field data from last sampling event.

N. Well keys.

O. Site specific Sample and Analysis Plan/Quality Assurance Project Plan.

P. PID or FID instrument (if appropriate) to detect VOCs for health and safety purposes, and provide qualitative field evaluations.

III. PRELIMINARY SITE ACTIVITIES

Check well for security damage or evidence of tampering, record pertinent observations.

Lay out sheet of clean polyethylene for monitoring and sampling equipment.

Remove well cap and immediately measure VOCs at the rim of the well with a PID or FID instrument and record the reading in the field logbook.

If the well casing does not have a reference point (usually a V-cut or indelible mark in the well casing), make one. Describe its location and record the date of the mark in the logbook.

A synoptic water level measurement round should be performed (in the shortest possible time) before any purging and sampling activities begin. It is recommended that water level depth (to 0.01 ft.) and

total well depth (to 0.1 ft.) be measured the day before, in order to allow for re-settlement of any particulates in the water column. If measurement of total well depth is not made the day before, it should not be measured until after sampling of the well is complete. All measurements must be taken from the established referenced point. Care should be taken to minimize water column disturbance.

Check newly constructed wells for the presence of LNAPLs or DNAPLs before the initial sampling round. If none are encountered, subsequent check measurements with an interface probe are usually not needed unless analytical data or field head space information signal a worsening situation. Note: procedures for collection of LNAPL and DNAPL samples are not addressed in this SOP.

IV. PURGING AND SAMPLING PROCEDURE

Sampling wells in order of increasing chemical concentrations (known or anticipated) is preferred.

1. Install Pump

Lower pump, safety cable, tubing and electrical lines slowly (to minimize disturbance) into the well to the midpoint of the zone to be sampled. The Sampling and Analysis Plan should specify the sampling depth, or provide criteria for selection of intake depth for each well (see Section I). If possible keep the pump intake at least two feet above the bottom of the well, to minimize mobilization of particulates present in the bottom of the well. Collection of turbid free water samples may be especially difficult if there is two feet or less of standing water in the well.

2. Measure Water Level

Before starting pump, measure water level. If recording pressure transducer is used-initialize starting condition.

3. Purge Well

3a. Initial Low Stress Sampling Event

Start the pump at its lowest speed setting and slowly increase the speed until discharge occurs. Check water level. Adjust pump speed until there is little or no water level drawdown (less than 0.3 feet). If the minimal drawdown that can be achieved exceeds 0.3 feet but remains stable, continue purging until indicator field parameters stabilize.

Monitor and record water level and pumping rate every three to five minutes (or as appropriate) during purging. Record any pumping rate adjustments (both time and flow rate). Pumping rates should, as needed, be reduced to the minimum capabilities of the pump (for example, 0.1 - 0.4 l/min) to ensure stabilization of indicator

parameters. Adjustments are best made in the first fifteen minutes of pumping in order to help minimize purging time. During pump start-up, drawdown may exceed the 0.3 feet target and then "recover" as pump flow adjustments are made. Purge volume calculations should utilize stabilized drawdown value, not the initial drawdown. Do not allow the water level to fall to the intake level (if the static water level is above the well screen, avoid lowering the water level into the screen). The final purge volume must be greater than the stabilized drawdown volume plus the extraction tubing volume.

Wells with low recharge rates may require the use of special pumps capable of attaining very low pumping rates (bladder, peristaltic), and/or the use of dedicated equipment. If the recharge rate of the well is lower than extraction rate capabilities of currently manufactured pumps and the well is essentially dewatered during purging, then the well should be sampled as soon as the water level has recovered sufficiently to collect the appropriate volume needed for all anticipated samples (ideally the intake should not be moved during this recovery period). Samples may then be collected even though the indicator field parameters have not stabilized.

3b. Subsequent Low Stress Sampling Events

After synoptic water level measurement round, check intake depth and drawdown information from previous sampling event(s) for each well. Duplicate, to the extent practicable, the intake depth and extraction rate (use final pump dial setting information) from previous event(s). Perform purging operations as above.

4. Monitor Indicator Field Parameters

During well purging, monitor indicator field parameters (turbidity, temperature, specific conductance, pH, Eh, DO) every three to five minutes (or less frequently, if appropriate). Note: during the early phase of purging emphasis should be put on minimizing and stabilizing pumping stress, and recording those adjustments. Purging is considered complete and sampling may begin when all the above indicator field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings, taken at three (3) to five (5) minute intervals, are within the following limits:

turbidity (10% for values greater than 1 NTU),
DO (10%),
specific conductance (3%),
temperature (3%),
pH (± 0.1 unit),
ORP/Eh (± 10 millivolts).

All measurements, except turbidity, must be obtained using a flow-through-cell. Transparent flow-through-cells are preferred, because they allow field personnel to watch for particulate build-up within the cell. This build-up may affect indicator field parameter values

measured within the cell and may also cause an underestimation of turbidity values measured after the cell. If the cell needs to be cleaned during purging operations, continue pumping and disconnect cell for cleaning, then reconnect after cleaning and continue monitoring activities.

The flow-through-cell must be designed in a way that prevents air bubble entrapment in the cell. When the pump is turned off or cycling on/off (when using a bladder pump), water in the cell must not drain out. Monitoring probes must be submerged in water at all times. If two flow-through-cells are used in series, the one containing the dissolved oxygen probe should come first (this parameter is most susceptible to error if air leaks into the system).

5. Collect Water Samples

Water samples for laboratory analyses must be collected before water has passed through the flow-through-cell (use a by-pass assembly or disconnect cell to obtain sample).

VOC samples should be collected first and directly into pre-preserved sample containers. Fill all sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

During purging and sampling, the tubing should remain filled with water so as to minimize possible changes in water chemistry upon contact with the atmosphere. It is recommended that 1/4 inch or 3/8 inch (inside diameter) tubing be used to help insure that the sample tubing remains water filled. If the pump tubing is not completely filled to the sampling point, use one of the following procedures to collect samples: (1) add clamp, connector (Teflon or stainless steel) or valve to constrict sampling end of tubing; (2) insert small diameter Teflon tubing into water filled portion of pump tubing allowing the end to protrude beyond the end of the pump tubing, collect sample from small diameter tubing; (3) collect non-VOC samples first, then increase flow rate slightly until the water completely fills the tubing, collect sample and record new drawdown, flow rate and new indicator field parameter values.

Add preservative, as required by analytical methods, to samples immediately after they are collected if the sample containers are not pre-preserved. Check analytical methods (e.g. EPA SW-846, water supply, etc.) for additional information on preservation. Check pH for all samples requiring pH adjustment to assure proper pH value. For VOC samples, this will require that a test sample be collected during purging to determine the amount of preservative that needs to be added to the sample containers prior to sampling.

If determination of filtered metal concentrations is a sampling objective, collect filtered water samples using the same low flow procedures. The use of an in-line filter is required, and the filter

size (0.45 um is commonly used) should be based on the sampling objective. Pre-rinse the filter with approximately 25 - 50 ml of ground water prior to sample collection. Preserve filtered water sample immediately. Note: filtered water samples are not an acceptable substitute for unfiltered samples when the monitoring objective is to obtain chemical concentrations of total mobile contaminants in ground water for human health risk calculations.

Label each sample as collected. Samples requiring cooling (volatile organics, cyanide, etc.) will be placed into a cooler with ice or refrigerant for delivery to the laboratory. Metal samples after acidification to a pH less than 2 do not need to be cooled.

6. Post Sampling Activities

If recording pressure transducer is used, remeasure water level with tape.

After collection of the samples, the pump tubing may either be dedicated to the well for resampling (by hanging the tubing inside the well), decontaminated, or properly discarded.

Before securing the well, measure and record the well depth (to 0.1 ft.), if not measured the day before purging began. Note: measurement of total well depth is optional after the initial low stress sampling event. However, it is recommended if the well has a "silting" problem or if confirmation of well identity is needed.

Secure the well.

V. DECONTAMINATION

Decontaminate sampling equipment prior to use in the first well and following sampling of each subsequent well. Pumps will not be removed between purging and sampling operations. The pump and tubing (including support cable and electrical wires which are in contact with the well) will be decontaminated by one of the procedures listed below.

Procedure 1

The decontaminating solutions can be pumped from either buckets or short PVC casing sections through the pump or the pump can be disassembled and flushed with the decontaminating solutions. It is recommended that detergent and isopropyl alcohol be used sparingly in the decontamination process and water flushing steps be extended to ensure that any sediment trapped in the pump is removed. The pump exterior and electrical wires must be rinsed with the decontaminating solutions, as well. The procedure is as follows:

Flush the equipment/pump with potable water.

Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.

Flush with potable or distilled/deionized water to remove all of the detergent solution. If the water is recycled, the water must be changed periodically.

Flush with isopropyl alcohol (pesticide grade). If equipment blank data from the previous sampling event show that the level of contaminants is insignificant, then this step may be skipped.

Flush with distilled/deionized water. The final water rinse must not be recycled.

Procedure 2

Steam clean the outside of the submersible pump.

Pump hot potable water from the steam cleaner through the inside of the pump. This can be accomplished by placing the pump inside a three or four inch diameter PVC pipe with end cap. Hot water from the steam cleaner jet will be directed inside the PVC pipe and the pump exterior will be cleaned. The hot water from the steam cleaner will then be pumped from the PVC pipe through the pump and collected into another container. Note: additives or solutions should not be added to the steam cleaner.

Pump non-phosphate detergent solution through the inside of the pump. If the solution is recycled, the solution must be changed periodically.

Pump potable water through the inside of the pump to remove all of the detergent solution. If the solution is recycled, the solution must be changed periodically.

Pump distilled/deionized water through the pump. The final water rinse must not be recycled.

VI. FIELD QUALITY CONTROL

Quality control samples are required to verify that the sample collection and handling process has not compromised the quality of the ground water samples. All field quality control samples must be prepared the same as regular investigation samples with regard to sample volume, containers, and preservation. The following quality control samples shall be collected for each batch of samples (a batch may not exceed 20 samples). Trip blanks are required for the VOC samples at a frequency of one set per VOC sample cooler.

Field duplicate.

Matrix spike.

Matrix spike duplicate.

Equipment blank.

Trip blank (VOCs).

Temperature blank (one per sample cooler).

Equipment blank shall include the pump and the pump's tubing. If tubing is dedicated to the well, the equipment blank will only include the pump in subsequent sampling rounds.

Collect samples in order from wells with lowest contaminant concentration to highest concentration. Collect equipment blanks after sampling from contaminated wells and not after background wells.

Field duplicates are collected to determine precision of sampling procedure. For this procedure, collect duplicate for each analyte group in consecutive order (VOC original, VOC duplicate, SVOC original, SVOC duplicate, etc.).

If split samples are to be collected, collect split for each analyte group in consecutive order (VOC original, VOC split, etc.). Split sample should be as identical as possible to original sample.

All monitoring instrumentation shall be operated in accordance with EPA analytical methods and manufacturer's operating instructions. EPA analytical methods are listed in 40 CFR 136, 40 CFR 141, and SW-846 with exception of Eh, for which the manufacturer's instructions are to be followed. Instruments shall be calibrated at the beginning of each day. If a measurement falls outside the calibration range, the instrument should be re-calibrated so that all measurements fall within the calibration range. At the end of each day, check calibration to verify that instruments remained in calibration. Temperature measuring equipment, thermometers and thermistors, need not be calibrated to the above frequency. They should be checked for accuracy prior to field use according to EPA Methods and the manufacturer's instructions.

VII. FIELD LOGBOOK

A field log shall be kept to document all ground water field monitoring activities (see attached example matrix), and record all of the following:

Well identification.

Well depth, and measurement technique.

Static water level depth, date, time and measurement technique.

Presence and thickness of immiscible liquid (NAPL) layers and

detection method.

Pumping rate, drawdown, indicator parameters values, and clock time, at the appropriate time intervals; calculated or measured total volume pumped.

Well sampling sequence and time of each sample collection.

Types of sample bottles used and sample identification numbers.

Preservatives used.

Parameters requested for analysis.

Field observations during sampling event.

Name of sample collector(s).

Weather conditions.

QA/QC data for field instruments.

Any problems encountered should be highlighted.

Description of all sampling equipment used, including trade names, model number, diameters, material composition, etc.

VIII. DATA REPORT

Data reports are to include laboratory analytical results, QA/QC information, and whatever field logbook information is needed to allow for a full evaluation of data useability.

EXAMPLE (Minimum Requirements) Page____of____

Well PURGING-FIELD WATER QUALITY MEASUREMENTS FORM

Location (Site/Facility Name)_____ Depth to _____/_____ of screen
Well Number_____Date_____ (below MP) top bottom
Field Personnel_____ Pump Intake at (ft. below MP)_____
Sampling Organization_____ Purging Device; (pump type)_____
Identify MP

Clock Time 24 HR	Water Depth below MP ft	Pump Dial[1]	Purge Rate ml/min	Cum. Volume Purged liters	Temp. °C	Spec. Cond.[2] µS/cm	pH	ORP/ Eh[3] mv	DO mg/L	Turb-idity NTU	Comments

1. Pump dial setting (for example: hertz, cycles/min, etc).
2. µSiemens per cm(same as µmhos/cm)at 25°C.
3. Oxidation reduction potential (stand in for Eh).

Appendix D

Boring and Monitoring Well Logs

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 88.25 ft TOTAL DEPTH 8.0 ft	DATE START 07/11/01 DATE FINISH 07/11/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-1**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 6" – Dense Grade Road Subbase Middle 18" – NARROWLY GRADED SAND WITH SILT (SP-SM), brown at top, stained black bottom 5". Bottom 3" – SILTY SAND WITH GRAVEL (SM), very dense, olive gray.
2	S1	NA	48	27	LPB1-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4							S2: WIDELY GRADED WAND WITH SILT AND GRAVEL (SW-SM), very dense, light gray to olive gray, mottled.
6	S2	NA	48	45	LPB1-S2 JHS = 0.0 ppm No visual or olfactory contamination.		
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA –BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins Inc.
JHS = Jar Head Space; measured with a Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 89.95 ft
TOTAL DEPTH 8.0 ft

DATE START 07/11/01
DATE FINISH 07/11/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-2

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), predominantly fine sand, ~10% medium to coarse sand, ~10% subangular coarse gravel, light brown except top 7" stained black.
2	S1	NA	48	30	LPB2-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4							S2: Top 20" – Similar to S1 with one 6" layer near top of sample of widely graded sand that was stained black.
6	S2	NA	48	45	LPB2-S2 JHS = 0.0 ppm No visual or olfactory contamination.		Bottom 25" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown, zones of olive gray Silty Sand and Gravel, very dense.
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA -BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins Inc.
JHS = Jar Head Space; measured with a Photo-Ionization Detector which was calibrated daily.

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August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) – 88.05 ft TOTAL DEPTH 10.5 ft	DATE START 07/09/01 DATE FINISH 07/09/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-3**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0	S1	7, 9, 15, 47	24	7	LPB3-S1 JHS = 0.0 ppm No visual or olfactory conta-Mination.	FILL	S1: WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM)
2	S2	41, 7, 5, 5	24	12	LPB3-S2 JHS = 7.0 ppm Staining, slight odor.		S2: Top 6" – Similar to S1 Bottom 6" – NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, light brown.
4	S3	7, 9, 46, 110	24	12			S3: Top 5" - NARROWLY GRADED SAND WITH SILT (SP-SM), upper 1" dark black, bottom 4" gray. Bottom 7" - SILTY SAND (SM), fine, peat like appearance but is hard and somewhat cementatious, rusty brown.
6	S4	120 / 5"	5	5	LPB3-S3 JHS = 0.0 ppm Slight odor.		S4: Similar to bottom 7" of S3.
8	S5	120 / 6"	6	6			S5: Top 1" – Similar to bottom 7" of S3. Bottom 5" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM).
10	S6	118 / 6"	6	6	Bottom of Borehole at 10.5 ft.		S6: Similar to S5, bottom 5".

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
S-SPLIT SPOON SAMPLE

NOTES: 2" split spoon sampling.
Ground elevation surveyed by Dana F. Perkins Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 87.75 ft TOTAL DEPTH 6.0 ft	DATE START 07/10/01 DATE FINISH 07/10/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-4**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0					LPB4-S1 JHS = 0.0 ppm No visual or olfactory contamination.	FILL	S1: Top 15" - NARROWLY GRADED SAND WITH SILT (SP-SM), light brown. Middle 22" – Similar to top 15" except stained dark Black.
2	S1	NA	48	39	LPB54-S2 JHS = 0.0 ppm Black staining, no odor.		Bottom 2" – WIDELY GRADED SAND WITH GRAVEL (SW), brown, very dense.
4	S2	NA	24	23	LPB4-S3 JHS = 0.0 ppm No visual contamination, Slight Odor.		S2: SILTY SAND WITH GRAVEL (SM), light brown and olive gray, mottled. Till.
6					Bottom of Borehole at 6.0 ft.		Refusal at 6 feet.
8							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA –BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins Inc.
JHS = Jar Head Space; measured with a Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 86.45 ft TOTAL DEPTH 8.0 ft	DATE START 07/10/01 DATE FINISH 07/10/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-5**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 17" - NARROWLY GRADED SAND WITH GRAVEL (SP-SM) tan.
2	S1	NA	48	33	LPB5-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
							Bottom 16" – WIDELY GRADED SAND WITH GRAVEL (SW), light brown, very dense. Note: refusal at 4', move over one food and repeat sample.
4							
6	S2	NA	48	42	LPB5-S2 JHS = 0.5 ppm No visual contamination, slight petroleum odor.		S2: SILTY SAND WITH GRAVEL (SM), fine to coarse sand, ~35% fine to coarse subangular gravel, ~20% slightly plastic fines.
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BBLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) – 85.65 ft
TOTAL DEPTH 8.0 ft

DATE START 07/10/01
DATE FINISH 07/10/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-6

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0					LPB6-S1 JHS = 0.0 ppm No visual or olfactory contamination.	FILL	S1: Top 12" - NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand and silt, tan.
2	S1	NA	48	31			Bottom 19" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), brown, very dense.
4					LPB6-S2 JHS = 0.5 ppm No visual contamination, slight petroleum odor.		
6	S2	NA	48	39			S2: WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), pockets of silty fine sand, zones of orange oxidation staining, light brown, gray and olive gray, mottled.
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 85.95 ft TOTAL DEPTH 8.0 ft	DATE START 07/10/01 DATE FINISH 07/10/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-7**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0							S1: Top 27" - NARROWLY GRADED SAND WITH SILT (SP-SM), tan.
					LPB7-S1 JHS = 0.0 ppm No visual or olfactory contamination.	FILL	
2	S1	NA	48	36			
							Bottom 9" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), brown, very dense.
4							
							S2: WIDELY GRADED SAND WITH GRAVEL (SW), very dense, brown with zones of orange/brown oxidation stains.
6	S2	NA	48	45	LPB7-S2 JHS = 0.0 ppm No visual or olfactory contamination.		
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 85.95 ft TOTAL DEPTH 8.0 ft	DATE START 07/10/01 DATE FINISH 07/10/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-8**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, tan with layers of dark brown.
2	S1	NA	48	36	LPB8-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4							S2: Top 12" – Similar to S1
6	S2	NA	48	48	LPB8-S2 JHS = 126 ppm Oily, petroleum odor.		Bottom 36" - WIDELY GRADED SAND WITH GRAVEL (SW), brown with two 6 to 8" layers of darkly stained oily soil at 5.5' and 6.5'.
					LPB8-S3 JHS = 3.0 ppm Coal tar like odor.		
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 85.35 ft
TOTAL DEPTH 7.5 ft

DATE START 07/09/01
DATE FINISH 07/09/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-9

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0	S1	10, 10, 12, 10	24	17		FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, ~ 10% fines, light brown.
2	S2	9, 10, 13, 4	24	13	LPB9-S1 JHS = 0.0 ppm *No visual or olfactory contamination.*		S2: Similar to S1 with occasional pieces of coarse gravel.
4	S3	17, 47, 39, 43	24	24	LPB9-S2 JHS = 0.0 ppm No visual contamination. Slight odor.		S3: Top 7" – Similar to S2 Bottom 17" - WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), 70% fine to coarse sand, 20% subrounded fine gravel, 10% silty fines, dark rust brown, with 1-4" zone stained black
6	S4	30, 32, 120 / 5"	17	8	LPB-S3 JHS = Not Measured No visual or olfactory contamination.		S4: WIDELY GRADED SAND WITH SILT (SW-SM), ~80% fine to coarse sand, 10% subrounded fine gravel, ~10% silty fines, brown.
					Bottom of Borehole at 7.5 ft.		Refusal at 7.5 ft.
8							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
S-SPLIT SPOON SAMPLE

NOTES:
2" split spoon sampling.
Ground elevations surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 85.55 ft
TOTAL DEPTH 8.5 ft

DATE START 07/10/01
DATE FINISH 07/10/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-10

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 24" - NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, tan.
2	S1	NA	48	38	LPB10-S1 JHS = 7.0 ppm No visual contamination, has Slight odor.		Middle 5" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM) – possible old gravel road, light gray Bottom 9" – Similar to top 24" with ~10% medium to coarse sand, tan with dark layers.
4							S2: Top 18" – Similar to bottom 9" of S1.
6	S2	NA	48	34	LPB10-S2 JHS = 123 ppm Oily, petroleum odor.		Middle 9" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM) – stained dark brown. Bottom 7" – Similar to middle 9" except no staining. Note: Difficult to advance at 7.0 ft.
8	S3	NA	12	12	LPB10-S3 JHS = 17 ppm Slight odor.		S3: Similar to bottom 7" of S2, piece of rock in tip of sample. Refusal at 8.5 ft.
					Bottom of Borehole at 8.5 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 85.75 ft
TOTAL DEPTH 10.0 ft

DATE START 07/09/01
DATE FINISH 07/09/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-11

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
0	S1	6 7 6 6	24	11	LPB11-S1 JHS = 1.5 ppm Slight odor.	FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, ~ 10% silty fines, one piece subangular gravel, tan.
2	S2	7 5 5 5	24	13			S2: Top 7" - Similar to S1. Bottom 6" - Similar to S1 except with several layers of fine to medium sand, gray.
4	S3	2 2 2 2	24	17	LPB11-S2 JHS = 165 ppm Kempore, significant odor.		S3: Top 13"- NARROWLY GRADED SAND WITH SILT (SP-SM), gray-brown (top 4"), blue green (middle 8"), light brown (bottom 4"). Bottom 4" – Kempore.
6	S4	32 47 36 27	24	15	LPB11-S3 JHS = 33 ppm Slight odor.		S4: WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), 65% fine to coarse sand, 25% subrounded gravel, ~10% slightly plastic fines, dark brown, some staining.
8	S5	17 28 50 / 1"	13	8			S5: WIDELY GRADED SAND WITH GRAVEL (SW), 60% fine to coarse sand, 35% subrounded fine to coarse gravel, trace of fines, gray.
					Bottom of Borehole at 10.0 ft.		Bottom of borehole at 10 ft.

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
S-SPLIT SPOON SAMPLE

NOTES: 2" split spoon sampling.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.
Ground and PVC elevation surveyed by Dana P. Perkins, Inc.
Install 2" PVC well, screened interval 3 – 10 feet. (GW-LPB11)
Groundwater Elevation = 82.23 ft (measured 08/06/01)

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August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) – 86.25 ft
TOTAL DEPTH 10.0 ft

DATE START 07/10/01
DATE FINISH 07/10/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-12

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 5" - SILTY SAND (SM), light brown.
							Middle 5" – SILTY SAND (SM), dark brown, fine.
							Bottom 28" – NARROWLY GRADED SAND WITH SILT (SP-SM), tan, lower 8" mixed with Kempore.
2	S1	NA	48	38	LPB12-S1 JHS = 2.5 ppm Pockets of kempore, slight odor.		
4					LPB12-S2 JHS = 90 ppm Kempore, significant odor.		S2: Top 18" – Kempore
							Middle 10" – NARROWLY GRADED SAND WITH SILT (SP-SM), stained black.
6	S2	NA	48	39			
							Note: Difficult to advance below 6.5 ft.
					LPB12-S3 JHS = 49 ppm Slight odor.		Bottom 10" – NARROWLY GRADED SAND WITH GRAVEL AND SILT (SW-SM), brown.
8	S3	NA	24	16			S3: Similar to bottom 10" OF S2.
10					Bottom of Borehole at 10.0 ft.		Refusal at 10.0 ft.

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin
Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 85.75 ft
TOTAL DEPTH 7.0 ft

DATE START 07/09/01
DATE FINISH 07/09/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

LPB-13

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0	S1	4 6 6 7	24	20	LPB13-S1 JHS = 0.0 ppm No visual or olfactory contamination.	FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, ~ 10% fines, light brown.
2	S2	5 29 12 9	24	11			S2: Top 5" - Similar to S1. Middle 3" – WIDELY GRADED SAND (SW), fine to coarse sand, ~20% subangular gravel, ~5% fines, sample has appearance of pulverized concrete, light gray. Bottom 2" - SITLY SAND (SM), fine, dark brown.
4	S3	30 42 64 75	24	21	LPB13-S2 JHS = 0.5 ppm Slight odor.		S3: Top 6"- Similar bottom 2" of S2. Bottom 15" – SILTY SAND (SM) - ~40% fine sand, ~10% medium to coarse sand, ~30% angular black gravel, ~20% silty fines, olive gray. Till.
6	S4	41 120 / 3"	9	3	LPB13-S3 JHS = 0.0 Slight odor.		S4: SILTY SAND (SM), similar to bottom 15" of S3 except ~10% gravel.
8					Bottom of Borehole at 7.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
S-SPLIT SPOON SAMPLE

NOTES:
2" split spoon sampling.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin
Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 86.55 ft TOTAL DEPTH 4.5 ft	DATE START 07/11/01 DATE FINISH 07/11/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-14**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	
							S1: NARROWLY GRADED SAND WITH SILT (SP-SM), ~10-15% medium to coarse sand and fine, subrounded gravel, upper 25" dry, light brown to gray, bottom 20" wet with some dark orange brown staining.
2	S1	NA	48	45	LPB14-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4	S2	NA	6	6	LPB14-S2 JHS = 0.0 ppm No visual or olfactory contamination.		S2: WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), very dense, brown.
					Bottom of Borehole at 4.5 ft.		Refusal at 4.5 ft.
6							
8							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 87.45 ft
TOTAL DEPTH 2.0 ft

DATE START 07/11/01
DATE FINISH 07/11/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-14-aband

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observation/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0	S1	NA	24	24	No Sample	FILL	S1: Top 10" - NARROWLY GRADED SAND WITH SILT (SP-SM), ~10 % coarse sand to fine subrounded gravel, brown / gray. Middle 2" – Asphalt Bottom 12" – Similar to top 10" without coarse sand & gravel, light brown to dark brown. Refusal at 2.0 ft.
2					Bottom of Borehole at 2.0 ft.		
4							
6							
8							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
Drill new boring approximately 6 feet Southwest (see log LPB14).

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August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 87.45 ft TOTAL DEPTH 11.0 ft	DATE START 07/10/01 DATE FINISH 07/10/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-15**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), light brown.
2	S1	NA	48	31	LPB15-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4							S2: Top 20" – Similar to S1.
6	S2	NA	48	38			Bottom 18" – WIDELY GRADED SAND WITH GRAVEL (SW), stained dark black, tar like stickiness.
					LPB15-S2 JHS = 2.0 ppm Oily/Tar like, petroleum odor.		
8							S3: SILTY SAND WITH GRAVEL (SM), olive gray, Till.
10	S3	NA	36	27	LPB15-S3 JHS = 49 ppm No visual contamination, petroleum odor.		
					Bottom of Borehole at 11.0 ft.		Refusal at 11.0 ft.

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 87.25 ft
TOTAL DEPTH 9.0 ft

DATE START 07/10/01
DATE FINISH 07/10/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-16

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), trace of coarse to medium sand, trace fine subrounded gravel, light brown, occasional layer of dark brown.
2	S1	NA	48	40	LPB16-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4							S2: Similar to S1, bottom 6" is ~20% fine to coarse gravel.
6	S2	NA	48	48			Difficulty drilling at 7.5 ft.
8	S3	NA	12	12	LPB16-S2 JHS = 56.0 ppm Petroleum odor.		S3: Top 6" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM). Bottom 6" -- CLAYEY SAND (SC) - ~20% subangular gravel. Till.
					Bottom of Borehole at 9.0 ft.		Refusal at 9.0 ft.
10							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 85.85 ft
TOTAL DEPTH 8.75 ft

DATE START 07/09/01
DATE FINISH 07/09/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-17

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0	S1	10 12 14 10	24	17		FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), predominantly fine sand, trace medium to coarse sand, ~5% subrounded fine gravel, ~10% non-plastic fines, brown.
2	S2	11 12 6 7	24	11	LPB17-S1 JHS = 1.3 ppm No visible or olfactory contamination.		S2: Similar to S1 with pieces of brick, tip of spoon is wet.
4	S3	8 5 26 120 / 5"	23	10			S3: Top 6" – WIDELY GRADED SAND WITH SILT (SW-SM), fine to coarse sand, ~10% fines, ~20% subrounded gravel, brown. Bottom 4" – SILTY GRAVEL (GM), primarily fractured gravel pieces in a silty fine sand matrix (possible glacial till), gray.
6	S4	48 120 / 4"	10	8	LPB17-S2 JHS = 0.0 ppm No visible contamination, slight odor.		S4: WIDELY GRADED GRAVEL WITH SILT AND SAND (GW-GM), subangular gravel, many pieces fractured during sampling, ~30% fine to coarse sand, ~10% non-plastic fines, gray-brown, mottled.
8	S5	48 120 / 3"	9	0			S5: No recovery.
					Bottom of Borehole at 8.75 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
S-SPLIT SPOON SAMPLE

NOTES:
2" split spoon sampling.
Groundwater elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) – 85.45 ft
TOTAL DEPTH 10.5 ft

DATE START 07/10/01
DATE FINISH 07/10/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

LPB-18

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), mostly fine sand, tan.
2	S1	NA	48	37			
4					LPB18-S1 JHS = 0.0 ppm No visual or olfactory contamination.		S2: Similar to S1.
6	S2	NA	48	40			
8							S3: Top 14" – Similar to S1, with bottom 3" dark stained.
	S3	NA	30	30	LPB18-S2 JHS = 27.0 ppm Strong odor, stained.		Bottom 16" – WIDELY GRADED SAND AND GRAVEL WITH SILT (SW-SM), brown, top 2" dark stained.
10					LPB18-S3 JHS = 7.0 ppm. Slight odor.		
					Bottom of Borehole at 10.5 ft.		Refusal at 10.5 ft.

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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GEI Consultants, Inc.
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BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) – 85.45 ft TOTAL DEPTH 14.0 ft	DATE START 07/09/01 DATE FINISH 07/09/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	LPB-19

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0	S1	6 7 11 7	24	18		FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, ~10% non-plastic fines, several pieces of subrounded coarse gravel, tan.
2	S2	9 7 6 120 / 5"	24	13	LPB19-S1 JHS = 0.0 ppm No visible or olfactory contamination.		S2: Top 11" - Similar to S1. Bottom 2" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), ~70% fine to coarse sand, ~20% subrounded gravel, ~10% silty fines, appears stained slightly, dark Brown.
4	S3	120 / 4"	4	4	LPB19-S2 JHS = 1.5 ppm Slight odor and staining.		S3: GRAVEL WITH SAND AND SILT (GW-GM), ~70% subrounded gravel, many of the gravel pieces fractured during sampling, ~20% fine to coarse sand, ~10% silty fines, gray to dark brown, mottled.
6	S4	18 34 23 37	24	18	LPB19-S3 JHS = 0.0 ppm No visible or olfactory contamination.		S4: WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), ~70% fine to coarse sand, ~10% non-plastic fines, ~20% subrounded fine gravel, rust - brown.
8	S5	9 * 7 10 14	24	14			S5: Similar to S4 with one 2" zone stained black.
10	S6	4 ** 3 8 35	24	12			S6: Similar to S4
12	S7	4 17 39 94	24	16			S7: Top 7" - Similar to S4 Bottom 9" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), ~65% fine to coarse sand, ~25% subangular to subrounded gravel, ~10% silty fines, gray-brown. Till.
14					Bottom of Borehole at 14.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
S-SPLIT SPOON SAMPLE

* = possibly softened by hydrostatic pressure
** = sample disturbed, sand running up into augers.

NOTES:
2" split spoon sampling.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 89.05 ft TOTAL DEPTH 12.0 ft	DATE START 07/11/01 DATE FINISH 07/11/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-22**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 3" – Asphalt Bottom 38" – NARROWLY GRADED SAND WITH SILT (SP-SM), light brown with zones of dark black.
2	S1	NA	48	41	LPB22-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4							S2: Top 10" - Similar to bottom of S1. Bottom 36" - WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), predominantly fine to medium sand, trace of coarse sand, ~10% fine subrounded gravel, ~10% fines, rust brown.
6	S2	NA	48	46	LPB22-S2 JHS = 0.0 ppm No visual or olfactory contamination.		
8							S3: Similar to bottom 36" of S2. Gravelly till at bottom.
10	S3	NA	48	48	Bottom of Borehole at 12.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 86.35 ft TOTAL DEPTH 8.0 ft	DATE START 07/11/01 DATE FINISH 07/11/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-23**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 31" – NARROWLY GRADED SAND WITH SILT (SP-SM), light brown.
2	S1	NA	48	46	LPB23-S1 JHS = 0.0 ppm No visual or olfactory contamination.		Bottom 15" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM) – Very dense, several small cobbles.
4							S2 - Similar to bottom 15" of S1.
6	S2	NA	48	48	LPB23-S2 JHS = 0.0 ppm No visual or olfactory contamination.		
8					Bottom of Borehole at 8.0 ft.		
10							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 85.45ft
TOTAL DEPTH 8.0 ft

DATE START 07/11/01
DATE FINISH 07/11/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-24

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0					LPB24-S1 JHS = 0.5 ppm No visual or olfactory contamination.	FILL	S1: Top 21" – NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), brown to black with a 6" layer of angular white gravel.
2	S1	NA	48	37	LPB24-S2 JHS = 3.0 ppm No visual contamination. Organic odor.		Middle 8" – ORGANIC SOIL (OL/OH), fibrous, black. Bottom 8" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM) – Brown to dark brown, angular gravel up to 2".
4							S2 – Top 10" – Similar to bottom 8" of S1
6	S2	NA	48	48	LPB24-S3 JHS = 3.0 ppm No visual or olfactory contamination.		Bottom 38" – WIDELY GRADED SAND WITH GRAVEL (SW) – Angular gravel, layers of white, gray and brown.
8					Bottom of Borehole at 8.0 ft.		
10							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BBLOW COUNTS NOT ANAILABLE, BORING ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

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Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 85.95ft TOTAL DEPTH 8.0 ft	DATE START 07/11/01 DATE FINISH 07/11/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-25**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0					LPB25-S1 JHS = 0.5 ppm No visual or olfactory contamination.	FILL	S1: Top 26" – NARROWLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), predominantly brown, one 6" zone in middle dark black, possibly mixed with organics.
2	S1	NA	48	38			Middle 6" – ORGANIC SOIL (OL) – root fibers, black.
					LPB25-S2 JHS = 271.0 ppm Organic odor.		
							Bottom 6" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM) , brown
4							
					LPB25-S3 JHS = 12.0 ppm No visual or olfactory contamination.		S2 – Similar to bottom 6" of S1
6	S2	NA	48	32			
8					Bottom of Borehole at 8.0 ft.		
10							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
S-SPLIT SPOON SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation was surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 85.55ft TOTAL DEPTH 8.0 ft	DATE START 07/11/01 DATE FINISH 07/11/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-26**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 6" – WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), gray. Middle 24" – NARROWLY GRADED SAND WITH SILT (SP-SM) – gray.
2	S1	NA	48	38	LPB26-S1 JHS = 1.0 ppm No visual or olfactory contamination.		
							Bottom 8" – ORGANIC SOIL(OL-OH), root fibers.
4					LPB26-S2 JHS = 2.5 ppm No visual contamination, Organic odor		S2: Top 12" – Similar to bottom 8" of S1 Middle 12" – NARROWLY GRADED SAND WITH SILT (SP-SM), rust brown.
6	S2	NA	48	40			Bottom 16" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM) – tan and gray mottled, zones of silty fine sand.
					LPB26-S3 JHS = 0.5 ppm No visual or olfactory contamination.		
8					Bottom of Borehole at 8.0 ft.		
10							

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED WITH A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 85.55ft TOTAL DEPTH 12.0 ft	DATE START 07/11/01 DATE FINISH 07/11/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-27**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM).
2	S1	NA	48	47	LPB27-S1 JHS = 0.5 ppm No visual or olfactory contamination.		
4							S2: Top 10" – NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, gray.
					LPB27-S2 JHS = 4.0 ppm No visual contamination, Organic odor		Middle 18" – ORGANIC SOIL (OL-OH), medium plasticity, root fibers.
6	S2	NA	48	48			Bottom 20" – NARROWLY GRADED SAND WITH SILT (SP-SM), brown to orange brown, bottom 6" has ~15% subangular gravel.
8					LPB27-S3 JHS = 0.5 ppm No visual or olfactory contamination.		S3: WIDELY GRADED SAND WITH SILT AND GRAVEL (SW-SM), brown to gray with depth.
10	S3	NA	48	48			
					Bottom of Borehole at 12.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED WITH A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 87.64 ft
TOTAL DEPTH 10.5 ft

DATE START 07/11/01
DATE FINISH 07/11/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-28

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 3" – Asphalt Bottom 25" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), brown.
2	S1	NA	48	28	LPB28-S1 JHS = 0.0 ppm No visual or olfactory contamination.		
4							S2: Top 18" – Similar bottom 25" of S1.
6	S2	NA	48	24	LPB28-S2 JHS = 1.5 ppm Slight odor.		Bottom 6" – ORGANIC SOIL (OL-OH), 50% fine sand, ~50% silt.
8	S3	NA	30	24			S3: Top 12" – Similar bottom 6" of S2.
10					LPB28-3 JHS = 1.0 ppm No visual contamination, slight odor.		Bottom 12" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), dense, light brown/gray. Till. Refusal at 10.5 ft.
					Bottom of Borehole at 10.5 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin
Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) -- 86.55 ft TOTAL DEPTH 10.5 ft	DATE START 07/12/01 DATE FINISH 07/12/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-29**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0							S1: NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, light brown, several layers of 3 to 4" and bottom 6" dark brown with some subangular gravel
2	S1	NA	48	36	LPB29-S1 JHS = 1.0 ppm No visual or olfactory contamination		
4							S2: Top 6" – NARROWLY GRADED SAND WITH SILT (SP-SM), fine to medium sand, dark brown. Next 10" – WIDELY GRADED SAND AND GRAVEL WITH SILT (SW-SM) – gray. Next 15" – Similar to top 6"
6	S2	NA	48	44	LPB29-S2 JHS = 340 ppm Kempore, significant odor.		Next 12" – Kempore Bottom 1" – SILTY SAND (SM), stained dark black-blue.
8	S3	NA	30	26	LPB29-S3 JHS = 15.0 ppm No visual contamination, petroleum odor.		S3: SILTY SAND (SM), ~65% fine to coarse sand, ~20 % subangular gravel, ~15% silty fines, small pockets of weathered rock, blue-gray.
10					Bottom of Borehole at 10.5 ft.		Refusal at 10.5 ft.

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) – 85.65 ft TOTAL DEPTH 11.0 ft	DATE START 07/12/01 DATE FINISH 07/12/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-30**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), fine sand, light brown, several layers with ~25-35% subangular gravel.
2	S1	NA	48	34	LPB30-S1 JHS = 33 ppm No visual contamination, petroleum odor.		
4							S2: Similar to S1, soil trend from light brown to gray with depth, occasional thin layer of dark staining.
6	S2	NA	48	48			
8	S3	NA	36	26	LPB30-S2 JHS = 151 ppm Oily, petroleum odor.		S3: Top 8" – Similar to S2 Middle 4" – SILTY SAND (SM), brown with black staining.
10					LPB30-S3 JHS = 18.0 ppm No visual contamination petroleum odor.		Bottom 14" – WIDELY GRADED SAND AND GRAVEL WITH SILT (SW-SM), light gray, very dense. Till.
					Bottom of Borhole at 11 0 ft.		Refusal at 11.0 ft.

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NNA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poty
GROUND ELEVATION (NGVD) -- 85.55 ft
TOTAL DEPTH 8.0 ft

DATE START 07/12/01
DATE FINISH 07/12/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-31

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: Top 5" – SILTY SAND (SM), fine sand, dark brown.
2	S1	NA	48	34	LPB31-S1 JHS = 0.5 ppm No visual or olfactory contamination.		Bottom 29" – NARROWLY GRADED SAND WITH SILT (SP-SM), light brown.
4							S2: Top 20" - Similar to bottom 29" of S1.
6	S2	NA	48	40	LPB31-S2 JHS = 0.5 ppm No visual or olfactory contamination.		Bottom 20" – WIDELY GRADED SAND AND GRAVEL WITH SILT (SW-SM), very dense, brown, upper 6" dark brown.
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA—BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin
Project 97598

GEI Consultants, Inc.
August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) – 85.55 ft TOTAL DEPTH 8.0 ft	DATE START 07/12/01 DATE FINISH 07/12/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-32**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0					LPB32-S1 JHS = 0.5 ppm No visual or olfactory contamination.	FILL	S1: Top 12" – NARROWLY GRADED SAND WITH SILT (SP-SM), light brown.
2	S1	NA	48	36			Bottom 24" –WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), very dense, light gray, till.
4					LPB32-S2 JHS = 2.0 ppm No visual contamination, slight odor.		S2: WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), very dense, light gray to brown, till.
6	S2	NA	48	45			
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly GROUND ELEVATION (NGVD) – 85.55 ft TOTAL DEPTH 8.0 ft	DATE START 07/12/01 DATE FINISH 07/12/01 DRILLED BY Environmental Drilling, Inc. LOGGED BY S. Sarandis	BORING LOG PAGE 1 of 1	**LPB-33**

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Log	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), light brown with some isolated thin layers of dark brown to black.
2	S1	NA	48	45	LPB33-S1 JHS = 0.5 ppm No visual or olfactory contamination		
4							S2: Top 16" – Similar to S1.
6	S2	NA	48	46	LPB33-S2 JHS = 8.5 ppm Oily, petroleum odor.		Bottom 30" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), very dense, upper 14" stained black and oily.
					LPB33-S3 JHS = 3.5 No visual contamination, slight odor.		
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT ANAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground Elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin Project 97598	GEI Consultants, Inc. August 2001

BORING LOCATION Lake Poly
GROUND ELEVATION (NGVD) -- 85.45 ft
TOTAL DEPTH 8.0 ft

DATE START 07/12/01
DATE FINISH 07/12/01
DRILLED BY Environmental Drilling, Inc.
LOGGED BY S. Sarandis

BORING LOG

PAGE 1 of 1

LPB-34

DEPTH FT.	SAMPLE TYPE & NO.	BLOWS / 6 IN.	PEN IN.	REC IN.	Environmental Observations/Samples	Soil Strata	SOIL AND ROCK DESCRIPTIONS
0						FILL	S1: NARROWLY GRADED SAND WITH SILT (SP-SM), light brown with some intermittent thin layers of dark staining.
2	S1	NA	48	42	LPB34-S1 JHS = 0.5 ppm No visual or olfactory contamination		
4							S2: Top 18" – Similar to S1.
6	S2	NA	48	46	LPB34-S2 JHS = 0.5 ppm No visual or olfactory contamination		Bottom 28" – WIDELY GRADED SAND WITH GRAVEL AND SILT (SW-SM), pockets of silty sand, gray-brown, mottled.
8					Bottom of Borehole at 8.0 ft.		

BLOWS PER 6 IN.- BLOWS OF A 140 LB. HAMMER FALLING 30 IN. TO DRIVE A 2.0 IN. OD SPLIT SPOON SAMPLER
PEN-PENETRATION LENGTH OF SAMPLER OR CORE BARREL
REC-RECOVERY LENGTH OF SAMPLE
NA-BLOW COUNTS NOT AVAILABLE, BORING WAS ADVANCED USING A GEOPROBE.

NOTES:
Drilling was done using a Geoprobe. Sleeves were 4 feet-long and 2 inch-diameter.
Ground elevation surveyed by Dana F. Perkins, Inc.
JHS = Jar Head Space measured with Photo-Ionization Detector which was calibrated daily.

Olin
Project 97598

GEI Consultants, Inc.

August 2001

GROUNDWATER MONITORING WELL REPORT

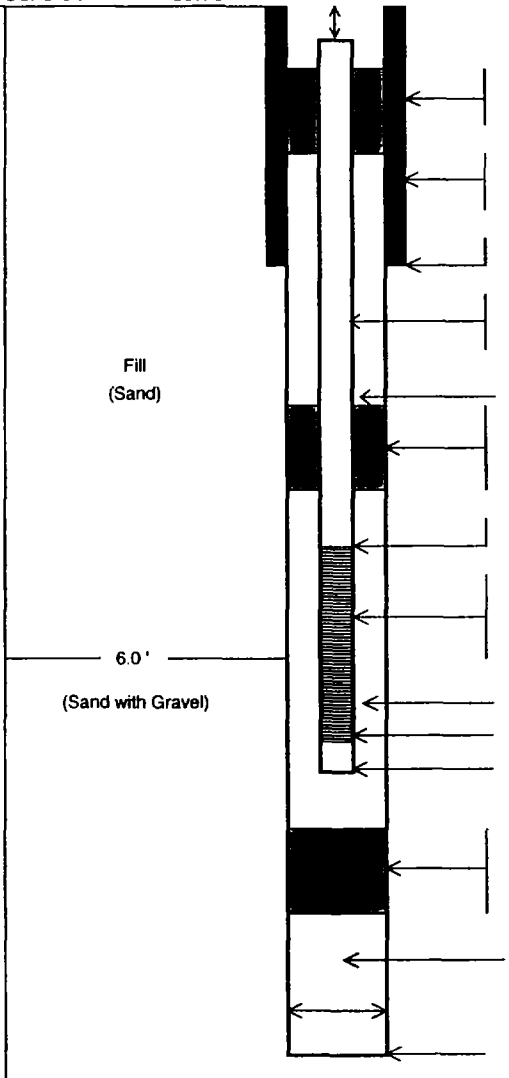
WELL ID # GW-LPB11

PROJECT	Olin				
LOCATION	Wilmington, MA			PROJECT NO.	97598-4
CLIENT	Olin			BORING NO.	LPB11
CONTRACTOR	Environmental Drilling, Inc.			LOCATION	Lake Poly
GEI REP.	J. Vallee and S. Sarandis	DATE	07/09/01		
CHECKED BY	L. Welch	DATE	10/8/01	INSTALL. DATE	7/9/01

SURVEY DATUM NGVD

GROUND EL. 85.75

GENERAL SOIL CONDITIONS (NOT TO SCALE)



CASING LENGTH ABOVE GROUND SURFACE	3.5'
ELEVATION OF RISER PIPE	88.89'
THICKNESS OF SURFACE SEAL	1'
TYPE OF SURFACE SEAL	Concrete
ID OF SURFACE CASING	4"
TYPE OF SURFACE CASING	Steel Standpipe
DEPTH BOTTOM OF CASING	1.5'
ID and OD OF RISER PIPE	2" ID, 2 3/8" OD
TYPE OF RISER PIPE	Sch. 40 PVC
TYPE OF BACKFILL AROUND RISER PIPE	Morie Sand
DEPTH TOP OF SEAL	-
TYPE OF SEAL	none
DEPTH BOTTOM OF SEAL	-
DEPTH TOP OF PERVIOUS SECTION	3.0'
TYPE OF PERVIOUS SECTION	Sch. 40 PVC
DESCRIBE OPENINGS	0.010" slotted
ID and OD OF PERVIOUS SECTION	2" ID, 2 3/8" OD
TYPE OF BACKFILL AROUND PERVIOUS SECTION	Sand
DEPTH BOTTOM OF PERVIOUS SECTION	9.8'
DEPTH BOTTOM OF SILT TRAP	10.0'
DEPTH BOTTOM OF SAND/TOP OF SEAL	-
TYPE OF SEAL	none
DEPTH BOTTOM OF SEAL	-
TYPE OF BACKFILL BELOW PERVIOUS SECTION	none
DIAMETER OF BOREHOLE	6.75"
DEPTH BOTTOM OF BOREHOLE	10.0'

NOTES: Groundwater elevation = 82.23 ft (measured 08/16/01)

GEI Consultants, Inc.

GEI Consultants, Inc.

December 5, 2001
Project 97598

1021 Main Street
Winchester, MA 01890-1970
781•721•4000
781•721•4073 Fax

Mr. Christopher Pyott
Environmental Analyst
Department of Environmental Protection
Northeast Regional Office
Bureau of Waste Site Cleanup
205A Lowell Street
Wilmington, MA 01887

Dear Mr. Pyott:

Re: Immediate Response Action (IRA) Status Report No. 2 and Completion Statement
South Ditch/Former Weir Area
Olin Corporation Property
51 Eames Street
Wilmington, MA
RTN 3-0471

The purpose of this submittal is to present a Status Report and Completion Statement for the Immediate Response Action (IRA) Assessment of the South Ditch and Former Weir Area at the Olin Corporation (Olin) property (the Property) in Wilmington, Massachusetts. As a result of an incident at the Property on October 5, 2000, MADEP determined that an IRA condition existed or potentially existed as a result of surface water conditions in the South Ditch/Former Weir Area at the Property, and that additional assessment and abatement measures should be performed to address the condition.

An IRA Assessment and Plan for the South Ditch/Former Weir was submitted to MADEP on December 22, 2000. In the IRA Plan, Olin presented an Imminent Hazard (IH) Evaluation of the downstream environment in the East Ditch, and in what is now called the New Boston Street Drainway, that concluded that an IH does not exist in the East Ditch as a result of the concentrations of chromium or ammonia observed in surface water during the *Part 2* Construction-Related Release Abatement Measure (RAM) in the fall of 2000. Additional monitoring during the winter and spring of 2001 was proposed to verify these findings. IRA Status Report No. 1, dated June 8, 2001, presented the results of surface water monitoring conducted during the period of December 11, 2000 through April 16, 2001.

MADEP provided Conditional Approval of the IRA Plan, and comments on the findings of the IH Evaluation, in a letter to Olin dated June 8, 2001. In its approval letter, MADEP requested that additional sediment sampling and analysis be conducted to define the extent of

contamination resulting from the October 2000 release. Additionally, MADEP requested that Olin conduct a quantitative human health IH Evaluation, and an Ecological IH Evaluation of near downstream environments. Olin submitted a Scope of Work (SOW) for the additional sediment sampling to MADEP on July 9, 2001. The Department approved the SOW in a letter to Olin dated August 10, 2001.

This IRA Status Report was originally due in October 2001. However, to accommodate the implementation of the SOW described above, and the analysis of the data, MADEP granted approval for the extension of the submittal date in writing on September 18, 2001, and verbally on November 8, 2001.

A copy of an IRA Transmittal Form (BWSC –103) is attached as Appendix A.

1. CONTACT INFORMATION

Responsibility for the IRA:

Steve Morrow, P.E.
Olin Corporation
1186 Lower River Road
Charleston, TN 37310
(423) 336-4511

Licensed Site Professional:

M. Margret Hanley, LSP No. 8494
Sleeman, Hanley, and DiNitto, Inc.
c/o GEI Consultants, Inc.
1021 Main Street
Winchester, MA 01890
(781) 721-4022

2. BACKGROUND

A Construction Related Release Abatement Measure (RAM) to remove contaminated sediments from portions of the On-Property Ditch System and to construct a subsurface containment wall around Dense Aqueous Phase Liquid (DAPL) and significantly contaminated groundwater was initiated in August 2000. The Construction related RAM was approved conditionally by MADEP in correspondence to Olin Corporation (Olin) dated June 26, and August 9, 2000. The locations of the remedial activities that were performed as part of the RAM are depicted in Figure 1.

One aspect of the RAM was the installation of an adjustable weir and sedimentation basin (Weir/Basin)1, to replace the former Weir, immediately downstream of the confluence of the Off-Property West Ditch and the South Ditch. The purpose of the Weir/Basin is to control the elevation of surface water, and to create conditions that will permit the sedimentation of chromium and iron floc from surface water in a controlled area. The location of the Weir/ Basin is indicated on Figures 1 and 2. The base of the Weir/Basin is several feet below the base elevation of the streambed of the South Ditch. To facilitate the installation of the box culvert, the site contractor diverted surface water from upstream of the box culvert to a sedimentation tank. After passing through a sedimentation tank, the water was then discharged to the "Delta" area of the South Ditch, downstream of the work area. On October 5, 2000, the pump that was used to divert surface water flow was inadvertently permitted to operate over night from a sump located at the base of the box culvert. This pumping resulted in a dewatering of the sump, and the eventual capture of shallow

1 The Weir/ Basin is commonly referred to as the "box-culvert".

groundwater, which was routed through the sedimentation tank and discharged to the Delta. On the following morning, water remaining in the sedimentation tank was observed to have a pH of about 4.6, indicating that DAPL affected groundwater, and potentially DAPL, had been captured. Additionally, the release of low pH groundwater to the South Ditch resulted in the formation of white floc in the Delta, and elevated total and dissolved chromium concentrations in surface water in portions of the South Ditch.

MADEP was notified of the incident on October 5, 2000, within 2 hours of GEI's identification and initial assessment of the conditions in the South Ditch. GEI concluded that the inadvertent pumping of untreated groundwater in the vicinity of the box culvert, and the resulting increase in total chromium concentrations in surface water leaving the Property resulted in a potential violation of the terms of a National Pollution Discharge and Elimination System (NPDES) Permit Exclusion that was issued to Olin by the United States Environmental Protection Agency (USEAP) for the construction work at the Property in August 2000. Accordingly, USEPA was notified verbally on October 18, 2000, of the incident. A letter report summarizing the NPDES Permit Exclusion exceedance and the subsequent abatement measures taken on behalf of Olin, was submitted to USEPA on October 26, 2000.

Based on a preliminary assessment of the incident on the afternoon of October 5, MADEP determined that conditions at the site met the criteria for an IRA, and requested that an IRA Assessment be performed.

A detailed summary of the October 5 incident, initial surface water testing performed at the Property to evaluate the incident, and IRA Assessment Activities conducted between October 5 and December 2000, were summarized in the IRA Assessment and Plan (IRA Plan) that was submitted to MADEP on December 22, 2000. Based on the results of the IRA Assessments performed at the Olin Property through December 2000, and as reported in the December 22, 2000, IRA Plan, it was GEI's opinion that conditions that occurred during the incident, and which were observed following the incident did not pose an imminent hazard as defined in the MCP. As previously reported, the presence of chromium precipitate (floc) and ammonia in the ditch system does constitute a Substantial Release Migration (SRM) Condition (310 CMR 40.0950). A SRM Condition was reported and addressed in the IRA Completion Statement for the South Ditch/Weir Area dated September 21, 1998.

Since the October 5, 2000 incident, Olin has conducted monitoring and assessment activities in the South Ditch. Monitoring and assessment activities conducted between October 2000 and September 2001 are reported in this Status Report.

A similar, but limited incident occurred for a period of about 3 hours during the afternoon of June 5, 2001. An estimated 5,000-15,000 gallons of surface water and low pH groundwater captured in a dewatering sump was discharged to the restored South Ditch and resulted in decreased pH and elevated chromium concentrations in the upper South Ditch. Olin notified MADEP immediately when it became aware of the incident.

Response actions taken by GEI on behalf of Olin are described below (2). The IH evaluations requested by MADEP did not specifically address the conditions associated with the June 5, 2001 incident. However, downstream surface water quality data collected during and following the June 5, 2001, incident were conservatively included in the human health risk assessment conducted by HESE as part of the IH evaluation presented herein.

3. DESCRIPTION OF IRA ASSESSMENT ACTIVITIES

IRA Assessment activities related to the South Ditch/Former Weir Area that have been performed since June 2001 are summarized below:

3.1 Surface Water Monitoring

To document conditions in the South Ditch / Former Weir Area, and to support an evaluation as to the need for continuing IRA measures at the Property, Olin performed periodic surface water monitoring in the South Ditch and East Ditch. Between November 2000 and February 2001, monitoring activities consisted of daily or weekly sampling of the upper and lower South Ditch for ammonia, and at times also total chromium, dissolved chromium, pH, or specific conductivity. In March 2001, the monitoring was expanded to include weekly sampling of the upper and lower South Ditch and monthly sampling of the East Ditch for ammonia, total nitrate/nitrite, total chromium, dissolved chromium, dissolved aluminum, sulfate, chloride, pH, specific conductivity, dissolved oxygen, and temperature. From September 11, 2001 to November 11, 2001, no surface water samples were collected from the South Ditch, due to lack of active flow in the ditch.

Beginning in January 2001, GEI and Olin began to record the discharge times of Plant B relative to the surface water sampling activities. As of March 26, 2001, weekly sampling activities were conducted whenever possible on Monday morning, prior to the discharge of treated water from Plant B. This strategy maximized the period of time between the last discharge from Plant B (typically the previous Friday afternoon) and the sampling events. Sampling times relative to Plant B discharge and sampling locations downstream of the Plant B discharge are presented in Tables 2 and 3.

A summary of the surface water sampling data collected from the South Ditch and East Ditch between July 2000 and September 2001 is presented in Table 1 through Table 5 of this Status Report. On behalf of Olin, GEI, or LAW Engineering and Environmental Services, Inc. (LAW), as appropriate, validated laboratory data for these samples in accordance with the Quality Assurance Project Plan (QAPP) dated August 1999. The data was entered into the Site database maintained by Olin. Measurements of field parameters (pH, specific conductivity, temperature, and dissolved oxygen) were conducted by GEI, in general accordance with GEI Standard Operating Procedures and generally accepted engineering and scientific practices.

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2 The June 5, 2001 Incident was also described in the Construction Related RAM Status Report No.2, dated August 28, 2001.

3.2 Response to June 5, 2001 Surface Water Management Incident

For a period of about 3 hours during the afternoon of June 5, 2001, an estimated 5000-15,000 gallons of surface water and low pH groundwater captured in a dewatering sump was discharged to the restored South Ditch and resulted in decreased pH and elevated chromium concentrations in the upper South Ditch. Olin notified MADEP immediately when it became aware of the incident. GEI directed the site contractor to immediately stop pumping and install a temporary dam downstream of the discharge area to contain the impacted surface water. For the next several days, water upstream of the temporary dam was pumped to the Bioremediation Cell (the Biocell) for storage, pending subsequent treatment. GEI estimates that between the afternoon of June 5 and June 8, approximately 50,000 gallons of water was pumped from the dammed portion of the South Ditch to the Biocell.

From June 6 to June 8, water from the Biocell was treated using the mobile treatment system, and discharged to the empty Detention Pond adjacent to the South Ditch. With MADEP's verbal approval, on June 8 the treated water from the Detention Pond was pumped to the upper South Ditch. This displaced the residual impacted surface water from the ditch, which was captured at the temporary dam downstream and pumped to the Biocell for treatment. To increase surface water elevations in the dammed portion of the South Ditch and reduce groundwater exfiltration to the South Ditch, two additional dams were installed along the upper South Ditch channel. Water from the Detention Pond was pumped to the upper South Ditch until water began to overflow the dams. GEI supervised the response actions following the June 5 incident. Based on pH and inorganic compound sampling results collected during and after the incident, it is GEI's opinion that the response actions taken between June 5 and June 8 were successful in capturing and treating the majority of surface water impacted as a result of the June 5 incident. A memorandum describing the details of the June 5, 2001 incident and the associated response actions is contained in the Construction Related RAM Status Report No. 2 dated August 28, 2001. Surface water monitoring data collected during this incident are included in Table 1 through Table 5 of this Status Report. Information obtained during this event is included as part of the surface water quality trend analysis described below.

3.3 Sediment Sampling in Lower Reaches of South Ditch

In response to the MADEP's request for additional sediment sampling, as described in the Department's June 8, 2001 Conditional Approval of the IRA Plan, Olin prepared a SOW for Supplemental Phase II Investigations of the South Ditch and Central Pond. The purpose of the additional sediment sampling was to delineate the extent of contamination resulting from the October 5, 2000 incident, and to support further characterization of the Site. The Scope of Work was prepared by GEI Consultants Inc. (GEI) and submitted to MADEP on July 9, 2001. MADEP provided Conditional Approval of the SOW in a letter to Olin dated August 10, 2001. The following is a summary of the additional sediment sampling conducted in and adjacent to the portions of the South Ditch downstream of the Delta, where no remediation activities were performed. Soil and sediment sampling results in the vicinity of Central Pond are not related to this IRA, and will be submitted to MADEP separately in a Supplemental Phase II Submittal. A summary of the South Ditch sediment sample results is presented in Table 6.

3.4 Summary of Sediment Sampling

On September 17, 2001, GEI personnel collected sediment samples from the South Ditch channel and the adjacent floodplain. Channel samples were collected from eight locations, approximately 50 feet apart, along the centerline of the Ditch, extending from the Delta to the confluence of the South Ditch and East Ditch. Floodplain samples were collected from four locations in the wetland just east of the Delta and from two locations in the wetland adjacent to the South Ditch and East Ditch. Sample locations are shown in Figure 2. Before each sample was collected, sampling equipment was decontaminated using an Alconox™/water wash, methanol rinse, and distilled water rinse.

Generally, two samples were collected from each of the eight channel locations. A shallow sample was collected from a depth of 0 to 6 inches below ground surface using a hand trowel. A deep sample was collected from a depth of 6 inches to the bottom of the sediment layer using a Shelby Tube driven to a depth of 2.5 feet below ground surface. The bottom depth of the sediment layer ranged from 13 to 24 inches below ground surface. At location SDC-2, a deep sample was not collected since the sediment layer did not extend below a depth of six inches. Using a hand trowel, one shallow sample (from 0 to 6 inches below ground surface) was collected from each of the six-floodplain locations. The depth interval for each sample is presented in Table 6.

For each sample collected, a composite sample representing the full sample depth interval was submitted to Severn-Trent Laboratory (STL) of Westfield, Massachusetts for analysis of semi volatile organic compounds (SVOCs), extractable petroleum hydrocarbons (EPH), metals, corrosivity (pH), oxygen reduction potential (ORP), and sulfide. A discrete sample was also collected from the midpoint of each sample depth interval and submitted for analysis of volatile organic compounds (VOCs). One field duplicate sample collected at location SDF-3S was also submitted. A summary of the sample results is presented in Table 6. A quantity of each composite sample was shipped to Geomega of Boulder, Colorado for quality control purposes related to hexavalent chromium analysis.

The laboratory results for the sediment analysis were reviewed and validated by LAW. A summary of the findings of the validation is presented in Appendix B.

3.5 Evaluation of Hexavalent Chromium Detects

Low concentrations of hexavalent chromium (Cr [VI]) were reported in the sediment samples collected on September 17, 2001. Detection limits for Cr (VI) were elevated due to matrix interference, and all reported concentrations are flagged as "estimated" (Appendix A). Also, the soil chemistry (specifically ORP and pH conditions) are inconsistent with the presence of Cr (VI). Nevertheless, the results of this analysis have been entered into the Olin database. These values were used in the IH evaluation, described below.

To evaluate the potential that the reported detection of hexavalent chromium in the sediment samples is due to analytical error, Geomega conducted an experiment with nine of the September 2001 sediment samples. The experiment consisted of spiking the samples with a known quantity of trivalent chromium (Cr [III]), and re-analysis. A description of this experiment is presented in Geomega's memorandum to Margret Hanley dated November 16,

2001. The laboratory results for the chromium spiked sample analysis, as well as a laboratory data validation report for the data, are presented in Appendix B. These results have not been entered into the Site database.

As with the initial sample analysis, the laboratory reported elevated detection limits due to matrix interference (Appendix C).

Geomega concluded that the reported presence of Cr (VI) in the sediment samples and the variability in the reported concentrations in both sets of data are artifacts of the analytical test methods.

3.6 Surface Water Quality Trend Analysis

To support the IRA Assessment, as well as to define baseline surface water quality conditions for future monitoring, Geomega conducted an assessment of the South Ditch surface water quality trends during the IRA, and the concurrent Construction Related RAM. Geomega's analysis is summarized in a Report entitled "Analysis of Surface water Quality Conditions in the South Ditch", which is attached as Appendix D to this IRA Status Report.

As part of it's analysis, Geomega established the baseline concentration of ammonia in the Ditch System to be 49.5 mg/l, with a standard deviation of +/- 44% This calculation excluded data representing temporary, atypical conditions resulting from certain remediation activities, including data collected during the surface water management incidents described above.

Based on Geomega's analysis, the June 5, 2001 incident, and likely the October 5, 2000, incident resulted in concentrations of ammonia that were outside of the pre-and post remediation ranges observed at the Property. However, these exceedances did not persist, as levels of solute (as indicated by ammonia) returned to, and were sustained within normal ranges immediately following each event.

As part of its analysis, Geomega also considered the impact of Plant B discharges to the South Ditch, and the location of the Plant B discharges on water quality measurements. Geomega concluded that Plant B discharges reduce ammonia concentrations leaving the Property by about 25% over levels when Plant B is not discharging, most likely through dilution and/or increased suppression of groundwater discharge to the South Ditch. The reduction in ammonia concentrations in the South Ditch does not appear to be statistically significant.

Geomega determined that the location of the Plant B discharge does have a statistically significant impact on water quality leaving the Property. Substantially lower concentrations of ammonia were observed during periods when Plant B is discharging to the On-Property West Ditch Wetland compared to discharge at the downstream end of the South Ditch. This is attributed to reduced groundwater discharge to the ditch due to higher surface water stage when Plant B is discharging to the West Ditch Wetland. Substantially less variability in ammonia concentrations, and accordingly, a smaller range of ammonia was also observed when Plant B was discharging to the On-Property West Ditch Wetland. Geomega estimated that the mean ammonia concentration increased by approximately 30% when the Plant B discharge was relocated to the downstream end of the South Ditch, and concluded that the

effect would be more or less pronounced depending on seasonal fluctuations in flow rates from the OPWD.

3.7 Update of Imminent Hazard Evaluations

3.7.1 Human Health IH Evaluation (HHIHE)

On behalf of Olin, HESE conducted a Human Health IH evaluation (HHIHE) of the near-downstream environments that were affected or potentially affected by the October 5, 2000 incident. The HHIHE was performed to address MADEP's requirement for additional assessment set forth in its conditional approval letter dated June 8, 2001, and attempts to address conditions at the time of the incident, as well as current conditions.

In its evaluation, HESE limited its assessment of the near downstream environment to the un-remediated, southern reach of the South Ditch (3). A memorandum that summarizes the findings of the IH evaluation is presented in Appendix E of this IRA Status Report. HESE concludes that the October 5, 2001 incident did not result in a Human Health IH.

HESE considered the affect of sediment contamination, as represented by the September 17, 2001 sampling results, the reported presence of floc, and surface water quality data collected downstream of the incident area during a period of active excavation of sediments (July 20, 2000 through October 4, 2000), and following the incident (between October 9, 2000 and June 9, 2001, including surface water data collected during and following the June 5, 2001 incident, in the HHIHE. It is our opinion that the use of this data results in a conservative evaluation of human health risk associated with the October 5, incident because the effects of the October 5, 2000 incident on sediment and surface water quality were substantially abated by measures taken immediately following the event. The incorporation of surface water data collected for a nine-month period following the October 5, 2000 incident in the IH evaluation likely overstates the actual affect of the incident.

3.7.2 Ecological IH Evaluation

HESE also conducted an Ecological IH Evaluation (EIHE) for near downstream sediments with respect to the October 5, 2001 incident. The objective of the EIHE was to determine if an ecological IH existed in the South Ditch and the closest downstream portions of the East Ditch at the time of the October 5, 2000 incident, and to determine if there are any residual affects of the incident that constitute an ecological IH in the South Ditch at the present time.

The EHIE was conducted in a manner consistent with the MCP (310 CMR 40.0950 and 40.0955(3)), as wells as Section 10.3 of MADEP's "Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORS-95-141", dated July 1995.

HESE's EIHE is presented in Appendix F of this IRA Status Report. HESE concludes that October 5, 2000 incident did not result in an ecological IH.

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3 See Section 4 of this IRA Status Report for a discussion of the geographic extent and temporal nature of the October 5, 2001 incident.

3.8 Other Related Activities

The following activities are not specifically related to this IRA, but are being conducted concurrently in the South Ditch and Former Weir Area. Information obtained during these additional activities may have an impact upon or generate information that will be used to assess the conditions in the South Ditch/Former Weir Area.

3.8.1 Visual Monitoring of South Ditch/Former Weir Area

In accordance with an Order of Conditions (OOC) issued by the Wilmington Conservation Commission, Olin continues to perform monthly monitoring of visual conditions of the South Ditch and Former Weir area. The monitoring is performed by Wetlands Preservation Inc. (WPI) on behalf of Olin to address the requirements of an existing Order of Conditions (OOC) issued for the Former Weir Area. Monthly monitoring reports are submitted to the Wilmington Conservation Commission and MADEP. The conditions in the South Ditch, as reported by WPI, were reviewed as part of the Ecological IH Evaluation (EIHE) presented in Section 3.5.2 of this Status Report.

3.8.2 Wetland Restoration in South Ditch and Former Weir Area

The Construction Related RAM Plan calls for the restoration of the South Ditch/Former Weir Area to the original grade, and replanting of vegetation in accordance with the Order of Conditions issued by the Wilmington Conservation Commission. This restoration work required that clean granular fill, and loam is imported to the Property. The restoration work began in May, and was completed in July 2001. A summary of the restoration work was presented in Status Report No. 2 for the Construction Related RAM, dated August 27, 2001.

3.8.3 NPDES Monitoring

Groundwater that is pumped during excavation activities in the South Ditch and other areas of the property is subject to an NPDES Permit Exclusion (NPDES Permit Exclusion Reference No. 00-177) that was issued to Olin for the Part 2 Construction Related RAM Plan in September 2000. Under the Permit exclusion, Olin is required to treat pumped groundwater to meet project specific water quality standards prior to surface water discharge. Between July and November 2001, no groundwater was pumped at the Property. However, accumulated precipitation in the Biocell, in the vicinity of the former Calcium Sulfate Landfill was pumped down in July, on August 31, and September 1, 2001. Water from the Biocell was filtered through three bag filters in series (final filter size of 1micron) and discharged to the upper South Ditch. Monthly monitoring reports presenting the testing results of treated groundwater were submitted to EPA in accordance with the NPDES Permit Exclusion. In October 2001, Olin informed EPA that it was terminating the NPDES permit exclusion for the Construction Related RAM.

The discharge from Plant B was relocated during 2001 to facilitate restoration of wetland areas in the South Ditch. On April 17, the outfall was temporarily moved from the On-Property West Ditch Wetland to the lower South Ditch where it intersects the eastern Property boundary. On September 25, the outfall was moved back to its permanent location in the On-Property West Ditch Wetland. Plant B outfall locations are shown on Figure 1.

4. ASSESSMENT OF EXTENT OF CONTAMINATION FROM THE OCTOBER 5, 2000 AND JUNE 5, 2001 INCIDENTS

Due to the limited duration of each incident, Olin was unable to collect sufficient data to quantitatively delineate the geographic extent of the affects of each of the incidents. However, based on available testing data, observations made during each incident and on our understanding of the hydrology of the South Ditch and downstream water bodies, it is our opinion that the effects of each incident on sediment and surface water quality are substantially limited to the South Ditch. This section presents the basis for our opinion.

4.1 Extent of Impact -Surface Water Quality

Both incidents occurred during periods of relatively low flow, and resulted in decreased pH and increased solute concentrations in surface water in portions of the South Ditch. Affected surface water was largely contained in both instances, resulting in limited, and short-lived affects in downstream surface water in the South Ditch. Additionally, due to the low-flow conditions in the South Ditch, the discharge from Plant B would have diluted the solute concentrations and may have helped increase the pH of water entering the East Ditch.

At the time of the October 5, 2000 incident, the primary monitoring parameters for surface water in the South Ditch were based on the types of contaminants present in the sediment and included ammonia, SVOCs, total chromium, and dissolved chromium. Upon identification of the release of diffuse-layer affected groundwater to the remediated portions of the South Ditch, GEI collected surface water at the farthest reach of the South Ditch, immediately upstream of the Plant B discharge point, and upstream of its confluence with the East Ditch at location SW11E (4). The sample was analyzed for the all of the parameters listed above, except for ammonia, in addition to the NPDES Permit Exclusion Parameters of MTBE, BTEX, PAHs, TPH, and total arsenic, barium, copper, lead, and nickel. The pH value in the Delta, where much of the affected water appeared to be contained, was measured at 6.4 on June 5, which is within the typical range for the South Ditch.

Results of laboratory analysis of the surface water collected at location SW11E were below laboratory reporting limits for all parameters except metals. Total chromium was reported at 130 ug/l. The total chromium concentration at this location was within the range previously detected in surface water samples in the South Ditch.

On October 6, 2000, approximately 24 hours after the incident, the southern reach of the South Ditch was re-sampled and analyzed for pH, total chromium, and dissolved chromium. Two sample locations within 300 feet of the confluence of the South and East Ditch exhibited pH values of 7, and dissolved chromium concentrations of less than 10 ug/l, which was the laboratory reporting limit. Total chromium concentrations were 37 ug/l and 78 ug/l (5).

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4 Surface water samples were also collected at locations upstream of SW11E. The results of these analyses were reported in the IRA RAM Plan, dated December 22, 2000, and are included in Table 4 of this Status Report.

5 Surface water sample locations SWLOC-14, and SWLOC-16. Results reported in IRA Plan dated December 22, 2000, and included in Tables 3 and 4 of this Status Report.

Surface water samples collected during the October 5, 2000 incident were not tested for ammonia. However, ammonia concentrations measured at the hay bale/silt fence-dam (location NP-1), downstream of the Delta, on October 4 and on October 7 were 110 and 61 mg/l, respectively. These values indicate that ammonia concentrations within the South Ditch were elevated prior to the incident, most likely due to the recent remediation activities, but were restored to baseline concentrations within 48 hours of the incident (6).

4.2 Area of Impact- Sediment

Based on our understanding of the magnitude of the incidents, the mitigation measures implemented immediately following each incident, and the on the results of additional sediment sampling described in this Status Report, it is Olin's opinion that sediment contamination resulting from each of the incidents were either abated immediately following the incident, and/or were insignificant and indistinguishable from contamination known or expected to exist in the unremediated portions of the South Ditch prior to the incidents. It is our further opinion that the concentrations of chromium and other contaminants of concern in sediments in the un-remediated lower reaches of the South Ditch are not related to the October 5, 2000 and June 5, 2001 incidents. When introduced to surface water in the South Ditch, DAPL affected groundwater, which has a pH as low as 4, forms precipitates of chromium and aluminum hydroxide (floc) (7). During periods of low flow, the floc precipitates in and settles on the sediments in the ditch system, forming a red and/or white layer of material, which is visible and is easily disturbed. When groundwater is introduced to surface water during periods of significant flow, floc is formed, and remains temporarily suspended in the water column and can be transported as a suspended solid. When flow velocities are reduced, floc will settle out of the water column. This phenomenon occurs in the South Ditch during periods of natural groundwater discharge, most noticeably in the spring. The incidents of October 2000 and June 2001 described above resulted in an "enhanced discharge" of Diffuse Layer affected groundwater to the upper South Ditch during periods of low flow. Therefore, the affects of the incidents on sediments in the South Ditch are identical to the affects of natural groundwater discharge to the South Ditch during periods of low flow, and consist primarily of the deposition of chromium and aluminum floc in the ditch system. Immediately following both incidents, fresh floc was observed deposited in the ditch channel proximate to the points of discharge.

The October 2000 incident resulted in the discharge of DAPL affected water to the Delta portion of the South Ditch (Figure 1). The Delta area had been partially drained and excavated prior to the October 5 incident. To facilitate the draining of the area, and to prevent the migration of particles suspended during excavation, a hay bale check dam had been installed along the downstream edge of the Delta area. The Delta water was clear, and the deposition of fresh floc on the bottom of the Delta area following the incident was evident, as was the absence of freshly deposited floc in the channel downstream of the Delta. As described in the IRA Plan (GEI, December 2000), the Delta area was pumped down after the incident, and floc was removed.

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6 See Appendix C of this Status Report for an evaluation of baseline ammonia concentrations in the South Ditch.

7 The chemical reactions that lead to the formation of floc are described in detail in the Supplemental Phase II Report (Smith, 1997).

Floc was also observed in the South Ditch channel upstream of the foot bridge following the brief release of DAPL affected groundwater to the South Ditch in June 2001. However, this floc was similar to the floc that had already formed in the South Ditch during the spring, and was judged not to warrant additional excavation.

The presence of chromium, as well as other site related COCs in the sediments in the un-remediated lower reach of the South Ditch, (Table 5) is consistent with the presence of floc and with the reported historical discharges to the South Ditch. While it is reasonable to assume that some amount of floc was mobilized during the incidents described above and deposited on sediments of the lower reach of the South Ditch, the amount of chromium that would have been caused by the floc would be insignificant relative to the re-current natural discharge of DAPL-affected groundwater to the South Ditch and the historical releases of chromium wastes to the Ditch system at the Property. Moreover, the presence of elevated levels of phthalate and other organic compounds, which are not related to the discharge of DAPL affected groundwater, and the presence of chromium at depth and in floodplain samples, indicates that the levels of chromium in the sediments are related to historical discharges at the Property.

4.3 Assessment of IRA Conditions in the South Ditch

Based on the information presented herein, the requirements for an IRA Completion Statement (310 CMR 40.0427) have been met as follows:

1. Conditions resulting from the October 5, 2000 and June 5, 2000 incidents did not result in an IH condition, nor are they expected to result in an IH in the foreseeable future.

2. Conditions resulting from the October 5, 2000 and June 5, 2000 incidents, as well conditions related to the on-going discharge of DAPL-affected groundwater to the South Ditch constitute a Substantial Release Migration (SRM) Condition. As previously described in the South Ditch and Weir Area IRA Status Report and Completion Statements (GEI, 1998), the presence of suspended solids which can migrate under certain conditions and which contain certain site related contaminants constitutes a SRM condition. However, this condition does not require further IRA actions, because:

   a. Immediate Response Actions taken at the time of the incidents substantially captured the floc and contaminated surface water that resulted from the incidents.

   b. A passive remedy, consisting of a subsurface containment system around DAPL and significantly affected groundwater has been installed and is intended to reduce the amount of floc that forms as a result of the discharge of DAPL-affected groundwater to the South Ditch in the future, and

   c. The postponement of additional response actions to address the formation of flocculent in the Ditch System until the affect of the subsurface containment system can be confirmed is not likely to:

i. Substantially increase the extent, area, or magnitude of environmental contamination.

ii. Substantially increase the degree or complexity of future remedial actions.

iii. Substantially increase clean-up costs.

iv. Otherwise result in the substantial endangerment of health, safety, public welfare, or the environment.

5. RECOMMENDATIONS

Olin is currently implementing the Post Construction Monitoring Plan (PCMP) at the Property, to evaluate the effectiveness of the subsurface containment system. The PCMP, and the semi-annual reporting of the results of the PCMP are largely redundant with the monitoring and reporting that has been performed as part of this IRA and IH evaluation, except the PCMP calls for monthly, as opposed to weekly monitoring of the South Ditch surface water.

Olin proposed to implement the PCMP in lieu of the IRA monitoring in the future. All data will be submitted to MADEP in the semi-annual *Part 2* Construction Related RAM Plan Status Reports.

6. LIMITATIONS

This Immediate Response Action Status Report No. 2 for the South Ditch/Former Weir Area was prepared for the use of Olin Corporation, exclusively. The findings provided by GEI in this report are based solely on the information reported in this document. Future investigations or information that was not available to GEI at the time of this Status Report may result in modification of this report. This report has been prepared in accordance with generally accepted engineering and geohydrological practices. No other warranty, expressed or implied, is made.

If you have any questions regarding the information presented in this letter report, please call Steve Morrow at Olin (423-336-4511) or me at (617-742-4447).

Very truly yours,

GEI CONSULTANTS, INC.

M. Margret Hanley, LSP
LSP of Record

MMH:lek
c: Marco Boscardin P.E., GEI
Steve Morrow, P.E., Olin

Attachments:

Figures:

1. Site Plan
2. Surface Water and Sediment Sample Locations, July 2000 through September 2001

Tables:

1. Chemical Testing Results, Surface water samples: South Ditch, ISCO-1
2. Chemical Testing Results, Surface water samples: South Ditch, ISCO-2 Location
3. Chemical Testing Results, Surface water samples: South Ditch, NP-1 Location
4. Chemical Testing Results, Surface water samples: South Ditch and On-Property West Ditch, Various Locations
5. Chemical Testing Results, Surface Water Samples: East Ditch, ISW-3 Location
6. Chemical Testing results, Sediment Samples: South Ditch

Appendices:

A BWSC-103 Transmittal Form
B Data Validation Memorandum- South Ditch Sediments
C Geomega Memorandum on Chromium Spiked Samples and Discussion of Hexavalent Chromium Detects (Will include Law DV memo on spiked Samples, and copy of laboratory results)
D Geomega Memorandum on Surface Water Quality Trends
E Human Health Risk Assessment Memo (HESE)
F Ecological Risk Assessment Memo (HESE)

Table 1.
Chemical Testing Results
Surface Water Samples: South Ditch, ISCO-1 Location[1]
Olin Corporation Property
51 Eames Street, Wilmington, MA

			Laboratory Parameters										Field Parameters			
		Parameter:	Ammonia Nitrogen, As N	Total Nitrate & Nitrite, As N	Chromium, Total	Chromium, Dissolved	Aluminum, Total	Aluminum, Dissolved	Sulfate	Chloride	Iron, Total	Iron, Dissolved	pH	Specific Conductivity	Stream Temperature	Dissolved Oxygen
		Method:	LAC107061A	LAC107041A	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 300	LAC117071A	EPA 200.7	EPA 200.7				
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mS/m (at 25C)	C	mg/L
Sample ID	Date Collected	Time Collected														
1150-OPWD-SWC17	11/15/00	NR	15	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC18	11/16/00	NR	26	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC19	11/17/00	NR	30	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC20	11/18/00	NR	36	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC21	11/19/00	14:30	40	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC22	11/20/00	12:20	32	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC23	11/21/00	15:00	59	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC24	11/22/00	9:40	43	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC25	11/27/00	15:00	18	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC26	11/27/00	11:30	30	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC27	11/29/00	15:00	42	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC28	11/30/00	13:50	34	-	0.22	0.082	1.8	0.46	-	-	2.2	1.6	-	-	-	-
1150-OPWD-SWC29	12/1/00	11:40	14	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC30	12/3/00	13:40	17	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC31	12/4/00	15:30	59	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC32	12/5/00	15:00	38	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC33	12/6/00	10:50	30	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC34	12/7/00	12:50	55	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC35	12/8/00	11:00	21	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC37	12/11/00	10:50	10	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC38	12/12/00	11:00	22	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWC39	12/13/00	10:50	55	-	-	-	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWD1	12/21/00	13:05	27	-	0.22	0.068	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWD2	12/29/00	10:40	66	-	0.5	<0.01	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWD3	1/4/01	13:30	61	-	0.48	0.024	-	-	-	-	-	-	-	-	-	-
1150-OPWD-SWD4	1/11/01	13:20	45	-	0.42	0.037	-	-	-	-	-	-	5.3	1.00	-	-
1150-OPWD-SWD5	1/18/01	14:50	32	-	0.26	0.087	-	-	-	-	-	-	5.4	1.10	-	-
1150-OPWD-SWD6	1/25/01	14:15	24	-	0.33	<0.01	-	-	-	-	-	-	5.8	0.80	-	-
1150-OPWD-SWD7	2/2/01	10:20	15	-	0.19	0.012	-	-	-	-	-	-	5.8	0.60	-	-
1170-ISCO1-1	2/9/01	13:00	12	-	0.2	<0.01	-	-	-	-	-	-	6.1	1.00	-	-
1170-ISCO1-2	2/15/01	10:45	11	-	0.17	0.036	-	-	-	-	-	-	6.0	0.50	-	-
1170-ISCO1-3	2/23/01	10:15	29	0.77	0.42	<0.01	-	-	-	-	-	-	5.8	0.80	3.6	-
1170-ISCO1-4	3/1/01	8:52	20	1	0.34	0.08	-	-	-	-	-	-	5.8	0.90	2.3	-
1170-ISCO1-5	3/9/01	14:00	19	0.46	0.3	0.12	-	-	-	-	-	-	6.0	0.60	3.5	6.67
1170-ISCO1-6	3/16/01	9:29	19	0.48	0.21	0.075	-	0.35	120	72	-	-	5.9	0.50	2.9	6.72
1170-ISCO1-7	3/23/01	8:47	8	0.73	0.03	0.021	-	0.29	55	47	-	-	5.4	0.30	3.2	8.46
1170-ISCO1-8	3/26/01	9:45	41	1.2	0.18	0.07	-	0.48	220	114	-	-	5.4	0.93	5.1	5.56
1170-ISCO1-9	4/2/01	9:09	35	1.1	0.26	0.12	-	0.57	300	120	-	-	5.3	0.94	4.9	5.74
1170-ISCO1-10	4/9/01	9:40	35	0.9	0.19	0.054	-	0.18	170	110	-	-	5.6	0.72	7.7	6.26
1170-ISCO1-11	4/16/01	7:45	22	0.78	0.2	0.11	-	0.38	180	120	-	-	6.0	0.88	-	-
1170-ISCO1-12	4/23/01	8:05	38	0.47	0.17	0.062	-	0.16	170	120	-	-	5.9	0.80	11.3	3.34
1170-ISCO1-13	4/30/01	7:55	25	0.64	0.091	0.054	-	0.23	160	140	-	-	5.9	1.01	6.5	2.85
1170-ISCO1-14	5/7/01	9:00	28	0.32	0.078	0.031	-	0.11	150	130	-	-	5.4	1.08	7.1	4.23
1170-ISCO1-15	5/14/01	8:55	52	0.16	0.054	0.013	-	<0.1	220	137	-	-	6.1	1.04	9.7	4.98
1170-ISCO1-20	5/21/01	8:55	33	0.099	0.025	<0.01	-	-	170	120	-	-	6.5	0.79	12.9	5.31
1170-ISCO1-25	6/4/01	9:15	200	0.49	0.14	0.039	-	0.11	180	100	-	-	6.2	0.84	13.2	-
1170-SD26-1	6/5/01	15:27	57	-	0.2	0.021	-	-	-	-	-	-	6.4	-	-	-

Table 1.

Chemical Testing Results

Surface Water Samples: South Ditch, ISCO-1 Location[1]

Olin Corporation Property

51 Eames Street, Wilmington, MA

			Laboratory Parameters										Field Parameters			
		Parameter:	Ammonia Nitrogen, As N	Total Nitrate & Nitrite, As N	Chromium, Total	Chromium, Dissolved	Aluminum, Total	Aluminum, Dissolved	Sulfate	Chloride	Iron, Total	Iron, Dissolved	pH	Specific Conductivity	Stream Temperature	Dissolved Oxygen
		Method:	LAC107061A	LAC107041A	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 300	LAC117071A	EPA 200.7	EPA 200.7				
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mS/m (at 25C)	C	mg/L
Sample ID	Date Collected	Time Collected														
1170-ISCO1-31	6/18/01	9:20	2	0.24	<0.01	<0.01	-	0.21	19	19	-	-	5.8	2.43	19 3	1.48
1170-ISCO1-32	6/25/01	8:45	4.1	0 14	0 014	<0.01	-	0.12	23	29	-	-	5.6	-	21.9	1 64
1170-ISCO1-33	7/2/01	9:15	3.6	0.20	<0.01	<0.01	-	0.24	47	18	-	-	5.1	-	-	-
1170-ISCO1-34	7/9/01	8:25	12	0.24	<0.01	<0.01	-	<0.1	63	66	-	-	-	-	-	-
1170-ISCO1-36	7/23/01	9:00	15	0.17	0.008	<0.005	-	<0.1	120	96	-	-	6.9	-	22.6	3.99
1170-ISCO1-37	7/30/01	13:05	20	0.063	0.011	<0.005	-	<0.1	110	77	-	-	7.2	-	21.5	3.15
1170-ISCO1-38	8/6/01	9:00	3.8	0.33	<0.01	<0.01	-	0.12	24	29	-	-	6.6	-	22.1	2 34
1170-ISCO1-39	8/13/01	8:20	3.4	0.21	<0.01	<0 01	-	0.21	30	19	-	-	6.6	0.22	19.2	2.15
1170-ISCO1-40	8/20/01	8:50	19	0.24	0.01	<0.01	-	<0.1	110	76	-	-	5.9	0.64	22.7	3.15
1170-ISCO1-41	8/27/01	8:20	40	0.2	0.012	<0.01	-	<0 1	210	100	-	-	6.6	0.95	19.3	1.99
1170-ISCO1-42	9/4/01	8:55	59	0 4	0.019	<0.01	-	<0.1	320	120	-	-	-	-	17 9	4.5

General Notes:

1. Source of Laboratory Analytical Data: Olin-Wilmington Active Project Database, updated November 26, 2001.
2. mg/L = Milligrams per liter.
3. mS/m = Millisiemens per meter.
4. C = Degrees Celsius.
5. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
6. "-" = Parameter not measured.
7. NR = Not recorded.
8. Field Parameters measured by GEI personnel in accordance with generally accepted engineering and scientific practices.

Footnote:

1. All samples listed on this table were collected from the South Ditch at location ISCO-1, as shown on Figure 2.

Table 3.
Chemical Testing Results
Surface Water Samples: South Ditch, NP-1 Location[1]
Olin Corporation Property
51 Eames Street, Wilmington, MA

		Parameter:	Laboratory Parameters										Field Parameters					
			Ammonia Nitrogen, As N	Total Nitrate & Nitrite, As N	Chromium, Total	Chromium, Dissolved	Aluminum, Total	Aluminum, Dissolved	Iron Total	Iron Dissolved	bis (2-ethylhexyl) phthalate	Fluoranthene	pH	Specific Conductivity	Stream Temperature	Dissolved Oxygen	Plant B Discharging	Last Plant B Discharge
		Method:	LAC107061A	LAC107041A	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 8270C	EPA 8310						
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L		mS/m (at 25C)	C	mg/L		
Sample ID	Date Collected	Time Collected																
1150-SD-SWC25	11/27/00	15:00	24	-	0.062	0.018	-	-	-	-	<10	<1	-	-	-	-	NR	NR
1150-SD-SWC26	11/28/00	11.30	50	-	0 08	<0.01	-	-	-	-	-	<1	-	-	-	-	NR	NR
1150-SD-SWC27	11/29/00	15:00	84 F	-	0 081	<0.01	-	-	-	-	-	<1 C	-	-	-	-	NR	NR
1150-SD-SWC28	11/30/00	14:00	76	-	0.054	<0.01	0 69	<0.1	2 3	1.4	-	<1 C	-	-	-	-	NR	NR
1150-SD-SWC29	12/1/00	11:30	90 F	-	0.048	<0.01	-	-	-	-	<10 C	<1	-	-	-	-	NR	NR
1150-SD-SWC30	12/3/00	13:30	70	-	0.028	<0.01	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC31	12/4/00	15:20	68 F	-	0.043	<0.01	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC32	12/5/00	15:00	91	-	0.022	<0.01	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC33	12/6/00	11:00	84	-	0.13	0.016	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC34	12/7/00	13.00	60	-	0.25	0.015	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC35	12/8/00	11:10	72	-	0.083	<0.01	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC36	12/9/00	11:15	55	-	0.094	0.01	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC37	12/11/00	11:00	84	-	0.074	<0 01	-	-	-	-	<10	<10	-	-	-	-	NR	NR
1150-SD-SWC38	12/12/00	11:15	72	-	0.051	<0.01	-	-	-	-	-	-	-	-	-	-	NR	NR
1150-SD-SWC39	12/13/00	11:10	66	-	0.047	<0.01	-	-	-	-	-	-	-	-	-	-	NR	NR
1150-SD-SWD1	12/21/00	13:00	37 F	-	0.1	<0.01	-	-	-	-	-	-	-	-	-	-	NR	NR
1150-SD-SWD2	12/29/00	10:40	96	-	0.16	<0.01	-	-	-	-	-	-	-	-	-	-	NR	NR
1150-SD-SWD3	1/4/01	13:40	94	-	0.12	<0.01	-	-	-	-	-	-	-	-	-	-	yes, since 9:10	active
1150-SD-SWD4	1/11/01	13:30	80	-	0.098	<0.01	-	-	-	-	-	-	6.3	1.8	-	-	yes, since 9.00	active
1150-SD-SWD5	1/18/01	15:00	81	-	0.064	<0.01	-	-	-	-	-	-	6.1	1.9	-	-	yes, since 8:30	active
1150-SD-SWD6	1/25/01	14:30	89 F	-	0.072	<0.01	-	-	-	-	-	-	6.2	1.9	-	-	yes, since 10:05	active
1150-SD-SWD7	2/2/01	10:40	37 F	-	0.076	<0.01	-	-	-	-	-	-	6.2	1	-	-	yes, since 9.30	active
1170-NP1-1	2/9/01	14 00	85	-	0.09	0.013	-	-	-	-	-	-	6.2	1 5	-	-	yes, since 8.30	active
1170-NP1-2	2/15/01	11:15	34	-	0.11	<0.01	-	-	-	-	-	-	6.2	0.7	-	-	yes, since 8:55	active
1170-NP1-3	2/23/01	12:06	74	1.8	0.12	0.027	-	-	-	-	-	-	6.2	1.4	-	-	yes, since 7:30	active
1170-SD-29	6/9/01	12:50	-	-	0.11	0.0064	-	-	-	-	-	-	7.3	-	-	-	no	6/8/01 14:50

General Notes:

1. Only results for analytes detected in at least one sample are reported here. For a complete list of analytical results, refer to the laboratory disk reports or the Olin-Wilmington Active Project Database.
2. mg/L = Milligrams per liter.
3. ug/L = Micrograms per liter.
4. mS/m = Millisiemens per meter.
5. C = Degrees Celsius.
6. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
7. "-" = Parameter not measured.
8. NR = Not recorded.
9. *Field Parameters measured by GEI personnel in accordance with generally accepted engineering and scientific practices*

Qualifying Notes:

A The result is estimated due to exceedance of holding times.
C The result is estimated due to surrogate recovery outside of control limits.
F The result is estimated due to matrix spike recovery outside of control limits
J The reported result is below the laboratory reporting limit and is therefore estimated.

Footnote:

1. All samples listed on this table were collected form the South Ditch at location NP-1, as shown on Figure 2.

Table 4.
Chemical Testing Results
Surface Water Samples: South Ditch and On-Property West Ditch, Various Locations[1]
Olin Corporation Property
51 Eames Street, Wilmington, MA

	Sample Identification:		NP-1C	NP-2C	NP-2T	NP-3C	NP-3T	1150-SD-SW11A	1150-SD-SW11B	1150-SD-SW11C	1150-SD-SW11D	1150-SD-SW11E	97586-SWLOC 9	97586-SWLOC 10	97586-SWLOC 11	97586-SWLOC 12	97586-SWLOC-16	1170-SD26-2	1170-SD26-3	1170-TD1-37	1170-TD2-37	1170-TD3-37
	Date Sampled:		7/20/00	7/20/00	7/20/00	7/20/00	7/20/00	10/5/00	10/5/00	10/5/00	10/5/00	10/5/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	6/5/01	6/5/01	7/30/01	7/30/01	7/30/01
	Time Sampled:		10:30	11:30	12:50	14:30	15:05	13:50	13:05	13:05	13:40	13:30						15:36	15:46	11:42	12:06	12:37
Parameter Name	Analysis Method	Units																				
Volatile Organic Compounds (VOCs) MTBE and BTEX only	8260B	ug/L	NT	NT	NT	NT	NT						NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Toluene								<1	0.96	1.1	<1	<1										
Semivolatile Organic Compounds (SVOC)	8270C	ug/L											NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
bis(2-Ethylhexyl)phthalate			<10	<10	<10	<10	74	3.4 A,J	2.6 A,J	2.5 A,J	3.9 A,J	3.9 A,J										
Polycyclic Aromatic Hydrocarbons (PAHs)	8310	ug/L	NT	NT	NT	NT	NT	ND	ND	ND	ND	ND	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Extractable Petroleum Hydrocarbons (EPH)	MADEP EPH	ug/L						NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
C11-C22 Aromatics (FID)			<100 F,K	<100 F,K	<100 F,K	<100 F,K	350 F,K															
C11-C22 Aromatics, Unadjusted			<100 F,K	<100 F,K	<100 F,K	<100 F,K	350 F,K															
C19-C36 Aliphatics (FID)			<100 F,K	<100 F,K	<100 F,K	<100 F,K	230 F,K															
EPH Concentration (Total)			<100	<100	<100	<100	570															
Total Petroleum Hydrocarbons (TPH)	EPA 8100M	mg/L											NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Fuel Oil #6 (C9-C36)			<0.1	<0.1	<0.1	<0.1	0.7	<0.1	<0.1	<0.1	<0.1	<0.1										
Total Organic Carbon (TOC)	EPA 415.1	mg/L	5.8	1.3	35	1.9	19	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Inorganic Compounds		mg/L						NT	NT	NT	NT	NT	NT	NT	NT	NT	NT			NT	NT	NT
Ammonia Nitrogen as N	LAC107061A		97	1.5	2	<0.1	0.36											290	250			
Bicarbonate alkalinity as CaCO3	SM2320B		70	150	130	150	150															
Chloride	LAC117071A		120	84	83	85	84															
Nitrate Nitrogen as N	LAC107041A		2.6	8.5	8.5	8.9	9															
Nitrite Nitrogen as N	SM4500NO2B		0.011	0.024	0.038	0.017	0.019															
Nitrogen, Total Kjeldahl as N	LAC107062D		79	<1	1.1	<1	1.2															
Phosphate, Total as P	SM184500PE		0.89 F	0.95 F	0.58 F	1.1 F	0.85 F															
Sulfate as SO4	EPA 300.0		410	59	72	52	54															
Metals	EPA 200.7	mg/L																				
Aluminum, Total			0.11	0.33	60	0.07	8.7															
Antimony, Total			<0.02	<0.02	0.069	<0.02	<0.02															
Arsenic, Total			<0.01	<0.01	0.041	<0.01	0.021	<0.01	<0.01	<0.01	<0.01	<0.01										
Barium, Total			0.018	<0.01	0.045	<0.01	0.056	0.03	0.065	0.072	0.062	0.063										
Beryllium, Total			<0.002	<0.002	0.0097	<0.002	<0.002															
Cadmium, Total			<0.001	<0.001	0.0014	<0.001	0.0014															
Calcium, Total			64	33	50	37	56															
Calcium, Dissolved					31		36															
Chromium, Total			0.015	0.037	8.5	<0.01	0.1	0.063	0.68	1.4	0.13	0.13	0.025	0.035	0.040	0.048	0.078	3.2	0.16	0.015	0.008	0.06
Chromium, Dissolved					<0.01		<0.01	<0.01	0.17	0.56	<0.026	<0.016	<0.01	<0.01	<0.01	<0.01	<0.01	1.7	<0.01	<0.005	<0.005	<0.005
Cobalt, Total			<0.01	<0.01	0.014	<0.01	<0.01															
Copper, Total			<0.02	<0.02	0.25	0.023	0.031	<0.02	0.035	<0.02	<0.020	<0.020										
Iron, Total			0.39	0.37	81	0.082	13															
Lead, Total			<0.01	<0.01	0.028	<0.01	0.068	<0.01	<0.01	<0.01	<0.01	<0.01										
Magnesium, Total			7.7	3	4	3.5	5.2															
Magnesium, Dissolved					2.4		2.9															
Manganese, Total			0.39	0.02	0.17	<0.01	0.16															
Manganese, Dissolved					0.026		<0.01															
Nickel, Total			<0.02	<0.02	0.034	<0.02	0.026	<0.02	0.12	0.16	<0.061	<0.073										
Potassium, Total			1.7	1.8	2	2.1	2.5															
Potassium, Dissolved					1.7		2.1															
Sodium, Total			92	100	8.7	92	9.5															
Sodium, Dissolved					92		110															
Strontium, Total			0.13	0.096	0.12	0.11	0.16															
Strontium, Dissolved					0.09		0.11															
Vanadium, Total			<0.01	<0.01	0.038	<0.01	0.034															
Zinc, Total			<0.05	<0.05	0.17	<0.05	0.21															
Hexavalent Chromium, Total			<0.005	<0.005	<0.005	<0.005	<0.005															
Mercury, Total	EPA 245.1		<0.0002	<0.0002	<0.0002	<0.0002	0.0007															

Table 4.
Chemical Testing Results
Surface Water Samples: South Ditch and On-Property West Ditch, Various Locations[1]
Olin Corporation Property
51 Eames Street, Wilmington, MA

	Sample Identification:		NP-1C	NP-2C	NP-2T	NP-3C	NP-3T	1150-SD-SW11A	1150-SD-SW11B	1150-SD-SW11C	1150-SD-SW11D	1150-SD-SW11E	97508-SWLOC 9	97508-SWLOC 10	97508-SWLOC 11	97508-SWLOC 12	97508-SWLOC-16	1170-SD26-2	1170-SD26-3	1170-TD1-37	1170-TD2-37	1170-TD3-37
	Date Sampled:		7/20/00	7/20/00	7/20/00	7/20/00	7/20/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	10/6/00	6/6/01	6/6/01	7/30/01	7/30/01	7/30/01
	Time Sampled:		10:30	11:50	12:50	14:30	15:05	13:50	13:05	13:05	13:40	13:30						15:35	16:45	11:42	12:05	12:37
Parameter Name	Analysis Method	Units																				
Characteristics								NT	NT	NT	NT	NT						NT	NT	NT	NT	NT
Chemical Oxygen Demand (COD)	EPA 410.2	mg/L	<20	<20	28	<20	78															
Odor	EPA 140.1	TON	1	1	1	1	1															
pH	150.1	pH units	7.3	7.92	7.04	7.67	7.51						7.3	7.0	7.1	6.9	7.0					
Solids, total dissolved	EPA 160.1	mg/L	750	430	440	450	450															
Solids, total suspended	EPA 160.2	mg/L	<5	7.5	320	<5	1200															
Turbidity	EPA 180.1	NTU	1.9	0.83	12	0.23	4.7															
Specific Conductance	SM2510B	umhos/cm	1508	714	727	724	729															

General Notes:

1. Only results for analytes detected in at least one sample are reported here. For a complete list of analytical results, refer to the laboratory disk reports or the Olin-Wilmington Active Project Database
2. Source of Laboratory Analytical Data: Olin-Wilmington Active Project Database, updated November 26, 2001
3. mg/L = Milligrams per liter
4. ug/L = Microgram per liter
5. TON = Treshold Odor Number.
6. NTU = Nephelometric Turbidity Unit
7. umhos/cm = Micromhos per centimeter
8. BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
9. MTBE = Methyl-t-butylether.
10. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit
11. NT = Sample not tested for this analyte.

Qualifying Note:

A The result is estimated due to exceedance of holding times.
F The result is estimated due to matrix spike recovery outside of control limits.
J The reported result is below the laboratory reporting limit and is therefore estimated.
K The result is estimated due to blank spike compound recovery outside of control limits

Footnote:

1. Samples listed on this table were collected from various locations as shown on Figure 2

Table 5.
Chemical Testing Results
***Surface Water Samples:* East Ditch, ISCO-3 Location[1]**
Olin Corporation Property
51 Eames Street, Wilmington, MA

			Laboratory Parameters							Field Parameters			
		Parameter:	Ammonia Nitrogen, As N	Total Nitrate & Nitrite, As N	Chromium, Total	Chromium, Dissolved	Aluminum, Dissolved	Sulfate	Chloride	pH	Specific Conductivity	Stream Temperature	Dissolved Oxygen
		Method:	LAC107061A	LAC107041A	EPA 200.7	EPA 200.7	EPA 200.7	EPA 300	LAC117071A				
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		mS/m (at 25C)	C	mg/L
Sample ID	Date Collected	Time Collected											
1170-ISCO3-1	2/9/01	13:40	4.6	-	<0.01	<0 01	-	-	-	6.6	0 4	-	-
1170-ISCO3-5	3/9/01	14:25	4.9	1.7	<0.01	<0.01	-	-	-	6.4	0.4	5.6	8 86
1170-ISCO3-9	4/2/01	8:45	3 4	1.6	<0.01	<0.01	<0.1	50	110	5.93	0.55	5.2	8.57
1170-ISCO3-13	4/30/01	8:55	5	1.5	<0.01	<0 01	<0.1	58	120	6.3	0 63	10	8.37
1170-ISCO3-25	6/4/01	8:40	4.5 F	1.3	<0 01	<0.01	0.11	67	98	5.7	0.55	14.1	-
1170-ISCO3-33	7/2/01	8:45	3.9	0.88	<0.01	<0 01	<0.1	84	68	5.8	-	-	-
1170-ISCO3-38	8/6/01	8:40	5.1	0.63	<0 01	<0.01	<0 1	45	70	6 6	-	18.9	5.42
1170-ISCO3-42	9/4/01	8.15	2.4 J	1	0 066	<0 01	<0.1	37	67	-	-	14.4	7.34

General Notes:
1. Source of Laboratory Analytical Data: Olin-Wilmington Active Project Database, updated November 26, 2001.
2. mg/L = Milligrams per liter
3. mS/m = Millisiemens per meter.
4. C = Degrees Celsius.
5. "<" = *Analyte not detected at a concentration above the specified laboratory reporting limit.*
6. "-" = Parameter not measured.
7. Field Parameters measured by GEI personnel in accordance with generally accepted engineering and scientific practices.

Qualifying Notes:
F *The result is estimated due to matrix spike recovery outside of control limits.*
J The reported result is below the laboratory reporting limit and is therefore estimated.

Footnote:
1. All samples listed on this table were collected from the East Ditch at location ISCO3, as shown on Figure 2

Table 6.
Chemical Testing Results
Sediment Samples: South Ditch
Olin Corporation
51 Eames Street, Wilmington, MA

		Sample ID:	1010-SED-SDC-1D	1010-SED-SDC-1S	1010-SED-SDC-2S	1010-SED-SDC-3D	1010-SED-SDC-3S	1010-SED-SDC-4D	1010-SED-SDC-4S
		Date Collected:	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01
		Sample Depth (inches):	6 - 15	0 - 6	0 - 6	6 - 16	0 - 6	6 - 22	0 - 6
Parameter Name	**Analysis Method**	**Units**							
Volatile Organic Compounds (VOCs)	8260B	mg/Kg							
2,4,4-Trimethyl-1-pentene			<0 39	<0.45	<0.68	<0.34	<0.34	2.8	<0.2
2,4,4-Trimethyl-2-Pentene			<0 39	<0.45	<0 68	<0.34	<0.34	1	<0 2
Semivolatile Organic Compounds (SVOCs)	8270C	mg/Kg							
bis(2-EthylHexyl)phthalate			15	102	105	24627	2620	16956	3119
Extractable Petroleum Hydrocarbons (EPH)	MADEP EPH	mg/Kg							
C11-C22 Aromatics (FID)			41	820	420	20000	4100	21000	9100
C11-C22 Aromatics, Unadjusted			41	820	420	20000	4100	21000	9100
C19-C36 Aliphatics (FID)			58	1300	450	16000	2800	11000	6800
C9-C18 Aliphatic Hydrocarbons			9.5 J	270 J	73 J	3100 J	480 J	2300 J	1200 J
EPH Concentration (Total)			110	2400	950	39000	7400	35000	17000
Benzo(a)pyrene			<0.5	<15	<1.8	<23	<6.5	<17	<6.4
Benzo(g,h,i)perylene			<0.5	<15	<1.8	<23	<6.5	<17	<6.4
Chrysene			<0.5	<15	<1.8	<23	<6.5	<17	<6.4
Fluoranthene			<0.5	<15	<1.8	<23	<6.5	<17	<6.4
Indeno (1,2,3-cd) pyrene			<0.5	<15	<1.8	<23	<6.5	<17	<6 4
Ethylbenzene			<0.39	<0.45	<0 68	<0.34	<0.34	<0 14	<0 2
Metals	6010	mg/Kg							
Arsenic, Total			<8	28	35	<9	<10	<8	<10
Barium, Total			31	40	39	26	16	15	14
Cadmium, Total			<2	<5	<5	<2	<2	<2	<2
Lead, Total			12	56	40	21	22	16	17
Selenium, Total			<8	<24	<27	<9	<10	<8	<10
Silver, Total			<8	<24	<27	<9	<10	<8	<10
Chromium, Total			380	4000	10000	5300	2300	4800	3600
Hexavalent Chromium, Total	7196		11 T	<2.1 T	<2.4 T	27 T	<1 T	<2.2 T	<0.9 T
Mercury, Total	7471		0.089	0 62	0.37	1.8	0.22	0 8	1.7
Characteristics									
pH	SW846 9045	pH	6.38	6 26	6.57	7.42	7.07	7.33	6 7
Oxygen Reduction Potential (ORP)	ASTM 1498	mV	360	390	280	180	240	95	180
Sulfide	SM184500SE	mg/Kg	<390	NT	NT	<350	NT	NT	NT
Solids, Percent (Discrete)	EPA 160.3	%	33.9	24 4	17.1	33.8	32.9	81	58.3
Solids, Percent (Composite)	EPA 160.3	%	63	21.7	18.7	57.8	51 1	59 7	52.4

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytical results, refer to laboratory data sheets or Olin-Wilmington Active Project Database.
2. Source of laboratory analytical data: Olin-Wilmington Active Project Database, updated November 26, 2001.
3. VOC analysis performed on discrete sample, collected at midpoint of sample depth interval, all other analytes performed on composite samples from full depth interval.
4. mg/Kg = Milligrams per kilogram (dry weight).
5. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
6. mV = Millivolts.
7. NT = Sample not tested for this analyte.

Qualifying Notes:

J The reported result is below the laboratory reporting limit and is therefore estimated.
T The associated value is an estimated quantity and may be biased high due to the oxidation of Cr+3 to Cr+6.

Footnote:

1. Duplicate sample of 1010-SED-SDF-3S.

Table 6.
Chemical Testing Results
Sediment Samples: South Ditch
Olin Corporation
51 Eames Street, Wilmington, MA

Parameter Name	Analysis Method	Units	1010-SED-SDC-5D	1010-SED-SDC-5S	1010-SED-SDC-6D	1010-SED-SDC-6S	1010-SED-SDC-7D	1010-SED-SDC-7S	1010-SED-SDC-8D	1010-SED-SDC-8S
		Date Collected:	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01
		Sample Depth (inches):	6 - 24	0 - 6	6 - 17	0 - 6	6 - 13	0 - 6	6 - 13	0 - 6
Volatile Organic Compounds (VOCs)	8260B	mg/Kg								
2,4,4-Trimethyl-1-pentene			0.76	<0.23	0.34	<0.19	<0.2	<0.71	<0.33	<0.47
2,4,4-Trimethyl-2-Pentene			<0.43	<0.23	<0.24	<0.19	<0.2	<0.71	<0.33	<0.47
Semivolatile Organic Compounds (SVOCs)	8270C	mg/Kg								
bis(2-EthylHexyl)phthalate			3079	609	5228	4092	13	2534	3958	605
Extractable Petroleum Hydrocarbons (EPH)	MADEP EPH	mg/Kg								
C11-C22 Aromatics (FID)			4400	5700	11000	8300	73	8300	17000	6500
C11-C22 Aromatics, Unadjusted			4400	5700	11000	8300	73	8300	17000	6500
C19-C36 Aliphatics (FID)			2600	4600	5500	5400	47	7400	13000	4900
C9-C18 Aliphatic Hydrocarbons			590 J	740 J	1200 J	1100 J	11 J	1300 J	2500 J	900 J
EPH Concentration (Total)			7500	11000	18000	15000	130	17000	32000	12000
Benzo(a)pyrene			<1.7	<5.7	<11	<7.6	<0.5	<15	<19	<12
Benzo(g,h,i)perylene			<1.7	<5.7	<11	<7.6	<0.5	<15	<19	<12
Chrysene			1.7	<5.7	<11	<7.6	<0.5	<15	<19	<12
Fluoranthene			34	<5.7	<11	<7.6	<0.5	<15	<19	<12
Indeno (1,2,3-cd) pyrene			19	<5.7	<11	<7.6	<0.5	<15	<19	<12
Ethylbenzene			<0.43	<0.23	0.26	<0.19	<0.2	<0.71	<0.33	<0.47
Metals	6010	mg/Kg								
Arsenic, Total			<27	<8	<8	<12	<8	<23	<20	<19
Barium, Total			90	10	22	14	56	73	17	<19
Cadmium, Total			<3	<2	<2	<2	<2	<5	<2	<4
Lead, Total			57	13	<8	16	11	43	14	27
Selenium, Total			<13	<8	<8	<12	<8	<23	<10	<19
Silver, Total			<13	<8	<8	<12	<8	<23	<10	<19
Chromium, Total			2800	2700	3300	3000	140	6200	3000	4500
Hexavalent Chromium, Total	7196		<1.2 T	<0.84 T	<0.8 T	<1 T	<0.75 T	<2 T	10 T	<2.1 T
Mercury, Total	7471		0.52	0.78	0.48	0.65	0.078	0.75	1.2	0.77
Characteristics										
pH	SW846 9045	pH	6.98	7.24	7.33	6.86	7.15	6.35	7.16	7.03
Oxygen Reduction Potential (ORP)	ASTM 1498	mV	140	160	120	140	140	160	140	140
Sulfide	SM184500SE	mg/Kg	NT	NT	NT	NT	NT	NT	<440	NT
Solids, Percent (Discrete)	EPA 160.3	%	29.6	50.3	50.7	56.4	59.4	16.7	36.7	24.8
Solids, Percent (Composite)	EPA 160.3	%	40	57.4	63	43.3	68.1	21.8	51.3	26.6

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytical results, refer to laboratory data sheets or Olin-Wilmington Active Project Database.
2. Source of laboratory analytical data: Olin-Wilmington Active Project Database, updated November 26, 2001.
3. VOC analysis performed on discrete sample, collected at midpoint of sample depth interval, all other analytes performed on composite samples from full depth interval.
4. mg/Kg = Milligrams per kilogram (dry weight).
5. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
6. mV = Millivolts.
7. NT = Sample not tested for this analyte.

Qualifying Notes:

J The reported result is below the laboratory reporting limit and is therefore estimated.
T The associated value is an estimated quantity and may be biased high due to the oxidation of Cr+3 to Cr+6.

Footnote:

1. Duplicate sample of 1010-SED-SDF-3S.

Table 6.
Chemical Testing Results
Sediment Samples: South Ditch
Olin Corporation
51 Eames Street, Wilmington, MA

		Sample ID:	1010-SED-SDF-1S	1010-SED-SDF-2S	1010-SED-SDF-3S	1010-SED-DUPE1 1	1010-SED-SDF-4S	1010-SED-SDF-5S	1010-SED-SDF-6S
		Date Collected:	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01
		Sample Depth (inches):	6 - 13	0 - 6	0 - 6	0 - 6.0	0 - 6	0 - 6	0 - 6
Parameter Name	**Analysis Method**	**Units**							
Volatile Organic Compounds (VOCs)	8260B	mg/Kg							
2,4,4-Trimethyl-1-pentene			<0.47	<0.56	<0.72	<0.8	<0.79	<0.3	<0.4
2,4,4-Trimethyl-2-Pentene			<0.47	<0.56	<0.72	<0.8	<0.79	<0.3	<0.4
Semivolatile Organic Compounds (SVOCs)	8270C	mg/Kg							
bis(2-EthylHexyl)phthalate			216	106	2.2	<5.5	20	7	6.9
Extractable Petroleum Hydrocarbons (EPH)	MADEP EPH	mg/Kg							
C11-C22 Aromatics (FID)			7500	1400	30	41	81	130	92
C11-C22 Aromatics, Unadjusted			7500	1400	32	43	85	140	100
C19-C36 Aliphatics (FID)			4900	1800	39	52	110	190	110
C9-C18 Aliphatic Hydrocarbons			780 J	200 J	8.4 J	10 J	16 J	17 J	17 J
EPH Concentration (Total)			13000	3400	77	100	200	340	210
Benzo(a)pyrene			<2.6	<2.2	2.2	2.5	3.4	1.2	2
Benzo(g,h,i)perylene			<2.6	2.3	<0.8	<0.9	<1.2	3.9	8.4
Chrysene			<2.6	<2.2	<0.8	<0.9	<1.2	<1.1	<1.3
Fluoranthene			2.6	<2.2	<0.8	<0.9	<1.2	<1.1	<1.3
Indeno (1,2,3-cd) pyrene			13	<2.2	<0.8	<0.9	<1.2	<1.1	<1.3
Ethylbenzene			<0.47	<0.56	<0.72	<0.8	<0.79	<0.3	<0.4
Metals	6010	mg/Kg							
Arsenic, Total			<37	40	<12	<14	<18	<18	<21
Barium, Total			65	23	19	21	52	52	23
Cadmium, Total			<4	<4	<2	<3	<4	<4	<4
Lead, Total			120	85	62	65	85	52	45
Selenium, Total			<18	<18	<12	<14	<18	<18	<20
Silver, Total			<19	<18	<12	<14	<18	<18	<21
Chromium, Total			21000	12000	310 J	820 J	1700	300	400
Hexavalent Chromium, Total	7196		28 T	26 T	<1.1 T	<1.4 T	<1.7 T	<1.7 T	<2.5 T
Mercury, Total	7471		1.4	1.5	0.24	0.14	0.41	0.33	0.23
Characteristics									
pH	SW846 9045	pH	4.74	4.58	5.67	5.75	5.27	5.73	4.77
Oxygen Reduction Potential (ORP)	ASTM 1498	mV	220	220	170	180	180	160	210
Sulfide	SM184500SE	mg/Kg	<730	<450	NT	NT	NT	NT	NT
Solids, Percent (Discrete)	EPA 160.3	%	24.5	22.4	19.7	18.5	21.2	37.8	40.3
Solids, Percent (Composite)	EPA 160.3	%	26	29.6	41.8	36.5	28	30	26.2

General Notes:

1. Only numerical results for analytes detected in at least one sample are reported here. For a complete list of analytical results, refer to laboratory data sheets or Olin-Wilmington Active Project Database.
2. Source of laboratory analytical data: Olin-Wilmington Active Project Database, updated November 26, 2001.
3. VOC analysis performed on discrete sample, collected at midpoint of sample depth interval, all other analytes performed on composite samples from full depth interval.
4. mg/Kg = Milligrams per kilogram (dry weight).
5. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
6. mV = Millivolts.
7. NT = Sample not tested for this analyte.

Qualifying Notes:

J The reported result is below the laboratory reporting limit and is therefore estimated

T The associated value is an estimated quantity and may be biased high due to the oxidation of Cr+3 to Cr+6.

Footnote:

1. Duplicate sample of 1010-SED-SDF-3S

Table 3.
Chemical Testing Results
Surface Water Samples: South Ditch, NP-1 Location[1]
Olin Corporation Property
51 Eames Street, Wilmington, MA

		Parameter:	Laboratory Parameters										Field Parameters					
			Ammonia Nitrogen, As N	Total Nitrate & Nitrite, As N	Chromium, Total	Chromium, Dissolved	Aluminum, Total	Aluminum, Dissolved	Iron Total	Iron Dissolved	bis (2-ethyhexyl) phthalate	Fluoranthene	pH	Specific Conductivity	Stream Temperature	Dissolved Oxygen	Plant B Discharging	Last Plant B Discharge
		Method:	LAC107061A	LAC107041A	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7	EPA 8270C	EPA 8310						
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L		mS/m (at 25C)	C	mg/L		
Sample ID	Date Collected	Time Collected																
1140-SD-SW1	9/20/00	15:00	40	-	0.049	-	-	-	-	-	3 A,J	<0.2	-	-	-	-	NR	NR
1140-SD-SW2	9/21/00	17:05	40	-	0.018	-	-	-	-	-	3.2 A,J	<0.2	-	-	-	-	NR	NR
1140-SD-SW3	9/22/00	15.45	33	-	0.013	-	-	-	-	-	14 A	<0.2	-	-	-	-	NR	NR
1140-SD-SW4	9/23/00	14:00	57	-	0.025	-	-	-	-	-	9.5 A,J	<0.2	-	-	-	-	NR	NR
1140-SD-SW5	9/25/00	17.05	100	-	1.2	-	-	-	-	-	220 A	<0.2	-	-	-	-	NR	NR
1140-SD-SW6	9/26/00	17.45	180	-	0.54	-	-	-	-	-	180 A	<0.2	-	-	-	-	NR	NR
1140-SD-SW7	9/27/00	18:10	60	-	0.035	-	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1140-SD-SW8	9/28/00	17:40	66	-	0.041	-	-	-	-	-	2.4 A,J	<0.2	-	-	-	-	NR	NR
1140-SD-SW9	9/29/00	16.30	28	-	<0.01	-	-	-	-	-	3.1 A,J	<0.2	-	-	-	-	NR	NR
1140-SD-SW10	10/2/00	18:15	120	-	<0.01 G	-	-	-	-	-	2.8 A,J	<0.2	-	-	-	-	NR	NR
1140-SD-SW11	10/4/00	17:30	110	-	0.032	-	-	-	-	-	4.4 A,J	<0.2	-	-	-	-	NR	NR
97598-SWLOC-14	10/6/01	NR	-	-	0.036	<0.01	-	-	-	-	-	-	7.0	-	-	-	NR	NR
1150-SD-SWA1	10/7/00	16.30	61	-	<0.01	0.019	-	-	-	-	1.8 A,J	<0.2	-	-	-	-	NR	NR
1150-SD-SWA2	10/9/00	16.45	71	-	<0.01	<0.01	-	-	-	-	9.7 A,J	<0.2	-	-	-	-	NR	NR
1150-SD-SWA3	10/10/00	15:45	50	-	0.023	<0.01	-	-	-	-	4.5 A,J	<0.2	-	-	-	-	NR	NR
1150-SD-SWA4	10/11/00	16.30	65	-	0.22	0.012	-	-	-	-	25 A	<0.2	-	-	-	-	NR	NR
1150-SD-SWA5	10/12/00	16:30	110	-	0.16	<0.01	-	-	-	-	24 A	<0.2	-	-	-	-	NR	NR
1150-SD-SWA6	10/18/00	14:15	110	-	0.048	<0.01	-	-	-	-	20 A	<0.2 C	-	-	-	-	NR	NR
1150-SD-SWA7	10/19/00	18:00	32	-	0.02	<0.01	-	-	-	-	<17 A	<0.2 C	-	-	-	-	NR	NR
1150-SD-SWA8	10/20/00	15.45	70	-	0.033	<0.01	-	-	-	-	<12 A	<0.2	-	-	-	-	NR	NR
1150-SD-SWA9	10/20/00	15:30	110	-	0.024	<0.01	-	-	-	-	23 A	<0.2	-	-	-	-	NR	NR
1150-SD-SWA10	10/23/00	15.45	120	-	0.013	0.01	-	-	-	-	<25 A	<0.2 C	-	-	-	-	NR	NR
1150-SD-SWB1	10/24/00	16:00	120	-	0.016	<0.01	-	-	-	-	<17 A	<0.2 C	-	-	-	-	NR	NR
1150-SD-SWB2	10/25/00	15:20	160	-	0.011	<0.01	-	-	-	-	<14 A	<0.2	-	-	-	-	NR	NR
1150-SD-SWC1	10/26/00	17.30	170	-	0.01	<0.01	-	-	-	-	<17 A	<0.2	-	-	-	-	NR	NR
1150-SD-SWC2	10/27/00	16.00	100	-	<0.01	<0.01	-	-	-	-	6 A,J	<1	-	-	-	-	NR	NR
1150-SD-SWC3	10/30/00	16:15	150	-	<0.01	<0.01	-	-	-	-	2.7 A,J	<1	-	-	-	-	NR	NR
1150-SD-SWC4	10/31/00	14:45	97 F	-	0.016	<0.01	-	-	-	-	<17 A	<1	-	-	-	-	NR	NR
1150-SD-SWC5	11/1/00	16 00	50 F	-	0.036	<0.01	-	-	-	-	<14 A	<1	-	-	-	-	NR	NR
1150-SD-SWC6	11/2/00	17:50	40 F	-	0.014	<0.01	-	-	-	-	<17 A	<1	-	-	-	-	NR	NR
1150-SD-SWC7	11/3/00	15:15	46 F	-	0.017	<0.01	-	-	-	-	<17 A	<1	-	-	-	-	NR	NR
1150-SD-SWC8	11/4/00	15.15	60	-	0.022	<0.01	-	-	-	-	7.6 A,J	<1	-	-	-	-	NR	NR
1150-SD-SWC9	11/6/00	16:15	44	-	0.012	<0.01	-	-	-	-	15 A,J	<1	-	-	-	-	NR	NR
1150-SD-SWC10	11/7/00	14:00	38	-	<0.01	<0.01	-	-	-	-	<25 A	<1	-	-	-	-	NR	NR
1150-SD-SWC11	11/8/00	15:15	62	-	0.017	<0.01	-	-	-	-	2.3 A,J	<1	-	-	-	-	NR	NR
1150-SD-SWC12	11/9/00	13:00	78	-	0.014	0.052	-	-	-	-	4.1 A,J	<1	-	-	-	-	NR	NR
1150-SD-SWC13	11/10/00	10:30	68	-	0.012	<0.01	-	-	-	-	5.5 A,J	<1	-	-	-	-	NR	NR
1150-SD-SWC14	11/12/00	10:15	18	-	0.025	<0.01	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC15	11/13/00	12:32	41	-	0.038	<0.01	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC16	11/14/00	12:40	72 F	-	0.044	<0.01	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC17	11/15/00	15 55	37	-	0.11	0.016	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC18	11/16/00	11:44	50	-	0.1	0.017	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC19	11/17/00	15:30	87	-	0.084	0.011	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC20	11/18/00	14:00	110 F	-	0.063	<0.01	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC21	11/19/00	14:30	94	-	0.051	<0.01	-	-	-	-	-	<0.2	-	-	-	-	NR	NR
1150-SD-SWC22	11/20/00	12:20	57	-	0.03	<0.01	-	-	-	-	-	0.25	-	-	-	-	NR	NR
1150-SD-SWC23	11/21/00	15:00	77	-	0.078	<0.01	-	-	-	-	-	<0.2 C,F	-	-	-	-	NR	NR
1150-SD-SWC24	11/22/00	9.30	76	-	0.04	<0.01	-	-	-	-	-	<0.2 C	-	-	-	-	NR	NR

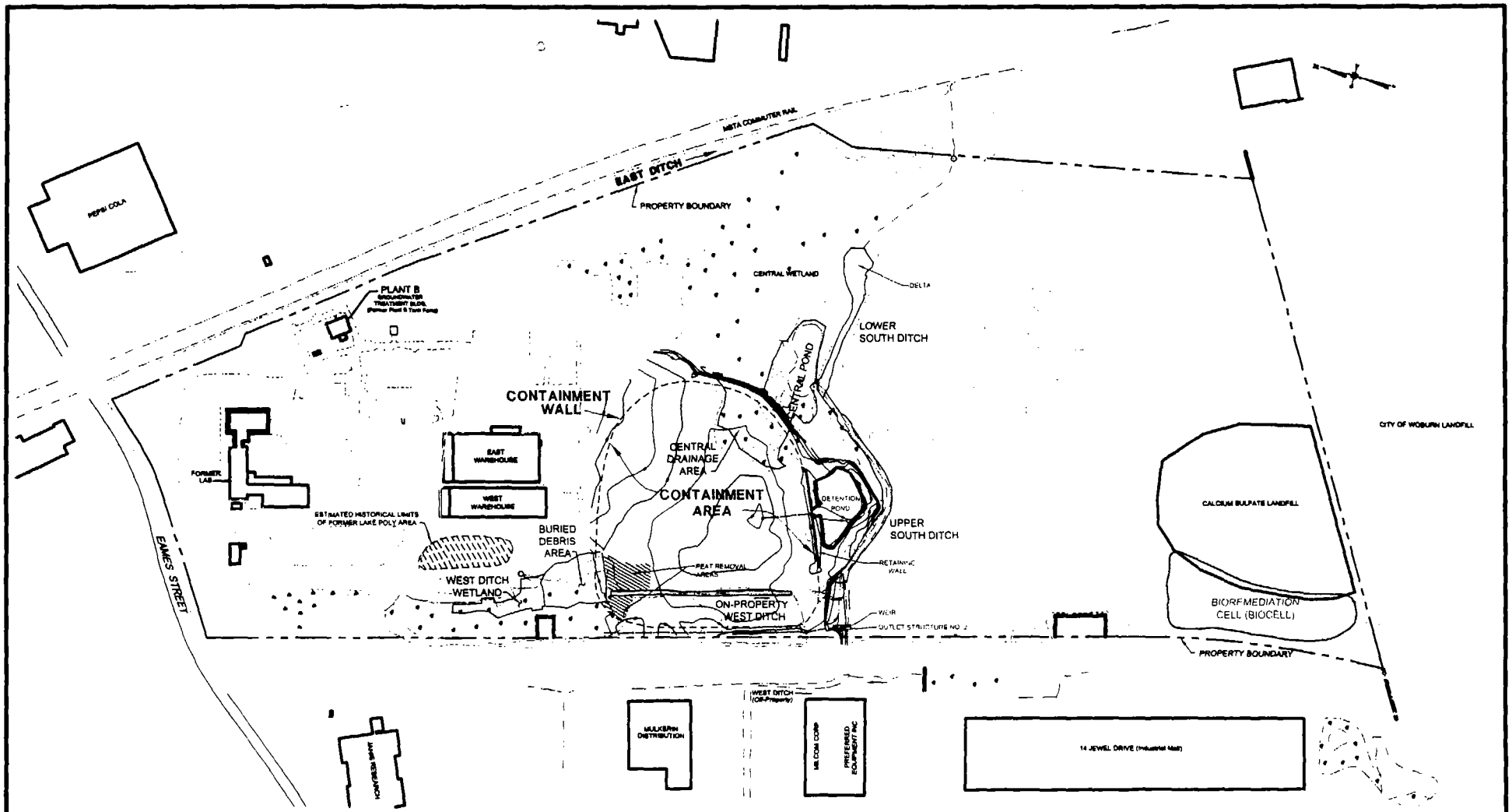
Table 2.
Chemical Testing Results
Surface Water Samples: South Ditch, ISCO-2 Location[1]
Olin Corporation Property
51 Eames Street, Wilmington, MA

			Laboratory Parameters								Field Parameters					
		Parameter:	Ammonia Nitrogen, As N	Total Nitrate & Nitrite, As N	Chromium, Total	Chromium, Dissolved	Aluminum, Dissolved	Sulfate	Chloride	bis (2-EthylHexyl) phthalate	pH	Specific Conductivity	Stream Temperature	Dissolved Oxygen	Plant B Discharging	Last Plant B Discharge
		Method:	LAC107061A	LAC107041A	EPA 200.7	EPA 200.7	EPA 200.7	EPA 300	LAC117071A	EPA 8270C						
		Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L		mS/m (at 25C)	C	mg/L		
Sample ID	Date Collected	Time Collected														
1170-ISCO2-1	2/9/01	13:20	76	-	0.1	0.013	-	-	-	-	6.3	1.5	-	-	yes, since 8:30	active
1170-ISCO2-2	2/15/01	11:00	27	-	0.092	<0.01	-	-	-	-	6.2	0.7	-	-	yes, since 8:55	active
1170-ISCO2-3	2/23/01	12:00	66	2	0.12	0.02	-	-	-	-	6.2	1.3	2.5	-	yes, since 7:30	active
1170-ISCO2-4	3/1/01	9:25	48	2.4	0.071	<0.01	-	-	-	-	6.4	1	1.9	-	yes, since 8:30	active
1170-ISCO2-5	3/9/01	14:15	59	2	0.11	0.023	-	-	-	-	6.1	1.2	1	8.58	yes, since 9:15	active
1170-ISCO2-6	3/16/01	9:01	15	1.2	0.083	0.013	0.18	150	50	-	6	-	1.5	9.8	yes, since 8:30	active
1170-ISCO2-7	3/23/01	9:52	9.3	0.87	0.036	0.011	0.23	79	37	-	5.6	0.33	2.5	9.41	yes, since 8:50	active
1170-ISCO2-8	3/26/01	8:45	33	1.6	0.09	0.014	0.22	210	78	-	5.7	0.83	3.2	8.2	no	3/23/01 14:00
1170-ISCO2-9	4/2/01	8:32	47	1.6	0.11	0.032	0.32	400	83	-	5.5	0.88	3.2	8.59	yes, since 7:30	active
1170-ISCO2-10	4/9/01	9:01	33	1.5	0.13	0.015	0.15	240	88	-	5.7	0.84	6.5	8.18	no	4/6/01 13:10
1170-ISCO2-11	4/16/01	8:17	57	840	0.036	<0.01	0.15	410	110	-	6.3	1.31	-	-	no	4/13/01 13:40
1170-ISCO2-12	4/23/01	8:50	73	0.96	0.027	<0.01	<0.1	680	120	-	6.5	1.47	14.7	5.98	no	4/20/01 13:30
1170-ISCO2-13	4/30/01	8:35	84	1.2	0.04	<0.01	<0.1	630	120	-	6.5	1.81	10.3	6.50	no	4/27/01 15:15
1170-ISCO2-14	5/7/01	8:25	70	1.4	0.083	<0.01	<0.1	620	120	-	5.8	1.83	10.0	6.32	no	5/4/01 14:15
1170-ISCO2-15	5/14/01	8:30	90 F	1.5	0.062	0.01	<0.1	660	147	<10	6.5	1.63	11.0	3.54	no	5/11/01 14:00
1170-ISCO2-16	5/15/01	7:55	-	-	0.044	0.01	-	-	-	<10	6.4	2.05	10.9	3.43	no	5/11/01 14:00
1170-ISCO2-17	5/16/01	9:25	-	-	0.011	<0.01	-	-	-	<10	6.5	0.97	12.9	8.19	yes, since 8:10	active
1170-ISCO2-18	5/17/01	8:25	-	-	0.033	0.012	-	-	-	<10	6.2	1.84	11.3	4.74	no	5/16/01 12:00
1170-ISCO2-19	5/18/01	9:30	-	-	0.013	0.01	-	-	-	<10	6.5	1.52	14.2	8.43	yes	active
1170-ISCO2-20	5/21/01	8:25	140	1.2	0.054	0.013	-	1200	260	-	6.5	2.20	10.6	2.11	no	5/18/01 14:00
1170-ISCO2-21	5/23/01	16:30	-	-	0.19	<0.01	-	-	-	21	-	-	16.9	6.90	no	5/23/01 14:50
1170-ISCO2-22	5/24/01	7:55	-	-	0.039	<0.01	-	-	-	<10	6.5	2.25	-	-	no	5/23/01 14:50
1170-ISCO2-23	5/29/01	13:55	-	-	0.038	<0.01	-	-	-	-	-	-	-	-	yes, since 10:45	active
1170-ISCO2-24	5/30/01	9:55	-	-	<0.01	<0.01	-	-	-	-	7.4	1.10	-	-	yes, since 8:35	active
1170-ISCO2-25	6/4/01	8:55	38	1.8	0.029	<0.01	<0.1	1300	510	-	6.7	2.26	14.6	-	no	6/1/01 13:20
1170-SD26-4	6/5/01	16:00	220	-	0.035	<0.01	-	-	-	-	6.4	-	-	-	yes, since 9:30	active
1170-ISCO2-27	6/6/01	11:45	-	-	<0.01	<0.01	-	-	-	-	6.6	-	-	-	yes, since 8:45	active
1170-ISCO2-28	6/7/01	13:55	-	-	0.011	0.0039	-	-	-	-	6.2	-	-	-	yes, since 9:00	active
1170-ISCO2-30	6/11/01	8:30	180	2.4	0.077	<0.01	<0.1	1400	540	-	6.2	2.55	15.9	3.11	no	6/8/01 14:50
1170-ISCO2-31	6/18/01	8:55	16	1.7	0.069	0.017	0.21	140	48	-	5.6	2.54	20.4	3.50	no	6/15/01 13:30
1170-ISCO2-32	6/25/01	8:10	26	0.92	0.058	<0.01	<0.1	180	54	-	6.0	-	23.3	3.65	no	6/22/01 14:15
1170-ISCO2-33	7/2/01	8:30	11	0.79	0.078	0.016	0.19	21	<1.0	-	5.8	-	-	-	no	6/29/01 13:10
1170-ISCO2-34	7/9/01	8:10	99	0.78	0.025	<0.01	<0.1	720	150	-	-	-	-	-	no	7/6/01 14:45
1170-ISCO2-35	7/16/01	8:30	100	1.3	0.059	<0.01	-	670	220 F	-	7	-	18.4	3.84	no	7/13/01 12:50
1170-ISCO2-38	8/6/01	8:30	33	1.8	0.037	<0.01	<0.1	220	58	-	6.4	-	21.8	5.02	no	8/3/01 12:00
1170-ISCO2-39	8/13/01	7:55	10	0.79	0.092	0.02	0.21	100	26	-	6.5	0.43	19.4	5.58	no	8/10/01 13:15
1170-ISCO2-40	8/20/01	7:45	110	1.5	0.02	<0.01	<0.1	680	250	-	7.1	2.41	22.4	4.1	no	8/17/01 12:50
1170-ISCO2-41	8/27/01	7:50	88	3.4	0.06	<0.01	<0.1	650	160	-	6.9	1.83	19.2	2.57	no	8/24/01 15:30

General Notes:
1. Only results for analytes detected in at least one sample are reported here. For a complete list of analytical results, refer to the laboratory disk reports or the Olin-Wilmington Active Project Database.
2. Source of Laboratory Analytical Data: Olin-Wilmington Active Project Database, updated November 26, 2001.
3. mg/L = Milligrams per liter.
4. ug/L = Micrograms per liter.
5. mS/m = Millisiemens per meter.
6. C = Degrees Celsius.
7. "<" = Analyte not detected at a concentration above the specified laboratory reporting limit.
8. "-" = Parameter not measured.
9. Field Parameters measured by GEI personnel in accordance with generally accepted engineering and scientific practices.

Qualifying Note:
F The result is estimated due to matrix spike recovery outside of control limits.

General Note:
1. All samples listed on this table were collected from the South Ditch at location ISCO-2, as shown on Figure 2.



LEGEND:

- APPROXIMATE EXISTING WETLANDS BOUNDARY
- STREAM
- ACTUAL LIMITS OF SEDIMENT EXCAVATION
- PLANT B DISCHARGE LOCATION

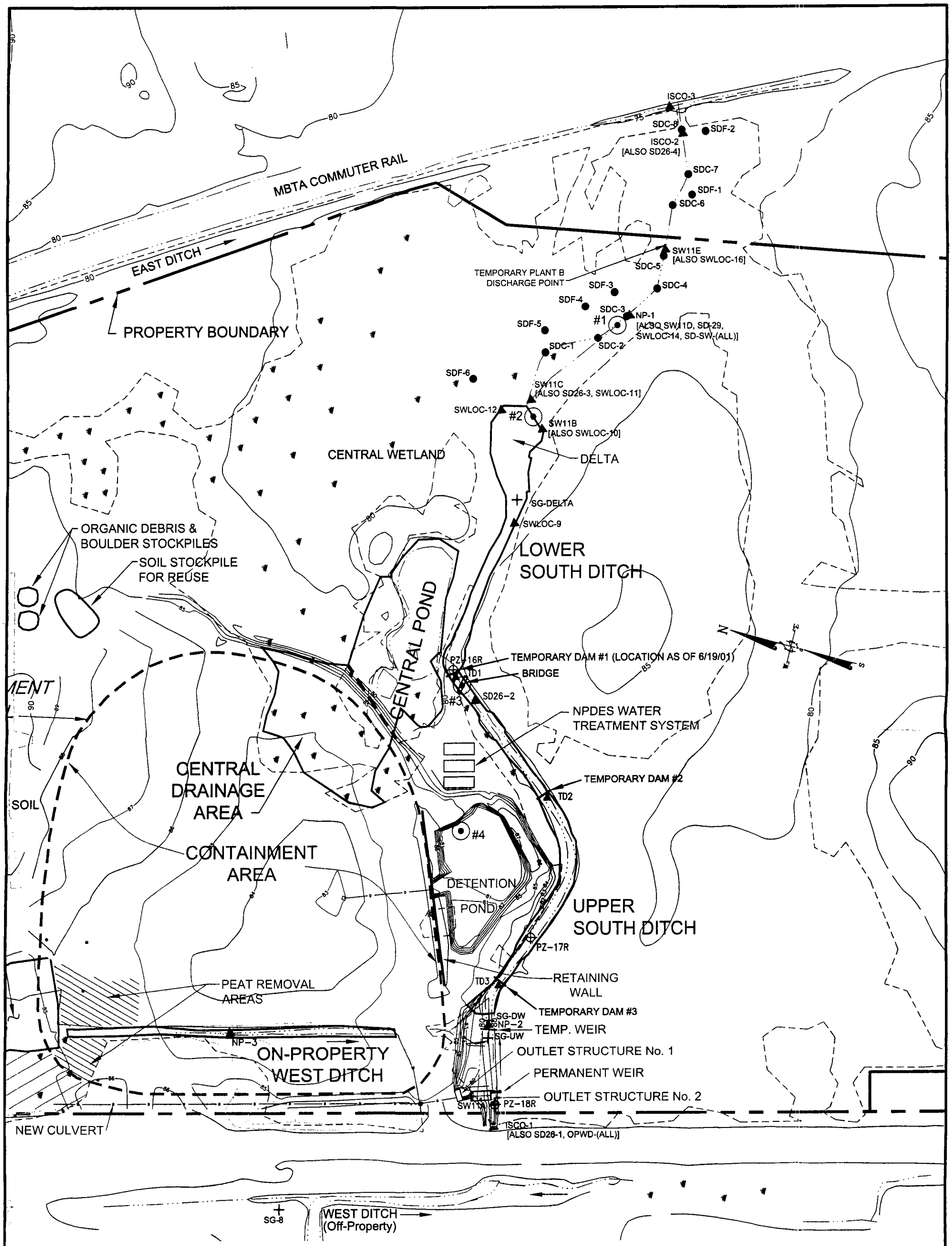
NOTES:

1. BASE PLAN PROVIDED BY DANA F. PERKINS, INC

0 100 200
SCALE, FEET

Olin Corporation Charleston, Tennessee	IRA Status Report No. 2 South Ditch/Former Weir Area 51 Eames Street Wilmington, Massachusetts	SITE PLAN
GEI Consultants, Inc.	Project 97598	November 2001 Fig. 1

97598-AB-221 djm 11/28/01



LEGEND:

- ▲ SURFACE WATER MONITORING LOCATION
- ⊙ WATER TREATMENT SYSTEM DISCHARGE POINT
- ⊕ PIEZOMETER
- ● SEDIMENT SAMPLE LOCATION
- ACTUAL LIMITS OF SEDIMENT EXCAVATION
- + STAFF GAUGE

0 100 200
SCALE, FEET

NOTE:
SAMPLE LOCATION OF SD-C4 SUBSEQUENTLY EXCAVATED IN MAY 2001.

Olin Corporation Charleston, Tennessee	IRA Status Report No. 2 South Ditch/Former Weir Area 51 Eames Street Wilmington, Massachusetts	SURFACE WATER MONITORING AND SEDIMENT SAMPLE LOCATIONS JULY 2000 THROUGH SEPTEMBER 2001
GEI Consultants, Inc.	Project 97598	November 2001 Fig. 2

97598\ASBUILT\97598-AB-219 djm/ptc 12/04/01

Appendix A

BWSC-105 Transmittal Form

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-105

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number: 3 - 0471

A. RELEASE OR THREAT OF RELEASE LOCATION:

Release Name: (optional) Olin Wilmington

Street: 51 Eames Street Location Aid:

City/Town: Wilmington ZIP Code: 01887

☐ Check here if a Tier Classification Submittal has been provided to DEP for this Release Tracking Number.

☐ Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114.

Specify Program: ☐ CERCLA ☐ HSWA Corrective Action ☐ Solid Waste Management ☐ RCRA State Program (21C Facilities)

Related Release Tracking Numbers That This IRA Addresses:

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

☐ Submit an **IRA Plan** (complete Sections A, B, C, D, E, H, I, J and K).

☐ Check here if this IRA Plan is an update or modification of a previously approved written IRA Plan. Date Submitted:

☐ Submit an **Imminent Hazard Evaluation** (complete Sections A, B, C, F, H, I, J and K).

☑ Submit an **IRA Status Report** (complete Sections A, B, C, E, H, I, J and K).

☐ Submit a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** (complete Sections A, B, C, D, E, H, I, J and K).

☑ Submit an **IRA Completion Statement** (complete Sections A, B, C, D, E, G, H, I, J and K).

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.

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT IRA:

Identify Media and Receptors Affected: (check all that apply) ☐ Air ☐ Groundwater ☑ Surface Water ☐ Sediments ☐ Soil

☐ Wetland ☐ Storm Drain ☐ Paved Surface ☐ Private Well ☐ Public Water Supply ☐ Zone 2 ☐ Residence

☐ School ☐ Unknown ☐ Other Specify:

Identify Conditions That Require IRA, Pursuant to 310 CMR 40.0412: (check all that apply) ☐ 2 Hour Reporting Condition(s)

☐ 72 Hour Reporting Condition(s) ☑ Substantial Release Migration ☑ Other Condition(s)

Describe: Surface water conditions related to surface water management incident on Oct. 5, 2000.

Identify Oils and Hazardous Materials Released: (check all that apply) ☐ Oils ☐ Chlorinated Solvents ☑ Heavy Metals

☑ Others Specify: Chromium, floc, low pH groundwater.

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply)

☑ Assessment and/or Monitoring Only

☐ Excavation of Contaminated Soils

☐ Re-use, Recycling or Treatment

○ On Site ○ Off Site Est. Vol.: _____ cubic yards

Describe:

☐ Store ○ On Site ○ Off Site Est. Vol.: _____ cubic yards

☐ Landfill ○ Cover ○ Disposal Est. Vol.: _____ cubic yards

☐ Removal of Drums, Tanks or Containers

Describe:

☐ Deployment of Absorbent or Containment Materials

☐ Temporary Covers or Caps

☐ Bioremediation

☐ Soil Vapor Extraction

☐ Structure Venting System

☐ Product or NAPL Recovery

☐ Groundwater Treatment Systems

☐ Air Sparging

☐ Temporary Water Supplies

SECTION D IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection **BWSC-105**
Bureau of Waste Site Cleanup

Release Tracking Number

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

3 - 0471

D. DESCRIPTION OF RESPONSE ACTIONS (continued):

☐ Removal of Other Contaminated Media

Specify Type and Volume: _____

☐ Temporary Evacuation or Relocation of Residents

☐ Fencing and Sign Posting

☐ Other Response Actions Describe: _____

☐ Check here if this IRA involves the use of Innovative Technologies (DEP is interested in using this information to aid in creating an Innovative Technologies Clearinghouse).

Describe Technologies: _____

E. TRANSPORT OF REMEDIATION WASTE: (if Remediation Waste has been sent to an off-site facility, answer the following questions)

Name of Facility: _____

Town and State: _____

Quantity of Remediation Waste Transported to Date: _____

F. IMMINENT HAZARD EVALUATION SUMMARY: (check one of the following)

☐ Based upon an evaluation, an Imminent Hazard exists in connection with this Release or Threat of Release.

☑ Based upon an evaluation, an Imminent Hazard does not exist in connection with this Release or Threat of Release.

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.

☐ Based upon an evaluation, it is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

G. IRA COMPLETION STATEMENT:

☑ Check here if future response actions addressing this Release or Threat of Release will be conducted as part of the Response Actions planned for a Site that has already been Tier Classified under a different Release Tracking Number, or a Site that is identified on the Transition List as described in 310 CMR 40.0600 (i. e., a Transition Site, which includes Sites with approved Waivers). These additional response actions must occur according to the deadlines applicable to the earlier Release Tracking Number (i. e., Site ID Number).

State Release Tracking Number (i. e., Site ID Number) of Tier Classified Site or Transition Site: NA

If any Remediation Waste will be stored, treated, managed, recycled or reused at the site following submission of the IRA Completion Statement, you must submit either a Release Abatement Measure (RAM) Plan or a Phase IV Remedy Implementation Plan, along with the appropriate transmittal form, as an attachment to the IRA Completion Statement.

H. 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 an **Immediate Response Action Plan** is being submitted*, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed 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;

> *if Section B of this form indicates that an **Imminent Hazard Evaluation** is being submitted*, this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation complies(y) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> *if Section B of this form indicates that an **Immediate Response Status Report** 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;

> *if Section B of this form indicates that an **Immediate Response Action Completion Statement** or a **Request to Terminate an Active Remedial System and/or Terminate a Continuing Response Action(s) Taken to Address an Imminent Hazard** 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 H IS CONTINUED ON THE NEXT PAGE.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-105

Release Tracking Number
3 - 0471

IMMEDIATE RESPONSE ACTION (IRA) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

H. LSP Opinion (continued):

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 th...

LSP Name: M. Hanley LSP #: 8494 Stamp:

Telephone: 617.742.4447 Ext.:

FAX: (optional)

Signature: Margaret Hanley

Date: December 5, 2001

COMMONWEALTH OF MASSACHUSETTS M. MARGRET HANLEY No. 8494 REGISTERED LSP SITE PROFESSIONAL

I. PERSON UNDERTAKING IRA:

Name of Organization: Olin Corporation

Name of Contact: Steve Morrow, P.E. Title: Principal Environmental Engineer

Street: 1186 Lower River Road

City/Town: Charleston State: TN ZIP Code: 37310-0248

Telephone: 423.336.4511 Ext.: FAX: (optional)

☐ Check here if there has been a change in the person undertaking the IRA.

J. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA: (check one)

☒ RP or PRP Specify: (X) 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 Undertaking IRA Specify Relationship:

K. CERTIFICATION OF PERSON UNDERTAKING IRA:

I, STEVE MORROW, 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: Steve Morrow Title: PRINCIPLE ENV SPECIALIST
(signature)

For: Date: December 3, 2001
(print name of person or entity recorded in Section I)

Enter address of the person providing certification, if different from address recorded in Section I:

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.

Appendix B

Data Quality Assessment Evaluation Memorandum
LAW, December 2001

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

MEMORANDUM

To: Steve Morrow, Olin Corporation

From: Paul Brafford

Date: December 4, 2001

Subject: Data Quality Assessment Evaluation for the Sediment Data Collected from the South Ditch/Former Weir Area

Law Engineering and Environmental Services, Inc. (LAW) is pleased to submit this Data Quality Assessment Evaluation of the sediment chemical analysis data with respect to the October 5, 2000 surface water management incident that occurred during sediment removal activities involving the release of surface water and groundwater to the South Ditch at the 51 Eames Street Site in Wilmington, Massachusetts. To address MADEP's concerns relative to the potential impact to sediments in the South Ditch, Olin collected sediment samples along the centerline of the South Ditch and adjacent wetlands in an effort to define the extent of potential contamination resulting from the release. Additionally, Olin conducted a qualitative human health Imminent Hazard (IH) Evaluation, and an Ecological IH Evaluation of the South Ditch environment. Analysis parameters for the South Ditch sediments include Volatile Organic Compounds (VOC), Semi-Volatile Compounds (SVOC), Extractable Petroleum Hydrocarbons (EPH), metals, including total and hexavalent chromium Cr(VI).

The Data Quality Assessment (DQA) process includes a review of the project-specific Data Quality Objectives (DQOs) and a summary as to whether the DQOs were achieved. After the project data were collected and evaluated the DQOs are reviewed to determine if they were satisfied. The following three DQOs were identified for the South Ditch/Former Weir sediment investigation:

- Sediment data collected from the South Ditch/Former Weir will be used in a human health IH Evaluation and an Ecological IH Evaluation
- Sediment data will be used to assess the nature and extent of contamination, and the potential impact of the contamination with respect to the Massachusetts Contingency Plan (MCP), including human health and ecological risk assessment for chronic exposure.
- The reported laboratory reporting limits should at least be equivalent to individual analyte detection limits listed in Table 1 for the human health IH Evaluation and the human health risk assessment for chronic exposure. The reported laboratory reporting

limits should at least be equivalent to the individual detection limits listed in Table 2 for the ecological risk assessment for chronic exposure.

To determine if the DQOs were satisfied, the following Data Quality Indicators (DQIs) were evaluated during the Data Quality Evaluation (DQE) process: Precision and Accuracy. The DQE summary (Attachment 1) provides a review of the laboratory generated analytical quality control (QC) data from each procedure performed and the subsequent qualification of the data where applicable. In addition to summarizing the precision and accuracy measurements in this memorandum, the DQIs for representativeness, completeness, comparability and sensitivity were reviewed.

Precision is a measure of mutual agreement among individual measurements of the same property, under prescribed conditions. Precision is calculated from duplicate measurements and is expressed as the relative percent difference (RPD). Duplicate sample results and/or matrix spike/matrix spike duplicate (MS/MSD) sample results were utilized to determine if the precision criteria were achieved for this sample data set. The VOC, SVOC, EPH, and metals data met the precision criteria with the exception of the total chromium result for sample SED-SDF-3S COMP, the mercury value for sample SED-SDF-3S COMP, and the Cr(VI) results only partial met the precision criteria in all sediment samples.

Accuracy is a measure of the closeness of an observed value to the true or known value. The accuracy of this sediment data set was evaluated based upon laboratory control sample (LCS) data and/or MS/MSD sample data generated for the analyses performed. The VOC, SVOC, EPH, metals and Cr(VI) data met the accuracy criteria with the exception of the C9-C18 Aliphatic fraction of the EPH analysis and the hexavalent chromium data which only partial met the accuracy criteria in all of the sediment samples.

Representativeness is an expression of the degree to which data accurately and precisely represent a characteristic of a population, parameter variation, or environmental condition. Though representativeness is a qualitative criteria, the accuracy and precision data produced during the chemical analyses does provide a useful quantitative measure. The VOC, SVOC, EPH, and metals data appear to be representative of analyte concentrations in the sediments with the exception of the hexavalent chromium data. The Cr(VI) data may not be representative of site conditions for the reasons outlined in the Geomega memorandum dated November 16, 2001 which is located in Appendix C of this report.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected under normal conditions. The completeness value has been calculated based upon the amount of valid data collected to use in the human health and ecological IH Evaluations. A completeness value of approximately 99% was achieved for this investigation while the completeness goal listed in the QAPP for soil investigations is 85%. The completeness criteria appear to have been achieved for the human health and ecological IH Evaluations.

Comparability is a qualitative assessment of how different data sets can be compared. Comparability is managed by the use of standardized methods/procedures in the field and

laboratory. This data set should be comparable since the same field sampling team using the same sampling technique collected the sediment samples. In addition, the same laboratory performed the same analytical methods. It appears that the comparability criteria appear to have been achieved.

Sensitivity is used to evaluate the applicability of the laboratory reporting limits. The reporting limits for the entire data set was impacted by the high moisture content of the sediments. The presence of bis(2-Ethylhexyl)phthalate impacted the reporting limits of the SVOCs in all 21 sediment samples. The presence of petroleum hydrocarbons impacted the reporting limits of EPH in 14 sediment samples. The presence of sample matrix interferences impacted the reporting limits of hexavalent chromium in all 21-sediment samples. Eventhough the reporting limits for this data were impacted, the usability of the data were not significantly effected.

Additionally, the laboratory reporting limits were compared with the human health risk assessment detection limits (Table 1 provided by Harding/ESE) to review the potential impact of the data usability with respect to both the human health IH Evaluation and the human health risk assessment. The laboratory reporting limits exceeded the human health risk assessment detection limits for benzo(a)pyrene in 11 sediments and benzo(a,h)anthracene in 6 samples. Both of these constituents were analyzed by two procedures and the lowest attainable values were utilized in the human health IH Evaluation. These data were suitable for use in the human health IH evaluation, but may only have limited use in the human health risk assessment.

The laboratory reporting limits were also compared with the ecological risk assessment detection limits (Table 2 provided by Harding/ESE) to review the potential impact of the data usability with respect to both the human health IH Evaluation and the ecological risk assessment. The ecological IH Evaluation should not be impacted since this analysis was qualitative rather than quantitative. However, the comparison does indicate that several of the laboratory reporting limits exceed the chronic ecological risk assessment detection limits. The laboratory reporting limits that exceed the ecological risk assessment detection limits were di-n-octylphthalate, flouranthene, n-nitrosdiphenylamine, and bis(2-ethylhexyl)phthalate in most of the sediment samples while the laboratory reporting limits for arsenic, cadmium, and selenium exceeded the ecological risk assessment detection limits in all samples. This data would have limited usability in the future ecological risk assessment.

The DQIs support the first DQO, that the sediment data collected and analyzed from the South Ditch/Former Weir maybe used in a human health and Ecological IH Evaluations.

The DQIs indicate that the second DQO, that the sediment data will be used to assess the nature and extent of contamination, and the potential impact of the contamination with respect to the MCP, including human health and ecological risk assessment for chronic exposure will only be partially met; therefore, the data will have limited usability. Of particular concern are the constituents with laboratory reporting limits above the human health and ecological risk assessment detection limit requirements.

The DQIs indicate that the third DQO, that the reported laboratory reporting limits should at least be equivalent to individual analyte detection limits listed in Table 1 for the human health IH Evaluation and the human health risk assessment for chronic exposure, and that the reported laboratory reporting limits should at least be equivalent to the individual detection limits listed in Table 2 for the ecological risk assessment for chronic exposure. The reported laboratory reporting limits were applicable for both the human health and ecological IH Evaluation. The reported laboratory reporting limits are applicable for the human health risk assessment; however, the required detection limits for the final ecological risk assessment indicate that the recent sediment data (and detection limits) may be of limited value.

Overall, the sediment data have been sufficient for conducting the imminent hazard evaluation; however, the sediment data may be of limited use in both the human health and ecological risk assessments.

REFERENCES:

2001, Geomega. Memorandum on Chromium Spiked Samples and Discussion of Hexavalent Chromium Detects.

Tables

Table 1: Required Detection Limits for Sediment and Human Health Risk Assessment

Table 2: Sediment Data Quality Objections for the South Ditch Ecological Risk Assessment

Table 1

REQUIRED DETECTION LIMITS FOR SEDIMENT AND HUMAN HEALTH RISK ASSESSMENT (MG/KG)

	DETECTION LIMIT
COMPOUND	
	OVERALL
1,1,1-Trichloroethane	327831.458
1,1,2,2-Tetrachloroethane	11.692
1,1-Dichloroethane	4436
1,2-Dichloroethene(total)	3278.315
1,2-Dichloropropane	220.5
2,4,4-Trimethyl-1-pentene	69115.994
2,4,4-Trimethyl-2-Pentene	69115.994
2-Butanone (MEK)	218554.305
2-Hexanone	218554.305
Acetone	36425.718
Benzene	1127
Bromodichloromethane	440.6
Bromoform	3458
Carbon Disulfide	30680.758
Carbon Tetrachloride	210
Chlorobenzene	7285.144
Chloroform	3642.572
Dibromochloromethane	325
Ethylbenzene	19994.444
Methylene Chloride	3642
Styrene	39988.888
Tetrachloroethene (PCE)	536
Toluene	62567.879
Trichloroethene (TCE)	728.514
Vinyl Chloride	9.06
Xylenes, Total	625678.788
1,2,4-Trichlorobenzene	4359.012
1,2-Dichlorobenzene	32783.146
2-Methylnaphthalene	5998.333
4-Bromophenyl-phenylether	NA
Naphthalene	
Anthracene	42662.977
Benzo(a)Anthracene	20.542
Benzo(a)Pyrene	2.054
Benzo(b)Fluoranthene	20.542
Benzo(g,h,i)Perylene	6657.579
Benzo(k)Fluoranthene	205.42
Benzoic Acid	887739.453
Butylbenzylphthalate	44386.973
Chrysene	2054
Di-n-butylphthalate	22193.486
Di-n-octylphthalate	4438.697
Dibenzo(a,h)Anthracene	4.0774
Dibenzofuran	6377.707
Dimethylphthalate	483444.395
Fluoranthene	7997.778
Fluorene	7997.778
Indeno (1,2,3-cd)Pyrene	20.542
N-Nitrosodiphenylamine	3575
Naphthalene	14570.287

Table 1

REQUIRED DETECTION LIMITS FOR SEDIMENT AND HUMAN HEALTH RISK ASSESSMENT (MG/KG)

	DETECTION LIMIT
COMPOUND	
	OVERALL
Phenanthrene	6657.579
Phenol	94413.324
Pyrene	5998.333
bis(2-EthylHexyl)phthalate	5696
4,4'-DDD	62.4
4,4'-DDT	44.1
Aldrin	0.7198
Alpha-BHC	2.642
Alpha-Chlordane	35.673
Beta-BHC	9.247
Delta-BHC	110.967
Endosulfan I	1331.609
Endosulfan Sulfate	1331.609
Endrin	48.944
Endrin Aldehyde	66.580
Endrin Ketone	66.580
Gamma-Chlordane	35.673
Heptachlor	3.332
Heptachlor Epoxide	1.648
Methoxychlor	999.722
Aluminum	NA
Antimony	145.703
Arsenic	42.879
Barium	44373.997
Beryllium	14.958
Cadmium	137.071
Calcium	NA
Chromium III	718562.537
Cobalt	14522.399
Copper	NA
Iron	NA
Lead	1973.773
Manganese	11375.879
Mercury	185.497
Nickel	2385.068
Potassium	NA
Selenium	9357.017
Silver	815.737
Sodium	NA
Vanadium	4437.400
Zinc	318995.528
Chloride	NA
Nitrate as N	1014262.789
Nitrite as N	63391.424
Nitrogen, Ammonia	234548.270
Sulfate as SO4	NA
Chromium VI	1984.359
NA = NOT AVAILABLE	

Table 1

REQUIRED DETECTION LIMITS FOR SEDIMENT AND HUMAN HEALTH RISK ASSESSMENT (MG/KG)

	DETECTION LIMIT
COMPOUND	
	OVERALL

Source: Harding/ESE, Wakefield, MA

Table 2
SEDIMENT DATA QUALITY OBJECTIVES FOR THE SOUTH DITCH
ECOLOGICAL RISK ASSESSMENT
IN CORPORATION, WILMINGTON, MASSACHUSETTS

CHEMICAL (mg/kg)	Detection Level - Green Heron [a]	Detection Level - Amphibian [b]	Minimum Required Detection Level
1,1,1-Trichloroethane	2.4E+05	NA	2.4E+05
1,1-Dichloroethane	1.8E+04	NA	1.8E+04
2,4,4-Trimethyl-1-pentene	NA	NA	NA
2,4,4-Trimethyl-2-Pentene	NA	NA	NA
2-Hexanone	1.0E+05	NA	1.0E+05
Acetone	1.0E+06	NA	1.0E+06
Benzene	2.0E+04	NA	2.0E+04
Carbon Disulfide	NA	NA	NA
Chlorobenzene	NA	NA	NA
Ethylbenzene	5.8E+05	NA	5.8E+05
Methylene Chloride	1.0E+05	NA	1.0E+05
Toluene	8.9E+05	NA	8.9E+05
Trichloroethene (TCE)	4.2E+04	NA	4.2E+04
Xylenes, Total	1.0E+06	NA	1.0E+06
bis(Chloromethyl)ether	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
4-Bromophenyl-phenylether	NA	NA	NA
4-Chlorophenyl-phenylether	NA	NA	NA
Benzo(b)Fluoranthene	7.1E+04	NA	7.1E+04
Benzoic Acid	NA	NA	NA
Butylbenzylphthalate	3.2E+05	NA	3.2E+05
Chrysene	1.8E+05	NA	1.8E+05
Di-n-butylphthalate	2.5E+05	1.6E-02	1.6E-02
Di-n-octylphthalate	3.5E+05	4.2E-01	4.2E-01
Dimethylphthalate	6.3E+06	NA	6.3E+06
Fluoranthene	2.2E+05	4.2E-01	4.2E-01
Fluorene	2.2E+05	NA	2.2E+05
Indeno (1,2,3-cd)Pyrene	1.3E+05	NA	1.3E+05
N-Nitrosodiphenylamine (1)	6.6E+04	4.2E-01	4.2E-01
Phenanthrene	2.4E+05	NA	2.4E+05
Phenol	9.9E+04	NA	9.9E+04
Pyrene	1.1E+05	NA	1.1E+05
bis(2-EthylHexyl)phthalate	5.0E+04	2.6E-01	2.6E-01
4,4'-DDT	2.0E+02	NA	2.0E+02
Endosulfan I	2.3E+02	NA	2.3E+02
Endosulfan Sulfate	1.1E+02	NA	1.1E+02
Endrin Aldehyde	3.7E+02	NA	3.7E+02
Heptachlor	7.0E+02	NA	7.0E+02
Heptachlor Epoxide	2.5E+02	NA	2.5E+02
Methoxychlor	7.1E+04	NA	7.1E+04
Aluminum	2.7E+05	4.0E+03	4.0E+03
Antimony	7.7E+04	9.6E-01	9.6E-01
Arsenic	NA	1.9E+00	1.9E+00
Barium	1.0E+04	5.4E+00	5.4E+00
Beryllium	9.8E+02	2.2E-01	2.2E-01
Cadmium	NA	2.1E-01	2.1E-01
Chromium (Trivalent)	4.3E+05	2.4E+01	2.4E+01
Chromium (Hexavalent)	1.9E+04	2.4E+01	2.4E+01
Cobalt	1.4E+04	1.6E+00	1.6E+00
Copper	1.8E+03	2.2E+00	2.2E+00
Iron	NA	2.8E+03	2.8E+03
Lead	1.1E+04	2.3E+00	2.3E+00
Manganese	0.0E+00	2.6E+01	0.0E+00

Table 2
SEDIMENT DATA QUALITY OBJECTIVES FOR THE SOUTH DITCH
ECOLOGICAL RISK ASSESSMENT
IN CORPORATION, WILMINGTON, MASSACHUSETTS

CHEMICAL (mg/kg)	Detection Level - Green Heron [a]	Detection Level - Amphibian [b]	Minimum Required Detection Level
Mercury	1.8E+02	8.6E-02	8.6E-02
Nickel	9.6E+03	4.0E+00	4.0E+00
Potassium	NA	1.3E+02	1.3E+02
Selenium	NA	8.3E-01	8.3E-01
Silver	NA	NA	NA
Sodium	NA	8.7E+01	8.7E+01
Thallium	NA	1.5E+00	1.5E+00
Vanadium	1.7E+03	4.5E+00	4.5E+00
Zinc	2.6E+04	1.1E+01	1.1E+01
Chloride	NA	NA	NA
Nitrate as N	NA	NA	NA
Nitrite as N	NA	NA	NA
Nitrogen, Ammonia	NA	NA	NA
Sulfate as SO4	NA	NA	NA

Notes:
[a] Green Heron detection limits were calculated using the equation:
Required DL / 1 = sediment concentration / Hazard Quotient
[b] Amphibian detection limits are equlivent to FETAX Toxicity Testing NOEL values
NA - Not Avaliable

Source: Harding/ESE, Wakefield, MA

Attachment 1

Data Quality Evaluation Summary

DATA QUALITY EVALUATION SUMMARY

Olin Wilmington

LAW Project No. 12000-1-0018

South Ditch Sediment Sampling and Analysis Event - September 2001

W. Paul Brafford

W. Paul Brafford - Senior Chemist

Glenn N. Coffman - Project Principal/Manager

Prepared by:

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Data Evaluation Narrative
Law Project: Olin-Wilmington: South Ditch Sediment Evaluation
Law Project Number: 12000-1-0018
Matrix: Sediment

STL Report No. 30376

Deliverables

The laboratory data package as submitted to Law Engineering and Environmental Services, Inc. were complete as stipulated under Section 8.0, Data Reduction, Validation, And Reporting in the Quality Assurance Project Plan (QAPP), LAW, August 1999. The data packaged contained the chemical results from the following analytical methods: EPA Methods 8260B, 8270C, 6010B, 7471A, 3060A/7196, 9045; MADEP Method EPH, ASTM Method 1498 and SM18 4500SE. Chemical analysis data within this sample delivery group (SDG) were validated consistent with *EPA Region I, Tiered Organics and Inorganics Data Validation Guidelines (July 1993, Draft)* as specified in the project QAPP.

Sample Integrity

Sediment samples within this SDG were submitted to Severn Trent Laboratories located in Westfield, MA. (STL) for the following chemical analysis: Volatile Organic Analysis (VOA), Semivolatile Organic Compounds (SVOC), Extractable Petroleum Hydrocarbons (MADEP EPH), ICP metals, mercury, hexavalent chromium, corrosivity, oxidation/reduction potential (ORP), and several selected samples for leachable sulfide.

Based on the information provided by the laboratory on the Chain-of-Custody (COC) forms, the sediment samples were transported by STL courier to the laboratory intact and iced on the same day of sample collection. Completed COC documents were included in the laboratory data package.

Sample Identification

The STL Report No. 30376 contained the following sediment and quality control (QC) samples:

SAMPLE ID	STL LAB NO.	SAMPLE ID	STL LAB No.
SED-SDC-1S GRAB	183306	SED-SDC-1S COMP	183329
SED-SDC-1D GRAB	183307	SED-SDC-1D COMP	183330
SED-SDC-2S GRAB	183308	SED-SDC-2S COMP	183331
SED-SDC-3S GRAB	183309	SED-SDC-3S COMP	183332
SED-SDC-3D GRAB	183310	SED-SDC-3S COMP	183333
SED-SDC-4S GRAB	183311	SED-SDC-4S COMP	183334
SED-SDC-4D GRAB	183312	SED-SDC-4D COMP	183335
SED-SDF-5S GRAB	183313	SED-SDF-5S COMP	183336
SED-SDF-6S GRAB	183314	SED-SDF-6S COMP	183337
SED-SDF-3S GRAB	183315	SED-SDF-3S COMP	183338
SED-SDF-4S GRAB	183316	SED-SDF-4S COMP	183339
SED-SDF-3S DUPE1	183317	SED-DUPE1 COMP	183340

SED-SDF-1S GRAB	183318	SED-SDF-1S COMP	183341
SED-SDF-2S GRAB	183319	SED-SDF-2S COMP	183342
SED-SDC-5S GRAB	183320	SED-SDC-5S COMP	183343
SED-SDC-6S GRAB	183321	SED-SDC-6S COMP	183344
SED-SDC-7S GRAB	183322	SED-SDC-7S COMP	183345
SED-SDC-8S GRAB	183323	SED-SDC-8S COMP	183346
SED-SDC-5D GRAB	183324	SED-SDC-5D COMP	183347
SED-SDC-6DGRAB	183325	SED-SDC-6D COMP	183348
SED-SDC-7D GRAB	183326	SED-SDC-7D COMP	183349
SED-SDC-8D GRAB	183327	SED-SDC-8D COMP	183350
SED-TB	183328		

These sediment samples were collected from the South Ditch on September 17, 2001.

Volatile Analyses (8260B)

Twenty-one sediment samples, one field duplicate and one trip blank (STL Lab Nos. 183306 - 183328) in this SDG were submitted for volatile organic compound (VOC) analysis.

Holding Times

The samples were preserved in the field and the data analysis report indicates that applicable (14-day) holding times were met for the samples submitted for the analysis of VOCs by EPA Method 8260B.

Reporting Limits

The VOC reporting limits (RLs) for sediment samples are not specified in the project QAPP; however, the laboratory VOC RLs are consistent with the guidance provided in the EPA Method 8260B for high concentration samples. In addition, the RLs were adjusted to reflect the sample moisture content.

Blank Summary

The analytical results of the laboratory method blanks indicate that no VOCs were detected at concentrations exceeding the RLs.

Surrogates

The recoveries of the three surrogate standards toluene-d_8, 4-bromofluorobenzene, and 1,2-dichloroethane-d_4 were within laboratory QC advisory limits for each sediment sample and the one trip blank.

Laboratory Control Sample

The laboratory control sample (LCS) contains sixteen representative VOC compounds. Six LCS samples were analyzed during the VOC sediment analyses. All of the VOC LCS compounds were recovered within applicable laboratory QC advisory limits.

Matrix Spike/Matrix Spike Duplicate

Sample SED-SDC-1S GRAB (#183306) was submitted to STL as the matrix spike/matrix spike duplicate (MS/MSD) sample for the VOC analysis. In addition, STL fortified sample SED-SDC-4S GRAB (#183311) as an MS/MSD sample. All MS/MSD sample compounds in both sample sets were recovered within the laboratory QC advisory limits. The Relative Percent Differences (RPDs) between the MS/MSD sample compounds were within the applicable laboratory QC advisory limits.

Sampling Accuracy

The analytical results of the trip blank (SED-TB) indicate that there were no VOCs were present at concentrations exceeding RLs. No equipment blanks were planned for collection during this sampling event.

Field Duplicate Samples

Samples SED-SDF-3S GRAB and SED-DUPE1 GRAB were collected as the VOC field duplicates. No VOC compounds were detected in the sample or its duplicate. The RPD calculation between the parent and duplicate samples could not be performed since no VOCs were detected in either sample.

Semi-Volatile Organic Analyses (8270C)

Twenty-one sediment samples and one field duplicate sample (STL Lab Nos. 183329 - 183350) in this SDG were submitted to the laboratory for semi-volatile organic compound (SVOC) analysis.

Holding Times

The data report indicates that applicable holding times were met for the samples submitted for SVOC analyses by EPA Method 8270C.

Reporting Limits

The SVOC reporting limits (RLs) for the sediment samples are not specified in the project QAPP; however, the laboratory RLs are consistent with the guidance provided in EPA Method 8270C. All of the SVOC sediment sample extracts required dilution due to the presence of bis(2-Ethylhexyl) phthalate. The SVOC RLs were adjusted to reflect the sample dilutions and sample moisture content. The following sample dilutions were made:

Dilution Factor:	Associated Samples:
4	SED-SDF-6S COMP, SED-SDF-3S COMP, SED-SDF-4S COMP
6	SED-SDC-1D COMP, SED-SDC-2S COMP, SED-SDF-5S COMP, SED-DUPE1 COMP
10	SED-SDC-7D COMP
20	SED-SDC-1S COMP, SED-SDF-1S COMP,
30	SED-SDF-2S COMP
150	SED-SDC-5S COMP, SED-SDC-8S COMP,
300	SED-SDC-3S COMP, SED-SDC-4S COMP, SED-SDC-7S COMP
600	SED-SDC-6S COMP, SED-SDC-5D COMP
1000	SED-SDC-8D COMP

1200	SED-SDC-6D COMP
2000	SED-SDC-3D COMP, SED-SDC-4D COMP

Blank Summary

The analytical results of the laboratory method blanks indicate that no SVOCs were detected at concentrations greater than the RLs.

Surrogates

The recoveries for the method-specified surrogates 2-fluorophenol, phenol-d_5, nitrobenzene-d_5, 2-fluorobiphenyl, 2,4,6-tribromophenol, and terphenyl-d_{14} were diluted out due to presence of bis(2-Ethylhexyl) phthalate.

Action: No data qualification was necessary since the surrogates were diluted out as a result of sample dilutions made to facilitate the accurate quantitation of bis(2-Ethylhexyl) phthalate.

Laboratory Control Sample

The laboratory control sample (LCS) contains eleven representative SVOC compounds. The LCS sample compounds were recovered within the applicable laboratory QC advisory limits.

Matrix Spike/Matrix Spike Duplicate

Sample SED-SDC-1S was collected as the project SVOC matrix spike/matrix spike duplicate (MS/MSD) sample. The MS/MSD compounds were diluted out due the presence of bi(2-Ethylhexyl) phthalate.

Action: Accuracy of the SVOC analysis was evaluated utilizing the recoveries of the SVOC LCS sample analysis.

Sampling Accuracy

No equipment blank was planned for collection during the sediment-sampling event.

Field Duplicate Sample

The results from the parent and duplicate field samples (SED-SDF-3S COMP and SED-DUPE1 COMP) were all non-detect and could not be evaluated for RPD. An estimated concentration of bis (2-Ethylhexyl) phthalate was reported in sample SED-SDF-3S COMP (2,200 ug/Kg) while the RL was <3,200 ug/Kg.

Extractable Petroleum Hydrocarbons (MADEP EPH)

Twenty-one sediment samples and one field duplicate sample (STL Lab Nos. 183329 - 183350) in this SDG were submitted to the laboratory for Extractable Petroleum Hydrocarbons (MADEP EPH) analysis.

Holding Times

The data report indicates that applicable holding times were met for the samples submitted for the EPH analyses as specific in the MADEP EPH method.

Reporting Limits

The EPH reporting limits (RLs) for sediment samples are not specified in the project QAPP; however, the laboratory RLs are consistent with the guidance provided in MADEP EPH method. Several of the EPH sediment sample extracts required dilution due to the presence of target constituents. The EPH RLs were adjusted to reflect the sample dilutions and sample moisture content. The following sample dilutions were made:

Dilution Factor:	Associated Samples:
2	SED-SDF-1S COMP, SED-SDF-2S COMP, SED-SDC-5D COMP
10	SED-SDC-1S COMP, SED-SDC-3S COMP, SED-SDC-4S COMP, SED-SDC-5S COMP, SED-SDC-6S COMP, SED-SDC-7S COMP, SED-SDC-8S COMP
20	SED-SDC-6D COMP
30	SED-SDC-4D COMP, SED-SDC-8D COMP
40	SED-SDC-3D COMP

Blank Summary

The analytical results of the laboratory method blanks indicate that no EPH was detected at concentrations greater than the RLs.

Surrogates

The recoveries for the two method-specified surrogate standards chloro-octadecane (aliphatic) and ortho-terphenyl (aromatic) were within method QC advisory limits with the exception of the surrogates in eleven sediment samples that were diluted out due to the presence of EPH constituents. The surrogates in the following eleven sediment samples were diluted out:

Dilution Factor:	Associated Samples:
10	SED-SDC-1S COMP, SED-SDC-3S COMP, SED-SDC-4S COMP, SED-SDC-5S COMP, SED-SDC-6S COMP, SED-SDC-7S COMP, SED-SDC-8S COMP
20	SED-SDC-6D COMP
30	SED-SDC-4D COMP, SED-SDC-8D COMP
40	SED-SDC-3D COMP

Action: No data qualification was necessary since the surrogates were diluted out as a result of sample dilutions made to facilitate the accurate quantitation of the EPH concentrations.

The recoveries for the two method-specified fractionation surrogates 2-bromonaphthalene and 2-fluorobiphenyl were within method QC advisory limits in all of the sediment samples.

Laboratory Control Sample

The EPH LCS sample contained ten representative EPH compounds. The LCS compounds were recovered within applicable method QC advisory limits with the exception of the lowest molecular weight aliphatic LCS compound, C9, which recovered at 31%. The control range for C9 is 40-140% recovery.

Action: All of the reported EPH C9-C18 aliphatic results (detects or non-detects) in all of the sediment results were qualified as estimated concentrations and "J" flagged.

Matrix Spike/Matrix Spike Duplicate

Sample SED-SDC-1S COMP was collected as the project EPH matrix spike/matrix spike duplicate (MS/MSD) sample. The MS/MSD compounds were diluted out due the presence of EPH constituents in the MS/MSD sample.

Action: Accuracy of the EPH analysis was evaluated utilizing the recoveries of the EPH LCS sample, which was recovered within applicable QC control limits.

Sampling Accuracy

No equipment blank was planned for collection during the sediment-sampling event.

Field Duplicate Samples

The EPH duplicate results of the field samples (SED-SDF-3S COMP and SED-DUPE1 COMP) were recovered within the RPD acceptance limits of ± 50 %.

Metals Analysis (6010B)

Twenty-one sediment samples and one duplicate sample (STL Nos. 183329-183350) in this SDG were submitted for analysis of metals by ICP per Method 6010B. The project QAPP does not list arsenic or selenium as ICP analytes; however, both are listed in Method 6010B as analytes. The laboratory provided QC criteria were utilized to evaluate the validity of the arsenic and selenium results.

Holding Times

The data report indicates that applicable holding times were met for the samples submitted for metals analysis by ICP.

Reporting Limits

The ICP metals reporting limits (RLs) for sediment samples are not specified in the project QAPP; however, the laboratory RLs are consistent with the guidance provided in Method 6010B. The ICP metal RLs were adjusted to reflect sample dilutions and sample moisture content.

Blank Summary

The analytical results for the laboratory method blanks indicate that no metals were detected at concentrations exceeding the RLs.

Laboratory Control Sample

The LCS recoveries for ICP metals were within the applicable laboratory QC advisory limits.

Matrix Spike/Matrix Spike Duplicate

Sample SED-SDC-1S COMP was submitted to the laboratory as the MS/MSD sample. The MS/MSD spike recoveries and RPDs were within the applicable laboratory QC advisory limits with the following exception:

Element	MS %R	MSD %R	QC Limits %R	RPD Limits	Associated Sample
Chromium	185	5	70-130	± 50	SED-SDC-1S COMP

Action: The MS/MSD chromium results were recovered outside the QC advisory limits due to the chromium concentration in the sample exceeded the spiking concentration by a factor of 20. STL subsequently performed a post digestion spike analysis on sample SED-SDC-1S COMP and the chromium was recovered at 98%. No data qualification is required for the associated sample result.

Sampling Accuracy

No equipment blank was planned for collection during the sediment-sampling event.

Field Duplicate Samples

Samples SED-SDF-3S COMP and SED-DUPE1 COMP were submitted to the laboratory as the field duplicates. All of the ICP metals were recovered within the RPD QC advisory limits with the exception of chromium.

Element	RPD	RPD Limits	Associated Sample
Chromium	90%	± 50%	SED-SDF-3S COMP, SED-DUPE1 COMP

Action: The chromium results reported for sample SED-SDF-3S COMP and duplicate SED-DUPE1 COMP have been qualified as estimated concentrations and "J" flagged.

Mercury Analysis (7471A)

Twenty-one sediment samples and one field duplicate sample (STL Lab Nos. 183329 - 183350) in this SDG were submitted to the laboratory for mercury analysis by the cold vapor technique.

Holding Times

The data report indicates that applicable holding times were met for the samples submitted for cold-vapor mercury analysis.

Reporting Limits

The mercury reporting limits (RLs) for sediment samples are not specified in the project QAPP; however, the laboratory RLs are consistent with the guidance provided in Method 7471A. The mercury RLs were adjusted to reflect sample dilutions (if required) and sample moisture content.

Blank Summary

The analytical results for the laboratory method blanks indicate that no mercury was detected at concentrations exceeding the RLs.

Laboratory Control Sample

The mercury LCS sample recoveries were within the applicable laboratory QC advisory limits.

Matrix Spike/Matrix Spike Duplicate

Sample SED-SDC-1S COMP (#183329) was submitted to STL as the matrix spike/matrix spike duplicate (MS/MSD) sample for the mercury analysis. The mercury MS/MSD recoveries were within the laboratory QC advisory limits. The Relative Percent Differences (RPDs) QC criteria were also within the applicable laboratory QC advisory limits.

Sampling Accuracy

No equipment blank was planned for collection during the sediment-sampling event.

Field Duplicate Samples

Samples SED-SDF-3S COMP and SED-DUPE1 COMP were submitted to the laboratory as the field duplicates. The mercury was recovered outside the RPD QC advisory limits.

Element	RPD	RPD Limits	Associated Samples
Mercury	53%	± 50%	SED-SDF-3S COMP, SED-DUPE1

Action: The mercury results reported for sample SED-SDF-3S COMP and duplicate SED-DUPE1 COMP have been qualified as estimated concentrations and "J" flagged.

Hexavalent Chromium Analysis (3060A/7196)

Twenty-one sediment samples and one field duplicate sample (STL Lab Nos. 183329 - 183350) in this SDG were submitted to the laboratory for hexavalent chromium (CR VI) analysis by alkaline digestion and colormetric analysis.

Holding Times

The data report indicates that applicable holding times were met for the samples submitted for hexavalent chromium analyses utilizing EPA Methods 3060A/7196.

Reporting Limits

The hexavalent chromium reporting limits (RLs) for sediment samples are not specified in the project QAPP; however, the laboratory RLs for all of the sediment samples were elevated due to the presence of a sample matrix interference. After sample preparation the digestates contained color interference and required dilution. The hexavalent chromium RLs were adjusted to reflect the sample dilutions and sample moisture content. The following sample dilutions were made:

Dilution Factor:	Associated Samples:
25	SED-SDC-1S COMP, SED-SDC-1D COMP, SED-SDC-2S COMP, SED-SDC-3S COMP, SED-SDC-3D COMP, SED-SDC-4S COMP, SED-SDC-5S COMP, SED-SDC-6S COMP, SED-SDC-7S COMP, SED-SDC-8S COMP, SED-SDC-5D COMP, SED-SDC-7D COMP, SED-SDC-8D COMP

50 SED-SDC-4D COMP, SED-SDF-5S COMP, SED-SDF-6S COMP, SED-SDF-3S COMP, SED-SDF-4S COMP, SED-DUPE1 COMP, SED-SDF-1S COMP, SED-SDF-2S COMP, SED-SDC-6D COMP

Blank Summary

The analytical results of the laboratory method blanks indicate that no hexavalent chromium was detected at concentrations exceeding the RLs.

Laboratory Control Sample

The hexavalent chromium LCS recovery was within the applicable laboratory QC advisory limits.

Laboratory Duplicates

Sample SED-SDC-1S COMP was selected as the laboratory duplicate sample. Hexavalent chromium was not detected at the elevated RLs in either sample aliquot. Since both of the sample aliquots were non-detect of CR VI, the precision of the analysis could not be determined.

Matrix Spike/Matrix Spike Duplicate

Sample SED-SDC-1S COMP (STL Lab #183329) was submitted to the laboratory as the CR VI MS/MSD sample. Only the MS sample was fortified. The MS sample was fortified at the following concentration levels: low level - 40 ug/kg and high level - 1500 mg/kg. The low level spiked was diluted out due to sample matrix interferences (color) while the high level spiked was recovered within the laboratory QC advisory limits.

Element	MS %R	QC Limits %R	Associated Sample
CR VI (low level)	Diluted out	70-130	All samples analyzed for CR VI
CR VI (high level)	95%	70-130	All samples analyzed for CR VI

Action: The hexavalent chromium results reported for all of the sediment samples have been qualified as estimated quantities that may be biased high due to the oxidation of trivalent chromium to hexavalent chromium and "T" flagged.

Sampling Accuracy

No equipment blank was planned for collection during the sediment-sampling event.

Field Duplicate Samples

The duplicate results from field samples (SED-SDF-3S COMP and SED-DUPE1 COMP) were all non-detect for CR VI and could not be evaluated for RPD.

Data Evaluation Summary

The data within this SDG were validated in general accordance with the guidelines provided in Section 8.0, Data Reduction, Validation, and Reporting of the project QAPP, *EPA Region I, Tiered Organics and Inorganics Data*

Validation Guidelines (July 1993, Draft), and analytical method QC guidelines and/or laboratory QC advisory guidelines when the QAPP guidance was insufficient. The data qualification and flagging procedures utilized for this SDG are provided in Section 8.2 of the QAPP.

The following is a summary of the data that required qualification and subsequent flagging:

Volatile Organic Compounds:

- No data qualifications or flags were required

Semi-Volatile Organic Compounds:

- No data qualifications or flags were required

Extractable Petroleum Hydrocarbons:

- The EPH C9 - C18 Aliphatic results reported (detects and non-detects) for all of the sediment samples (STL Lab Nos. 183329 - 183350) were qualified as estimated concentrations and "J" flagged.

Metals:

- The chromium results reported for sample SED-SDF-3S COMP and SED-DUPE1 COMP were qualified as estimated concentrations and "J" flagged.

Mercury:

- The mercury results reported for sample SED-SDF-3S COMP and SED-DUPE1 COMP were qualified as estimated concentrations and "J" flagged.

Hexavalent Chromium:

- The hexavalent chromium results reported (detects and non-detects) for all of the sediment samples (STL Lab Nos. 183329 - 183350) were qualified as estimated quantities that may be biased high which may be a result of to the oxidation of trivalent chromium to hexavalent chromium and "T" flagged.

References

Geomega, 2001. Memorandum on Chromium Spiked Samples and Discussion of Hexavalent Chromium Detects.

LAW, 1999. "Quality Assurance Project Plan," Olin Corporation, Wilmington, Massachusetts, Law Engineering and Environmental Services, Inc., Kennesaw, Georgia, August 1999.

Appendix C

Data Quality Assessment Memorandum,
Geomega Memorandum Regarding
Chromium Spiked Sediment Sample Analysis
and
Laboratory Data Sheets for
Chromium Spiked Sample Analysis

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES

MEMORANDUM

To: Steve Morrow, Olin Corporation

From: Paul Brafford

Date: December 4, 2001

Subject: Data Quality Assessment of the Hexavalent Chromium Fortified Sediments Collected from the South Ditch/Former Weir Area

Law Engineering and Environmental Services, Inc. (LAW) is pleased to submit this Data Quality Assessment (DQA) of the hexavalent chromium {Cr(VI)} analyses performed on fortified South Ditch and near wetland sediments. The sediment investigation was performed in response to the October 5, 2000 surface water management incident that occurred during sediment removal activities involving the release of surface water and groundwater to the South Ditch at the 51 Eames Street Site in Wilmington, Massachusetts. To address MADEP's concerns relative to the potential impact to sediments in the South Ditch, Olin collected sediment samples along the centerline of the South Ditch and adjacent wetlands in September 2001 in an effort to define the extent of potential contamination resulting from the release. Cr(VI) was a constituent of concern (COC) and was reported to be present in several of the sediment samples by Severn Trent Laboratories (STL) of Westfield, MA. To evaluate the veracity of the Cr(VI) in the sediments, Geomega conducted a spiking experiment to determine if the reported Cr(VI) results were artifacts of the analytical technique.

This DQA process includes an evaluation of the laboratory hexavalent chromium analytical method quality control (QC) information and the subsequent potential impact on the Geomega Cr(VI) experiment data.

The laboratory analytical method (3060A/7196) QC data was evaluated during the Data Quality Evaluation (DQE) process and included a review of sample handling, shipping and preservation, holding times, reporting limits, method blank results, laboratory control sample (LCS) results, laboratory duplicate results, and matrix spike (MS) results. The details of the DQE review are provided in the DQE Summary that is included in this memo as Attachment 1. The precision and accuracy of the Cr(VI) data at lower concentration levels could not be determined because the laboratory low level (0.05 mg/Kg) MS sample required dilution due to the presence of sample matrix interferences. The laboratory high level (2000 mg/Kg) MS sample was recovered within the QC accuracy criteria. Based on the results of the 2 laboratory MS samples, South Ditch sediments with Cr(VI) concentrations approximately

less than 1500 mg/Kg should be considered estimated concentrations. To potentially reduce the uncertainty and improve the lower linear range of future Cr(VI) analysis, additional laboratory MS samples with spike concentrations between 0.1 and 1500 mg/Kg should be included in the analysis.

Due to the uncertainty associated with reported concentrations of Cr(VI) in the Geomega fortified sediment samples, the Cr(VI) data reported at less than 1,500 mg/Kg Cr(VI) potentially has limited usability.

REFERENCES:

2001, Geomega. Memorandum on Chromium Spiked Samples and Discussion of Hexavalent Chromium Detects.

Attachment 1

Data Quality Evaluation Summary

DATA QUALITY EVALUATION SUMMARY

Olin Wilmington

LAW Project No. 12000-1-0018

South Ditch Sediment Sampling and Analysis Event - September 2001

Hexavalent Chromium Spiked Sediments

W. Paul Brafford - Senior Chemist

Glenn N. Coffman - Project Principal/Manager

Prepared by:

Law Engineering and Environmental Services, Inc.
3200 Town Point Drive, Suite 100
Kennesaw, Georgia 30144

Data Evaluation Narrative
Law Project: Olin-Wilmington: Hexavalent Chromium Spiked South Ditch Sediments
Law Project Number: 12000-1-0018
Matrix: Sediment

STL Report No. 30642

Deliverables

The laboratory data package (STL Report No. 30642) as submitted to Law Engineering and Environmental Services, Inc. was complete as stipulated under Section 8.0, Data Reduction, Validation, And Reporting in the Quality Assurance Project Plan (QAPP), LAW, August 1999. The data packaged contained the chemical results from the following analytical methods: EPA Method 3060A/7196. Chemical analysis data within this sample delivery group (SDG) were validated consistent with *EPA Region I, Tiered Organics and Inorganics Data Validation Guidelines (July 1993, Draft)* as specified in the project QAPP.

Sample Integrity

Nine of the original twenty-one sediment samples collected from the South Ditch/Former Weir Area were sent to Geomega by STL after the initial hexavalent chromium analyses were completed. Geomega fortified the nine sediment samples with trivalent chromium and returned the fortified sediments to STL for hexavalent chromium analysis. Sediment samples within this SDG represent the trivalent chromium fortified samples submitted to Severn Trent Laboratories located in Westfield, MA. (STL) for hexavalent chromium analyses.

Based on the information provided by the laboratory on the Chain-of-Custody (COC) form, the sediment samples were transported to the laboratory intact and on ice one day following trivalent chromium fortification. Completed COC documents were included in the laboratory data package.

Sample Identification

The STL Report No. 30642 contained the following fortified sediment samples:

SAMPLE ID	STL LAB No.	SAMPLE ID	STL LAB No.
SDC-CR-1D	184724	SDC-CR-8S	184729
SDC-CR-2S	184725	SDC-CR-7D	184730
SDC-CR-3D	184726	SDC-CR-1S	184731
SDC-CR-3S	184727	SDC-CR-2S	184732
SDC-CR-8D	184728		

These sediment samples were collected from the South Ditch on September 17, 2001. The sediments were fortified with trivalent chromium and resubmitted to STL for analysis on October 3, 2001.

Hexavalent Chromium Analysis (3060A/7196)

Nine sediment samples (STL Lab Nos. 184724 - 18432) in this SDG were submitted to the laboratory for hexavalent chromium (CR VI) analysis by the alkaline digestion and colormetric instrumental analysis.

Holding Times

The data report indicates that applicable holding times were met for the samples submitted for hexavalent chromium analyses utilizing EPA Methods 3060A/7196.

Reporting Limits

The hexavalent chromium reporting limits (RLs) for sediment samples are not specified in the project QAPP; however, the laboratory RLs for all of the sediment samples have been elevated due to the presence of a sample matrix interference. After sample preparation the sample digestates produced color interference and required dilution. The hexavalent chromium RLs were adjusted to reflect the sample dilutions and sample moisture content. The following sample dilutions were made:

Dilution Factor:	Associated Samples:
50	SDC-CR-1D, SDC-CR-2S, SDC-CR-3D, SDC-CR-3S, SDC-CR-8D,SDC-CR-8S, SDC-CR-7D, SDC-CR-1S
250	SDC-CR-2S

Blank Summary

The analytical results of the laboratory method blanks indicate that no hexavalent chromium was detected at concentrations exceeding the RLs.

Laboratory Control Sample

The hexavalent chromium LCS recovery was within the applicable laboratory QC advisory limits.

Laboratory Duplicates

Sample SDC-CR-1D was selected as the laboratory duplicate sample. Hexavalent chromium was not detected at the respective RLs in either sample aliquot. Since both of the sample aliquots were non-detect of CR VI, the precision of the analysis could be evaluated.

Matrix Spike

Sample SDC-CR-1D (STL Lab #184724) was submitted to the laboratory as the CR VI MS/MSD sample. STL spiked only one aliquot (MS) of the sample. The MS sample was fortified at the following concentration levels: low level - 40 ug/kg and high level - 1500 mg/kg. The low level spiked was diluted out due to sample matrix interferences (color) while the high level spiked was recovered within the laboratory QC advisory limits.

Element	MS %R	QC Limits %R	Associated Sample
CR VI (low level)	Diluted out	70-130	All samples
CR VI (high level)	75%	70-130	All samples

Action: The hexavalent chromium results reported for the nine sediment samples have been qualified as estimated concentrations and "T" flagged.

Sampling Accuracy

No equipment blank was planned for this experiment-spiking event.

Field Duplicate Samples

No duplicate samples were planned for this experiment-spiking event.

Data Evaluation Summary

The data within this SDG were validated in general accordance with the guidelines provided in Section 8.0, Data Reduction, Validation, and Reporting of the project QAPP, *EPA Region I, Tiered Organics and Inorganics Data Validation Guidelines (July 1993, Draft)*, and analytical method QC guidelines and/or laboratory QC advisory guidelines when the QAPP guidance was insufficient. The data qualification and flagging procedures utilized for this SDG are provided in Section 8.2 of the QAPP.

The following is a summary of the data that required qualification and subsequent flagging:

Hexavalent Chromium:

- The hexavalent chromium results reported (detects and non-detects) for all of the spiked sediment samples (STL Lab Nos. 184724 - 184732) were qualified as estimated quantities that maybe biased high due to the oxidation of trivalent chromium to hexavalent chromium and "T" flagged in the Olin database.

References

Geomega, 2001. Memorandum on Chromium Spiked Samples and Discussion of Hexavalent Chromium Detects. November 16, 2001.

LAW, 1999. "Quality Assurance Project Plan," Olin Corporation, Wilmington, Massachusetts, Law Engineering and Environmental Services, Inc., Kennesaw, Georgia, August 1999.

Geomega

MEMORANDUM

To: Margaret Hanley, Steve Morrow
From: Andrew Nicholson, Ph.D., Andy Davis PhD
Subject: Accuracy of hexavalent chromium analyses in South Ditch Sediments.
Date: November 29, 2001

Summary

Hexavalent chromium [Cr(VI)] has been sporadically reported at low levels (<3 % of total chromium and less than 30 mg/kg) in South Ditch sediments. However, based on a sediment-spiking study, analytical artifacts (e.g., auto-oxidation and complexation by organic matter) are the most likely causes of these observations. In addition, the South Ditch sediment geochemical environment is too reducing to allow Cr(VI) to be stable.

Introduction

To evaluate the veracity of reported Cr(VI) in South Ditch sediments, a spiking experiment was conducted to determine if methodological extraction and analysis could result in the oxidation of Cr(III) to Cr(VI) as an artifact of the technique. In these experiments, nine samples from the September 2001 sediment sampling round were spiked with known amounts of trivalent chromium. Some of the samples had detectable hexavalent chromium, while others did not (Table 1). The amount of Cr_2O_3 added approximately doubled the amount of total chromium in the samples to evaluate whether the analytical technique returned any of the added Cr (III) as Cr (VI).

Methods.

Approximately 50 grams of wet sample was measured into glass jars. To this sample, reagent-grade 99.99% pure Cr_2O_3 [Cr(III)] was added to approximate a spike of 5000 mg/kg Cr(III) (dry weight) based on the previously reported solids content (between 60 and 150 mg). 5000 mg/kg was chose as a spike concentration because it would approximately double the chromium concentration of most samples (the mean total Cr in these samples was 6290 mg/kg, the median was 4500 mg/kg, and the geometric mean was 2430 mg/kg).

The samples were homogenenized and sent under chain of custody for analysis of Cr(VI) at STL Laboratories in Westfield, MA. For this analysis the samples were first extracted using EPA Method 3060A, an alkaline Cr (VI) digestion. Following extraction, the samples were analyzed using a colorimetric method (7196A) for hexavalent chromium. Sample masses, spike amounts, and analytical results are presented in Table 1.

Results and Discussion

Spike testing revealed the inherent variability in reporting of Cr (VI) data (Table 1). Of the 9 samples tested:

- Two samples (SDC-1D and SDF-1S) had no detectable Cr (VI) after spiking, despite having measured Cr (VI) in the native, unspiked sample.
- One sample (SDC-2S) had detectable Cr (VI) in the spiked sample (74 mg/kg), despite having no measured Cr (VI) in the unspiked sample (<2.4 mg/kg). This indicates oxidation of added Cr (III) to Cr (VI) as an artifact of the analytical process.
- Three samples (SDC-7D, SDC-8S, SCF-3S) had no detectable Cr(VI) in either the spiked or native samples.
- Three samples (SDC-3D, SDC-8D, SDF-2S) had detected Cr(VI) in both spiked and unspiked samples. However, in all the spiked samples with detected Cr (VI), the increase was at least 190 mg/kg, and almost 1500 mg/kg in SDF-2S. These data also indicate oxidation of added Cr (III) to Cr (VI) as an artifact of the analytical process.

In addition, the sample results for both the native and spiked samples had highly variable detection limits (DLs). In the spiking study, DLs ranged from 0.25-46 mg/kg, due to problems with the analytical technique described in STL's case narrative, i.e.,

> *"The digestates for all samples were very dark in color. Small aliquots were diluted to a final volume to remove color interference. This dilution resulted in the inability to recover the spike concentration in the soluble sample."*

The dark color that prevents spike recoveries results from alkaline extraction of the sediments using EPA Method 3060A, which solubilizes natural organic matter in sediments, including humic and fulvic substances. All the samples collected were dark in nature, probably due to the presence of these compounds. Therefore, the Cr (VI) extraction also extracts these dark-colored compounds that absorb light over a wide spectrum. Because the dark water absorbs light at 540 nm (the wavelength of the colorimetric analysis) the organic color also interferes with the Cr (VI) analysis.

The alkaline extraction may also result in the oxidation of Cr (III) to Cr (VI). Because Cr (III) is amphoteric, it's solubility increases at low (<4.5) and high (>9) pH (Figure 1). At the pH of the extraction (near 14; Location A on Figures 1 through 3) Cr solubility is similar to that at pH 4.25. In addition, the extraction of any organic matter (integral in these sediments) could also enhance Cr (III) solubility through formation of strong organic-Cr complexes.

After extraction, the pH is reduced to 7.5, using nitric acid, *an oxidizing acid* that neutralizes the solution (to Location B on Figures 2 and 3) and may also oxidize Cr (III) in solution to Cr (VI). In summary, the alkaline extraction may solubilize Cr^{3+} in the extraction that may then be converted to Cr (VI) in the neutralization step (Figures 2 and 3). It is also clear that the Eh-pH regime of the analytical method is extremely oxidizing in comparison to the ambient sediment environment, with all samples analyzed falling well within the Cr (III) predominance field (Figure 2). Hence with the additional complication of the absorbance interference from organic matter extracted from the sediments, it is hardly surprising that some Cr (VI) is reported as a by-product of analysis.

Indeed, problems related to Cr (VI) extraction and analysis are not unique to the Wilmington site. Previous scientific literature has discussed some of the analytical artifacts that can result in misinterpretation of Cr valence in soils and sediments due to disparate effects, e.g., non-specificity of reagents, re-adsorption, and oxidation/reduction of compounds (Vitale et al. 1997; Davis, and Olsen, 1995; James et al. 1995).

Conclusions

Spike experiments demonstrate the great variability and potential for oxidation of Cr (III) to Cr (VI) in the South Ditch sediments. The variability and production of false positives appears to be a function of the basic chemistry of the alkaline extraction technique that may dissolve both Cr (III) and humic substances. The neutralization of the extractant with nitric acid may also facilitate further oxidation of Cr (III) to Cr (VI). Due to the problems inherent with chromium valence analysis, and the geochemical data for the South Ditch sediments that generally confirm their reducing condition, it is our conclusion that Cr(VI) is not present in South Ditch sediments. Where Cr(VI) has been reported in sediments it is merely an inevitable artifact of the sample preparation and analytical techniques.

References

Davis, A., Olsen, R.L. 1995. The geochemistry of chromium migration and remediation in the subsurface. *Ground Water.* 33, 759-768.

Vitale, R.J.; Mussoline, G.R.; Petura, J.C.; James, B.R.1997. Cr(VI) soil analytical method: a reliable analytical method for extracting and quantifying Cr(VI) in soils. *J. Soil Contamination.* 6, 581-593.

James, B.R.; Petura, J.C.; Vitale, R.J.; Mussoline, G.R. 1995. Hexavalent chromium extraction from soils: A comparison of five methods. *Environ. Sci. Technol.* 29, 2377-2381.

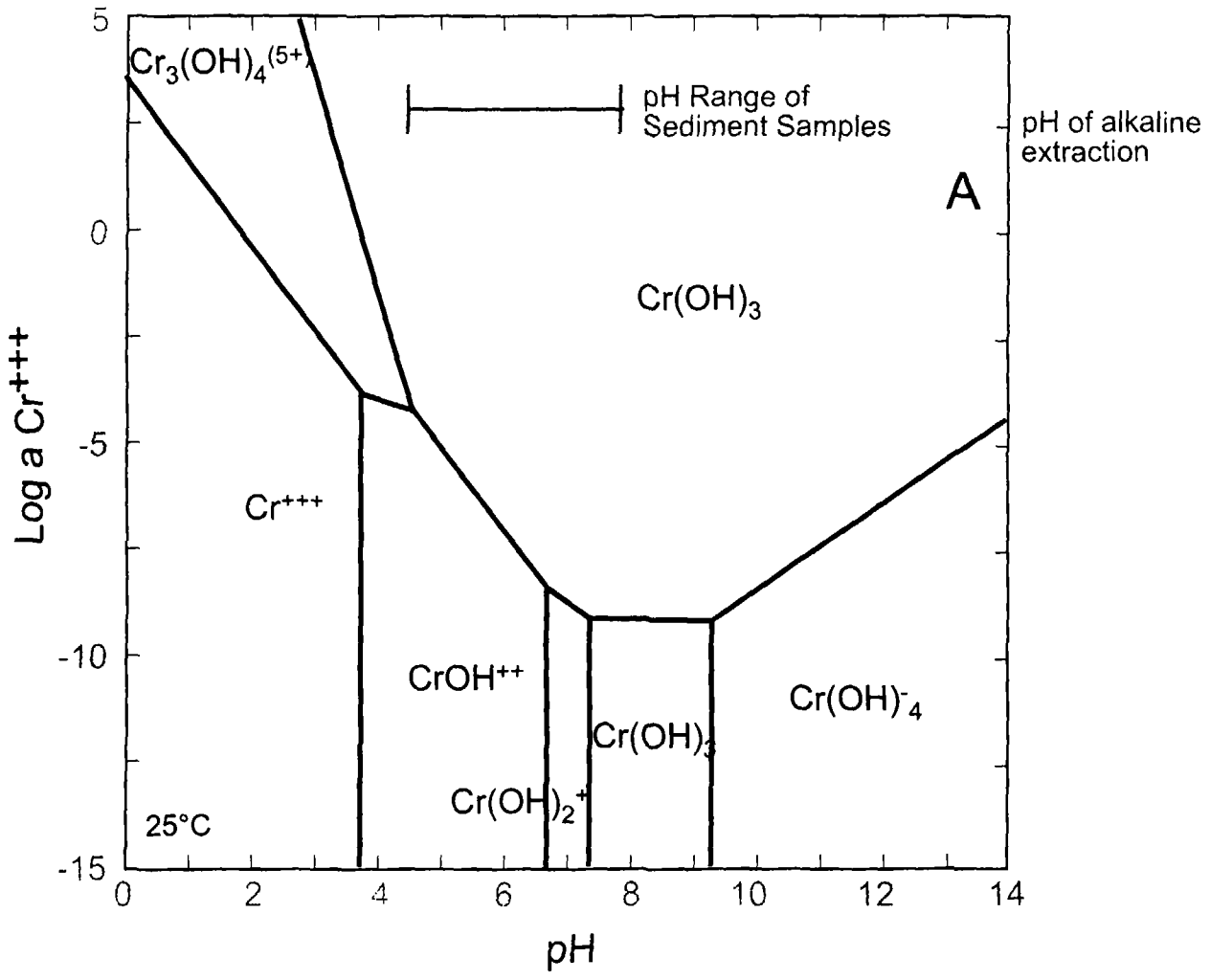
Table 1. Results of Cr(III) Spiking Studies of Sediments.

Sample ID	Pre-spike Measured Total Cr (mg/Kg)	Pre-spike Measured Cr(VI) (mg/kg)	Mass sample (g)	Cr_2O_3 Added (g)	Solids, Percent	Post-spike Cr(VI) (mg/kg)	Calculated Cr(III) Spike Concentration (mg/kg)
1010-SED-SDC-1D	380	11	28.72	0.13401	43.0	0.25 u	7425
1010-SED-SDC-2S	10000	2.4 u	49.62	0.08814	22.6	74	5378
1010-SED-SDC-3D	5300	27	50.19	0.12784	56.1	220	3106
1010-SED-SDC-7D	140	0.75 u	50.02	0.19302	63.9	15 u	4132
1010-SED-SDC-8D	3000	10	49.55	0.13992	47.1	210	4102
1010-SED-SDC-8S	4500	2.1 u	49.25	0.09257	25.1	42 u	5124
1010-SED-SDF-1S	21000	28	50.29	0.08673	21.2	46 u	5566
1010-SED-SDF-2S	12000	26	50.07	0.06173	25.1	1510	3361
1010-SED-SDF-3S	310	1.1 u	49.67	0.07302	34.6	28 u	2907

Notes:

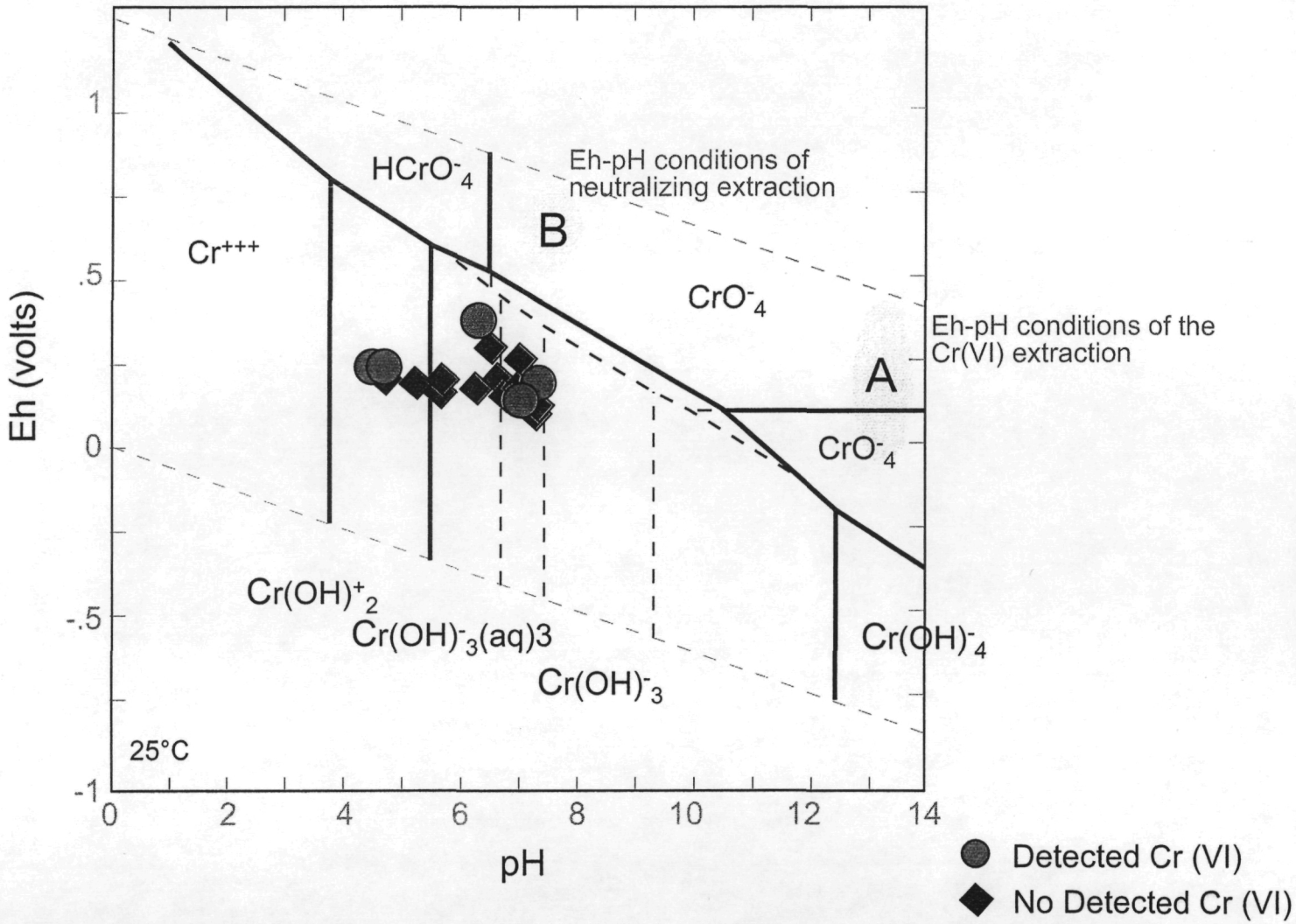
1. SDC = South Ditch channel samples, SDF = South Ditch floodplain samples.
2. Samples with u flag are nondetects at the reported detection limit.

Geomega



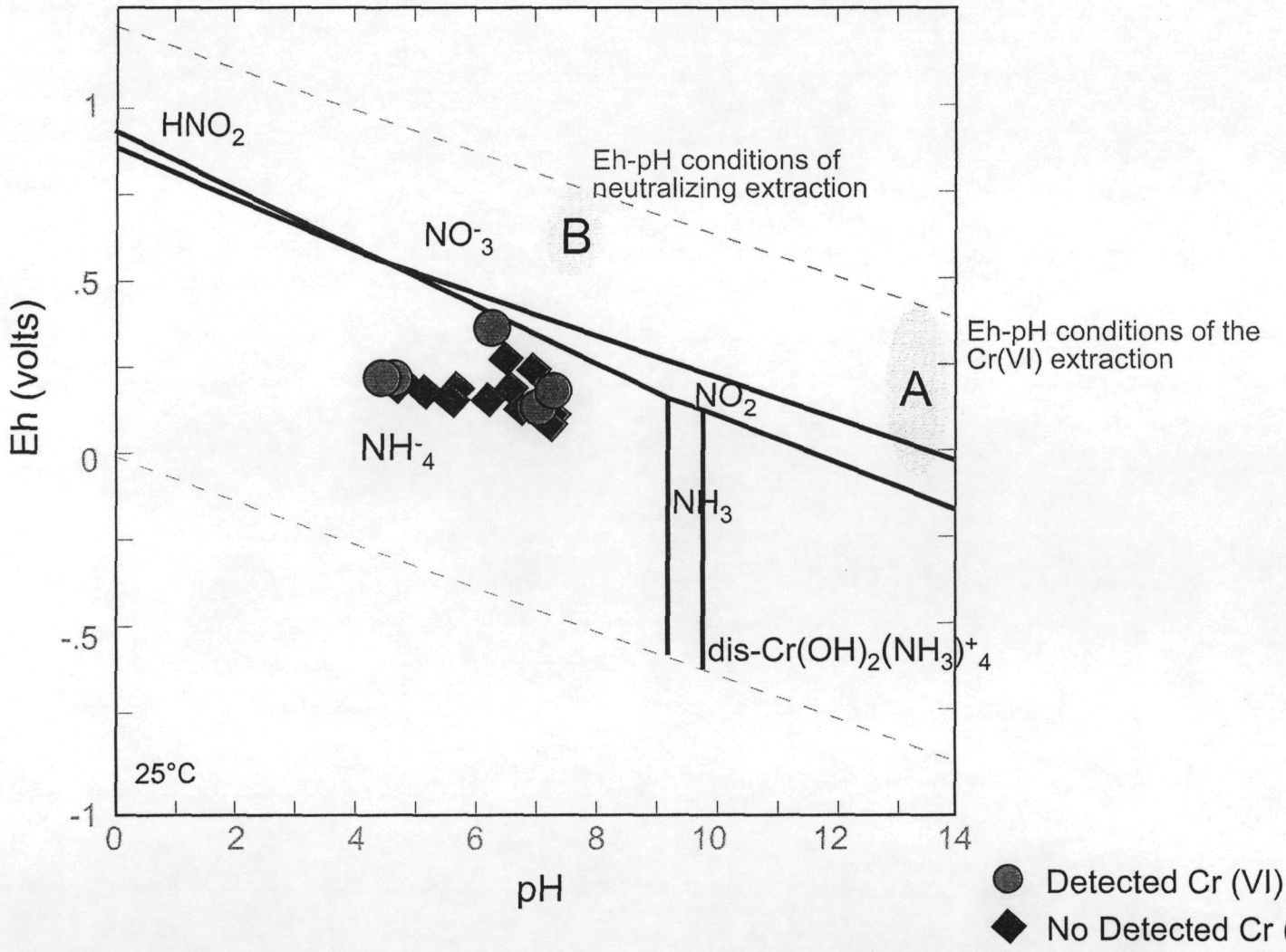
Generation Date: 11/29/01	Figure 1. Cr (III) Solubility as a Function of pH.	Geomega

o:\Olin\DitchSystemReport11-01\CrSolubility-1.ai



Generation Date: 11/14/01	Figure 2. Chromium Speciation in South Ditch Sediments and Laboratory Test. Symbols Show the Measured Eh-pH Conditions of the Sediments.	Geomega

o:\Olin\DitchSystemReport11-01\CrSolubility-2.ai



Generation Date: 11/14/01	Figure 3. Nitrogen Speciation in South Ditch Sediments and Laboratory Test. Symbols Show the Measured Eh-pH Conditions of the Sediments.	Geomega

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SEVERN TRENT SERVICES

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October 16, 2001

Mr. Alan Peirce

Olin Chemical
51 Eames St.

Wilmington, MA 01887

Report Number : 30642

Dear Mr. Peirce,

The analysis of your sample(s) submitted on 10/3/01 is now complete and the appropriate analytical report is enclosed. The samples were prepared and analyzed according to established methodologies and protocols. If you have any questions regarding the report or any part of our service, please do not hesitate to contact us. Thank you for using STL Westfield, and we look forward to receiving your next samples.

STL WESTFIELD

Michael F. Wheeler, Ph.D.
Laboratory Director

Total number of pages in this report: 7

STL WESTFIELD/BILLERICA
DATA REPORTING QUALIFIERS AND TERMINOLOGY

A number of data qualifiers are widely used within the environmental testing industry and may be utilized in our data reports. The following definitions of these qualifiers are included as a service to our clientele. The majority of the qualifiers have evolved from the EPA contract laboratory program (CLP).

ORGANIC QUALIFIERS

U - Indicates that the compound was analyzed for but not detected. The sample detection limit is corrected for dilution and percent moisture. This detection limit is not necessarily the instrument detection limit.

J - Indicates an estimated value. This qualifier is used when mass spectral data indicates the presence of a compound that meets the identification criteria and the result is less than the specified quantitation limit but no less than one-half the quantitation limit. Common laboratory contaminants are not reported below the quantitation limit.

B - Indicates that the analyte was found in both the sample and its associated laboratory blank. It indicates possible/probable blank contamination and warns the data user to use caution when applying the results of this analyte. Common laboratory contaminants in applicable method blanks are reported with J qualifiers to one-tenth the quantitation limit.

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument for the specific analysis.

D - Indicates all compounds identified in an analysis at a secondary dilution factor.

RE - This suffix indicates a re-analyzed sample and is appended to the sample number on the result form.

RR - This suffix indicates a re-extracted and re-analyzed sample and is appended to the sample number on the result form.

INORGANICS

U - Indicates that the analyte was analyzed for but not detected.

E - Indicates an estimated value because of the presence of interference.

RPQ00101.MA

Inorganics Analysis Data Sheet

Client Name : Olin Chemical
Project Name : 97598
Matrix Name : Solid

Report No : 30642
Date Collected : 10/1/01
Date Received : 10/3/01

Sample No.	Client ID	Analyte	Result	Units	Method	Date Analyzed	By
184724	SDC-CR-1D MS/MSD	Chromium, hexavalent	0.25U	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	43.0	%	EPA 160.3	10/5/01	GRB
184725	SDC-CR-2S	Chromium, hexavalent	74	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	22.6	%	EPA 160.3	10/5/01	GRB
184726	SDC-CR-3D	Chromium, hexavalent	220	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	56.1	%	EPA 160.3	10/5/01	GRB
184727	SDF-CR-3S	Chromium, hexavalent	28U	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	34.6	%	EPA 160.3	10/5/01	GRB
184728	SDC-CR-8D	Chromium, hexavalent	210	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	47.1	%	EPA 160.3	10/5/01	GRB
184729	SDC-CR-8S	Chromium, hexavalent	42U	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	25.1	%	EPA 160.3	10/5/01	GRB
184730	SDC-CR-7D	Chromium, hexavalent	15U	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	63.9	%	EPA 160.3	10/5/01	GRB
184731	SDC-CR-1S	Chromium, hexavalent	46U	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	21.2	%	EPA 160.3	10/5/01	GRB
184732	SDF-CR-2S	Chromium, hexavalent	1510	mg/kg	3060A/7196	10/11/01	RWE
		Solids, percent	25.5	%	EPA 160.3	10/5/01	GRB

INORGANIC QUALITY CONTROL

Client Name: Olin
Project: 97598
Job No.: 30642
Sample No: 184724

Analysis	Sample Result mg/kg	C	Duplicate Result mg/kg	C	Q	%RPD	Spl + Spk	Spike	%Rec.	Q	Method Blank	C
Cr6 Soluable	0.25	U	0.25	U		0	n/a	n/a	n/a	*	0.25	U
Cr6 Insoluable	0.25	U					3,160	4,203	75			

Analysis	LCS		LCS True	% REC
Hexavalent Cr6	36.30		40.30	90

(*) Outside QC Limits
C = Concentration Qualifier
Q = QC Qualifier
NA = Not applicable

CASE NARRATIVE FOR REPORT NUMBER 30642

Client Name : Olin Chemical

Project Name : 97598

Date : October 12, 2001

Sample No.	Sample ID	Comments
(184724)	SDC-CR-1D MS/MSD	
(184725)	SDC-CR-2S	
(184726)	SDC-CR-3D	
(184727)	SDF-CR-3S	
(184728)	SDC-CR-8D	
(184729)	SDC-CR-8S	
(184730)	SDC-CR-7D	
(184731)	SDC-CR-1S	
(184732)	SDF-CR-2S	

CASE NARRATIVE
Client: STL BURLINGTON
SDG: SDC-CR-1D

Inorganic

Method Spike

The digestates for all samples were very dark in color. Small aliquots were diluted to a final volume to remove the color interference. This dilution resulted in the inability to recover the spike concentration in the soluble sample.

A post digestion spike was performed with acceptable recovery for this sample.

30642

Geomega
2995 Baseline Rd. Suite 202
Boulder, CO 80303

303-442-2549 (phone)
303-938-8123 (fax)

Chain of Custody Record

Project: Olin
Number: C01222A
Sampling Personnel: GEI

Sent To: STL Labs
Date: 10/2/01

Sample ID	Date	Time	# of Containers	Matrix Type	Sample Filtered? Y/N	Sample Preserved? Y/N	Analyses Requested: Cr VI	Analyses Requested: per GEI/Geomega	Analyses Requested:	Analyses Requested:	Analyses Requested:	Comments
SDC-1D	10/2/01	3 pm	1	Sed	N	N						
SDC-2S	↓	↓	1	Sed	N	N						
SDC-3D			1	Sed	N	N						
~~SDC-3S~~ SDF-CR-3S (AI 10/04/01)			1	Sed	N	N						
SDC-8D			1	Sed	N	N						
SDC-8S			1	Sed	N	N						
SDC-7D			1	Sed	N	N						
SDC-1S			1	Sed	N	N						
~~SDC-2S~~ (AI 10/04/01)			1	Sed	N	N						
SDF-CR-2S												

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[signature]	10/2/01	3pm	[signature]	10/3/01	10:20am
Stephen W. Lacroix	10/3/01	15:00	[signature]	10/3/01	1500
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

on ice

Method of Shipment:

Distribution: Original - Accompany Shipment; One copy - Project Manager

* Client supplied Corrected COC for these samples 10-4-01 AI.

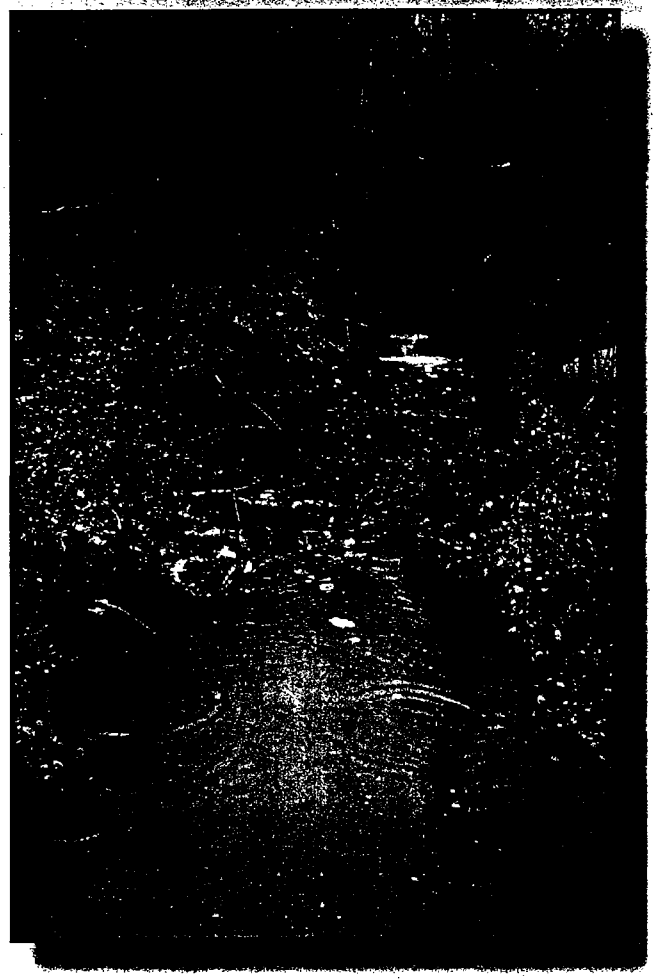
Geomega

Appendix D

Analysis of Surface Water Quality Conditions in the South Ditch Geomega, November 28, 2001

Olin Wilmington Technical Series

XIX. Analysis of Surface Water Quality Conditions in the South Ditch



Prepared for:

Olin Corporation
Wilmington, MA Facility

November 28, 2001

geomega

ood science • hard work • creative thinkin

ANALYSIS OF SURFACE WATER QUALITY CONDITIONS IN THE SOUTH DITCH

November 28, 2001

Prepared for:

Olin Environmental Management, Inc.
1186 Lower River Road, NW
Charleston, Tennessee 37310-0248

Prepared by:

Geomega, Inc.
2995 Baseline Road, Suite 202
Boulder, Colorado 80303
(303) 938-8115

Executive Summary

EXECUTIVE SUMMARY

The 51 Eames Street property in Wilmington, Massachusetts (the Property) is a former chemical manufacturing facility that has been owned and operated by various companies since the early 1950s. Historical releases at the Property have caused it, and portions of the surrounding area affected by those releases (the Site), to be listed by the Massachusetts Department of Environmental Protection as a Tier 1A Disposal Site. Olin Corporation (Olin), the current owner of the Property, is responsible for response actions at the Site under the provisions of the Massachusetts Contingency Plan.

This document was prepared in support of the Immediate Response Action (IRA) Status Report No. 2 for the South Ditch. The document presents an assessment of South Ditch surface water quality conditions during the on-going IRA and the concurrent Construction-Related Release Abatement Measure (the RAM) that was performed at the Property between September 2000 and July 2001. Information developed as part of this assessment will be used to evaluate the impact of the surface water management incidents that occurred on October 5, 2000 (resulting in the IRA condition) and June 5, 2001, and to establish a baseline against which future surface water quality can be compared to evaluate the effectiveness of the RAM. The scope of this assessment only concerned South Ditch surface water quality data.

The historic, pre-remediation water quality data for the South Ditch consist of several sampling events at various sampling locations. Early sampling events (1992-1996) focused on the collection of data for general characterization and risk assessment of the South Ditch. The most recent pre-remediation sampling event occurred in July 2000. Prior to remediation, ammonia concentrations in the South Ditch ranged by more than an order of magnitude, from non-detect to 170 mg/l, dissolved chromium concentrations were low, ranging from non-detect to 0.017 mg/l, and sulfate concentrations were highly variable and ranged from 25 to 1100 mg/l.

Remedial activities in the ditch system began on September 18, 2000 along with concomitant water quality sampling. The term "remediation data," is used in this report to refer to all data collected from the start of ditch remediation activities in September 2000

through September 4, 2001. During this period, ammonia concentrations ranged from 2 to 290 mg/l, dissolved chromium concentrations ranged from non-detect to 1.7 mg/l, and sulfate concentrations ranged from 19 mg/l to 1400 mg/l.

For the purpose of analyzing surface water data trends and variability, the report focuses on ammonia concentrations and loading in the South Ditch. The analyses are focused on ammonia because 1) ammonia is the most ubiquitous parameter in the surface water data set, 2) there is a high population of non-detects for many of the other compounds that have been analyzed for in surface water, 3) ammonia has historically been the primary risk driver in the South Ditch, and 4) ammonia is a suitable analog for many of the other inorganic COCs in surface water. Thus, trends in the ammonia data are considered to be representative of trends in other inorganic COCs.

Analyses of spatial and temporal trends and variability of ammonia concentrations in South Ditch surface water during both the pre-remediation and remediation time periods led to the following conclusions:

1. Baseline conditions were established relative to ammonia concentrations in the South Ditch. The mean baseline ammonia concentration is 49.5 mg/l with a standard deviation of ±44%;
2. The South Ditch gained roughly 80% of its ammonia load after it was joined by the OPWD in February and March 2001. Consideration of the preliminary data suggests that post-RAM improvements in groundwater discharge quality should lead to lower ammonia loading below the OPWD and that OPWD remediation may not significantly improve water quality in the South Ditch;
3. No clear temporal trend is evident in the remediation data from the South Ditch, and the monthly average ammonia concentrations are contained fully within the 95% confidence bounds of the pre-remediation data;
4. Early remediation activities, including sediment excavation and construction-related dewatering and discharge probably caused temporary, short-lived increases in ammonia concentrations in the South Ditch;

5. Remediation ammonia levels in the South Ditch exceeded the pre-remediation 95% upper confidence level only 12 times out of 93 samples. Of these 12 exceedences, seven occurred during the ditch system excavation phase of the remediation and the remaining five were related to the June 5, 2001 dewatering incident;

6. Plant B discharge appears to lower ammonia concentrations in the South Ditch by approximately 25% over levels when not discharging, but the reduction is not statistically significant.

7. The location of the Plant B discharge has a statistically significant impact on ammonia concentrations in the South Ditch. The mean ammonia concentration increases by approximately 30% when Plant B discharge is moved from the upstream end of the South Ditch to the downstream end of the ditch. This is attributed to reduced groundwater discharge to the ditch due to the higher surface water stage when Plant B is discharging at the upstream end of the ditch and, conversely, increased groundwater discharge to the ditch when Plant B is discharging at the downstream end of the ditch.

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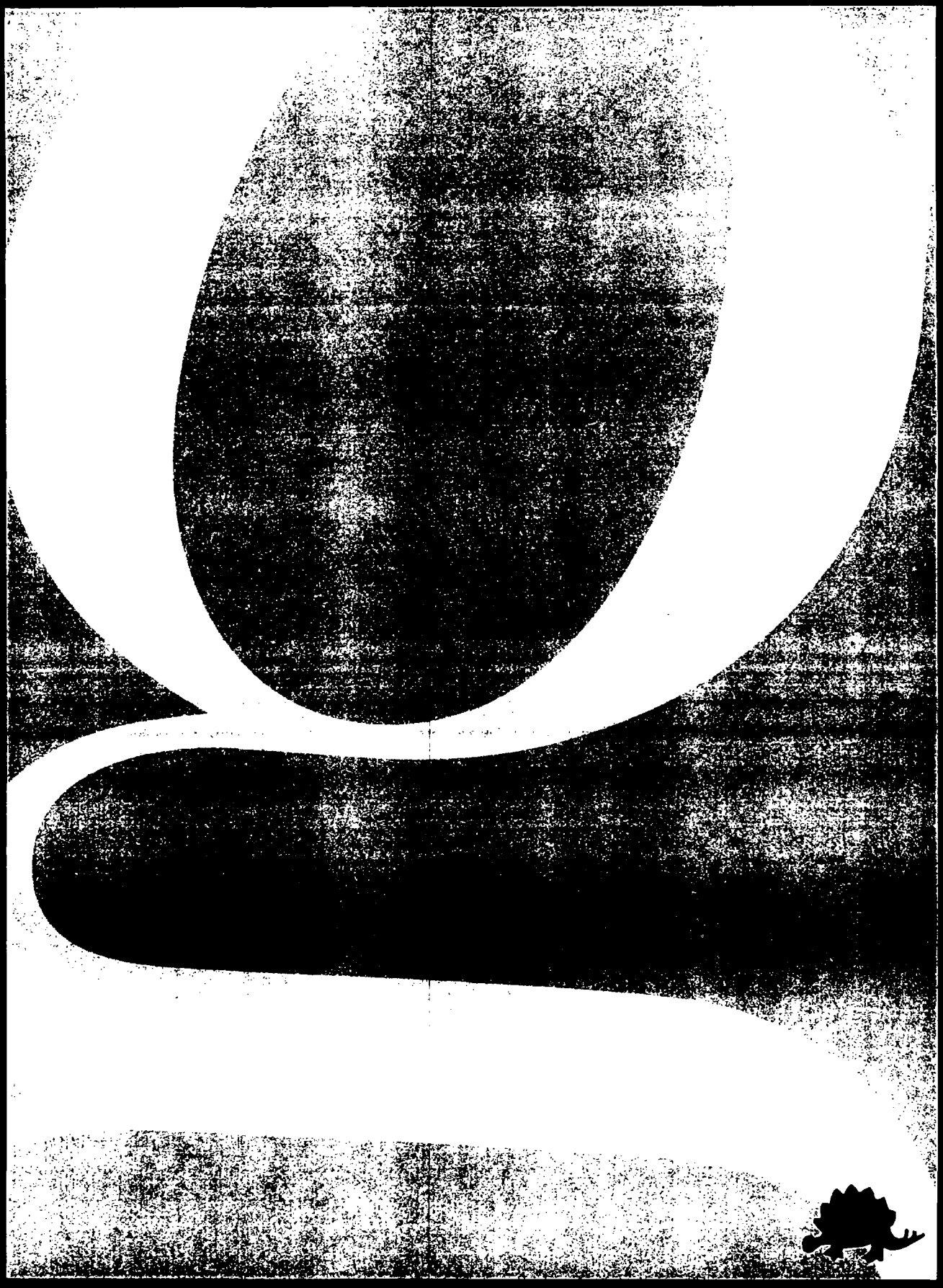

1 INTRODUCTION

The 51 Eames Street property in Wilmington, Massachusetts (the Property) is a former chemical manufacturing facility that has been owned and operated by various companies since the early 1950s. Historical releases at the Property have caused it, and portions of the surrounding area affected by those releases (the "Site"), to be listed by the Massachusetts Department of Environmental Protection (MADEP) as a Tier 1A Disposal Site (Release Tracking No. 3-0471). Olin Corporation (Olin), the current owner of the Property, is responsible for response actions at the Site under the provisions of the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000.

This document was prepared by Geomega, Inc. on behalf of Olin to support the Immediate Response Action (IRA) Status Report No. 2 for the South Ditch. The purpose of this report is to present an assessment of South Ditch surface water quality conditions during the on-going IRA and the concurrent Construction-Related Release Abatement Measure (the "RAM") that was performed at the Property between September 2000 and July 2001. Information developed as part of this assessment will be used to evaluate the impact of the surface water management incidents that occurred on October 5, 2000 (resulting in the IRA condition) and June 5, 2001, and to establish a baseline against which future surface water quality can be compared to evaluate the effectiveness of the RAM. The scope of this assessment only concerned South Ditch surface water quality data.

This report is divided into five main sections. Section 1 provides background information on the South Ditch configuration and hydrology and the remediation activities that took place during the RAM. Section 2 summarizes historic pre-remediation data and conditions found in the South Ditch. Section 3 summarizes data collected from the start of the RAM through September 4, 2001 (herein referred to as "the remediation period"). Section 4 presents analyses of spatial and temporal trends in ammonia concentrations in the South Ditch. Section 5 evaluates potential mechanisms that could effect ammonia concentrations within the South Ditch and discusses the baseline conditions developed from the available data. Conclusions are presented in Section 6.

1.1 Background

The ditch system associated with the Property is an interconnected man-made drainage system for surface water that borders two sides of, and crosses the center of the Property. The ditch system consists of the West Ditch, South Ditch, Ephemeral Ditch, and East Ditch (Figure 1). The West Ditch is subdivided into the On-Property West Ditch (located within the Property boundary) and the Off-Property West Ditch (OPWD). A culvert connects the OPWD to the South Ditch near the location where the On-Property West Ditch joins the South Ditch. The South Ditch traverses the property, passing the Central Pond, and eventually drains into the East Ditch. The Ephemeral Drainage flows to the east and merges with the South Ditch near the eastern property boundary, just upstream from the confluence with the East Ditch. All of the On-Property ditches ultimately flow into the East Ditch, which continues to flow to the south and eventually becomes a tributary to the Aberjona River.

Historical waste disposal practices at the Property have caused certain chemicals to be present in groundwater beneath and adjacent to the Property. Because groundwater discharges to various parts of the ditch system at different times of the year, these chemicals are also present in surface water.

A weir was constructed across the South Ditch in 1992 to increase water levels near the West Ditch/South Ditch confluence, thereby reducing groundwater discharge and minimizing generation of flocculent precipitates ("floc"). The weir also served to limit the downstream transport of floc from the OPWD. Evaluations of the impact of the weir on the groundwater and surface water hydrology of the area surrounding the West and South Ditches are reported in Smith (1997). In general, the evaluation indicated that:

- Surface water recharges groundwater upstream of the weir area during low groundwater levels (late summer and early fall). However, the recharge is minimal and occurs only for a short period of a few weeks to a couple of months over the course of the year. During periods of high groundwater (winter and spring), groundwater discharges to the ditch.

- Groundwater discharges to portions of the South Ditch between the weir area and the East Ditch under both high and low water-level conditions. However, higher water levels in the Central Pond indicate groundwater recharge in that area.

This description of groundwater and surface water interactions in the vicinity of the West and South Ditches summarizes the general understanding of hydrological conditions in that area prior to the recent RAM-related remediation activities at the Property.

Since 1982, Olin has operated a groundwater extraction and treatment facility at the location of the former Plant B tank farm (Plant B Remediation System). The facility is designed to treat groundwater containing light, non-aqueous phase liquid (LNAPL), extractable petroleum hydrocarbons (EPH), and volatile petroleum hydrocarbons (VPH) in the Plant B area. The National Pollution Discharge Elimination System (NPDES) permitted outfall from Plant B has historically discharged to the to the On-Property West Ditch before it joins the South Ditch (Figure 1). The added flow to the South Ditch from the Plant B discharge likely reduces chemical concentrations in the South Ditch through dilution and increased suppression of groundwater discharge. Hence, the Plant B discharge is an important consideration for the evaluation of future South Ditch water quality because the treatment system will cease operations when the remedial objectives of the Plant B Remediation System are achieved.

Remediation activities at the Property in the vicinity of the South Ditch, referred to herein as the Construction-Related RAM, were started in July 2000 (GEI 2001). Preparation and excavation of sediments in portions of the Ditch System commenced in September 2000. The RAM had three main objectives:

1. Remove contaminated sediments that exhibited significant concentrations of chromium and phthalate from upper portions of the On-Property Ditches.
2. Contain residual Dense Aqueous Phase Liquid (DAPL) and significantly contaminated groundwater within a subsurface containment system (slurry wall) to reduce discharge of contaminated groundwater, and therefore mitigate the impact on surface water and sediments within the ditch system.

3. Eliminate areas of significant soil contamination (hot spots).

Removal of contaminated sediments from the upper portions of the On-Property Ditch System involved excavating sediments from the On-Property West Ditch and portions of the South Ditch to a depth of several feet below the existing grade. Following the excavations, a concrete culvert was installed to replace the On-Property West Ditch, while clean backfill materials were used to reconstruct the South Ditch and restore it to its previous grade. A box culvert was also installed at the intersection of the On-Property West and South Ditches in the vicinity of the former weir. Section 5.3 of this report discusses the observed effects that these activities had on South Ditch surface water quality.

During the installation of the box culvert, pumped groundwater was inadvertently discharged to remediated portions of the South Ditch. This incident and the ensuing response measures, generally referred to as the "October 5, 2000 incident," are described in the South Ditch/Weir Area IRA Assessment and Plan (GEI 2000).

A separate surface water incident occurred for a period of about two hours during the afternoon of June 5, 2001. That incident involved an estimated 5,000 to 15,000 gallons of surface water and low pH groundwater captured in a dewatering sump and discharged to the restored South Ditch. The June 5, 2001 incident and the ensuing response measures are described in GEI (2001).

Concurrent with the Construction-Related RAM, Olin undertook a second RAM to remove buried drums and debris from two areas at the Property, including an area adjacent to parts of the On-Property West Ditch (Figure 2). The Drum Removal RAM was initiated in August 2000 and the fieldwork associated with that RAM was completed in July 2001. A Drum RAM Completion Statement was submitted to MADEP in July 2001.

1.2 Site-Related Chemicals of Concern

More than 100 different chemicals have been investigated in Olin Site media on the basis of potential concern for environmental risk. In this report, the phrase "Chemical of

Concern" (COC) refers to those chemicals that have been previously analyzed in Olin Site media, regardless of whether or not they have been retained in prior risk assessment evaluations or identified as remediation drivers. As such, the term COC is used broadly in this report for purposes of the data analysis, but its use is not intended to meet any particular regulatory definition.

Potential COCs at the Olin Site were identified in the Screening-Level Environmental Risk Assessment (ABB 1993) and in the Supplemental Phase II report (Smith 1997). COCs at the 51 Eames Street Property, through which the South Ditch flows, were identified in the Focused Risk Assessment (HLA 2000). Based on those reports, the primary inorganic COCs that are of concern in Site media are ammonia, chromium, sulfate, chloride, and sodium. The primary organic COCs that are of concern in Site media are n-nitrosodiphenylamine (NNDPA), phthalates (primarily bis(2-ethylhexyl)phthalate, BEHP), and trimethylpentenes (TMPs). A list of all of the previously investigated COCs in surface water at the Property is presented on Table 1.

With regard to the South Ditch, the most recent data examined in Smith (1997) showed that the concentrations of ammonia, aluminum, and iron in South Ditch surface water exceeded applicable Massachusetts Water Quality Standards, with ammonia being the primary risk driver for the aquatic habitat.

2 PRE-REMEDIATION DATA

The historical South Ditch information considered in this report includes surface water quality data collected as part of previous Phase II investigations (ABB 1993; CRA 1993; Smith 1997), which are contained in the Olin-Wilmington database. Additional data are from subsequent studies on the South Ditch approved by MADEP. The pertinent information from the Olin-Wilmington database is presented in Appendix A. Collectively there are 1,991 data points for the pre-remediation time period (prior to September 2000), with the oldest data collected on August 31, 1992.

The historic water quality data for the South Ditch consist of several sampling events at various sampling locations (Figure 2 and Table 2). Early sampling events (1992-1996) events focused on the collection of data for general characterization and risk assessment of the South Ditch. The most recent pre-remediation sampling event occurred in July 2000 (Appendix B).

Historic ranges for the primary COCs are presented on Table 3. Ammonia concentrations in the South Ditch ranged by more than an order of magnitude, from non-detect to 170 mg/l. Dissolved chromium concentrations were low, ranging from non-detect to 0.017 mg/l. Sulfate concentrations were highly variable and ranged from 25 to 1100 mg/l.

3 REMEDIATION DATA

Preliminary site remediation activities began in July 2000 and consisted of the Drum RAM activities. Remedial activities in the ditch system began on September 18, 2000 along with concomitant water quality sampling. "Remediation data," as the term is used in this report, consist of data collected from the start of ditch remediation activities in September 2000 through September 4, 2001. Appendix A lists 847 surface water chemistry data points for the South Ditch during this one-year period. Data collection during the remediation included ongoing NPDES monitoring and additional focused data collection (e.g., to characterize the effects of storm water runoff on the South Ditch). Surface water samples collected during the remediation were analyzed for various parameters, including total metals, dissolved metals, sulfate, chloride, ammonia, and nitrate/nitrite (GEI 2001).

At times data collection was intensive, with daily samples collected during the early stages of remediation. As a result, the number of remediation samples contrasts strongly with the number of pre-remediation samples (Figure 3). A summary of all surface water chemistry data collected in the South Ditch since September 2000 is presented in Appendix C.

Remediation data ranges for the primary COCs are presented on Table 4. Ammonia concentrations show a range of 2 to 290 mg/l during the remediation period. Dissolved chromium concentrations ranged from non-detect to 1.7 mg/l. Sulfate concentrations ranged from 19 mg/l to 1400 mg/l.

3.1 Deployment and Use of Auto Samplers

One ISCO 6700 automatic sampler was deployed at location ISCO-1 (Figure 2) in April 2000 to assess the effects of precipitation and storm water runoff on solute concentrations from the OPWD. The sampler collected samples during rain events over the three-day period April 20 through April 22, 2000. Sampling was subsequently suspended until January 2001.

On January 16, 2001, two additional ISCO samplers equipped with Model 750 ultrasonic flow sensors were deployed in the South Ditch (ISCO-2) upstream from the confluence of the East Ditch, and in the East Ditch (ISCO-3) upstream from the South Ditch (Figure 2). In the early part of 2001, all three ISCO samplers were used to collect stage (water level elevation) and flow-velocity data, but no water samples were collected by the ISCOs during that time because weekly samples were already being collected from the South Ditch as part of the Construction-Related RAM and the on-going South Ditch/Weir Area IRA. The three ISCO samplers remained deployed until a severe storm (the March 23rd 2001 "Nor'easter") disabled the samplers. The stage and velocity data, in conjunction with surface water chemistry data, were used to calculate solute loading to the South Ditch during the winter and early spring of 2001. This seasonal time period is typically associated with high groundwater elevations and corresponding groundwater discharge to the ditch.

3.2 Average Daily Flows in South Ditch

Stage data from the three samplers show a consistent flow regime throughout the late winter (Figures 4a, 4b, 4c). Each sampler recorded a small daily rise in stage, most likely due to minor diurnal snowmelt events because most of the daily high elevations were recorded in the late afternoon. Additionally, all of the samplers recorded the extreme stage elevations of the Nor'easter in late March.

Because the ISCO samplers are unable to measure velocities below about 0.1 foot per second (fps), velocity data from the three samplers are sparse during the generally low flow conditions of the ditches in the winter. However, low flow conditions were also at least partly the result of remediation activities at the Property (e.g., the temporary rerouting of Plant B discharge from the On-Property West Ditch to the downstream end of the South Ditch, as discussed below). Some of the velocity data that were collected, however, were suitable for calculating stream flows.

Flow volume in the South Ditch was calculated based on a stage/cross-sectional area relationship and the measured stream stage. Specifically, the standard USGS (1976) method for developing a stage discharge relationship was used to calculate the stream

channel cross-sectional area for a given water elevation (Figure 5). The flow volume was calculated by multiplying the wetted cross-sectional area (determined from stage data) by the flow velocity. Discharge of the OPWD was calculated by multiplying the width of the culvert (1.83 feet) by the water depth (determined from stage data) and then multiplying the resulting cross-sectional area by the flow velocity. The calculated average daily flows from the OPWD and in the South Ditch are shown on Figure 6.

4 DATA TRENDS AND VARIABILITY

For the purpose of analyzing surface water data trends and variability, this report focuses on ammonia concentrations and loading in the South Ditch. The analyses are focused on ammonia for several reasons: First, ammonia is the most ubiquitous parameter in the surface water data set; Second, there is a high population of non-detects for many of the other compounds that have been analyzed for in surface water; Third, ammonia has historically been the primary risk driver in the South Ditch (Smith 1997); Fourth, ammonia is a suitable analog for many of the other inorganic COCs in surface water. For example, sulfate and ammonia are strongly correlated (ρ=0.81, α<0.05) at ISCO-2 in the April 2000 samples (Figure 7), and previous investigations have also identified correlations between ammonia and other Property-related chemicals (Geomega 1999a, 1999b). Thus, trends in the ammonia data are considered to be representative of trends in other inorganic COCs.

4.1 Spatial Characteristics of Ammonia Data

Previous sampling efforts typically have not collected synoptic data along the length of the South Ditch. However, there are two sets of data available to assess potential spatial trends in ammonia concentrations and loading along the South Ditch. The first data set consists of samples collected at several points along of the South Ditch in April 2000 (the "SD" locations shown on Figure 2). The second data set consists of three dates in February and March 2001 when concomitant water quality and ditch flow data are available for both upstream and downstream locations on the South Ditch.

4.1.1 April 2000 Data Set

Prior to remediation activities, surface water samples were collected at the upstream end of the South Ditch where the OPWD enters the Property (location ISCO-1) and at several locations in the South Ditch downstream to the confluence of the East Ditch (Figure 2) on April 20, 2000. The objective of the sampling was to obtain preliminary information on the effects of precipitation and storm water runoff on the spatial distribution of water quality within the South Ditch.

Results of the April 2000 sampling event revealed no discernable spatial trend in the ammonia data. Concentrations were generally consistent throughout the length of the South Ditch at that time (Figure 8).

4.1.2 February and March 2001 Data Set

Ammonia concentrations measured at the terminus of the South Ditch (ISCO-2) were generally higher at the terminus of the ditch than at ISCO-1 at the upstream end of the ditch (Figure 9). To determine whether this was a result of increased solute loading, the measured ammonia concentrations were combined with calculated stream discharges on the dates for which concomitant water quality and ditch flow data were available (February 15, March 16, and March 22, 2001) to calculate solute loads at each end of the South Ditch (Figure 10).

For samples collected prior to the Nor'easter, loading from the OPWD represent approximately 14-26% of the load at the South Ditch (Table 5). On the day of the Nor'easter, calculated ammonia loading from the OPWD exceeded loadings in the South Ditch by approximately 140%. This latter result is attributed to flow volume measurement error associated with the Nor'easter flooding because it is unlikely that ammonia would be lost from the system, as greater loading at the OPWD relative to the South Ditch terminus would imply. Thus, on the basis of the two pre-Nor'easter observations in February and March 2001, the South Ditch gained roughly 80% of its ammonia load after it was joined by the OPWD. Consideration of these preliminary data suggests that post-RAM improvements in groundwater discharge quality should lead to lower ammonia loading below the OPWD and that OPWD remediation may not significantly improve water quality in the South Ditch.

4.2 Temporal Characteristics of Ammonia Data

Temporal trends in pre-remediation samples cannot be determined due to the sparse data (Figure 3). The six pre-remediation samples collected at the terminus of the South Ditch are too widely spaced in time to establish any quantitative trend.

The amount of data collected during the remediation period (n = 93) is substantially higher than during the pre-remediation period and, therefore, is likely to have better characterized the variability of ammonia in the system. Figure 11 shows the high density of samples that were collected in the early part of the remediation, as the ditch system was being excavated and the slurry wall constructed. During this period, water quality samples were collected on a daily basis. Following completion of the slurry wall, weekly sampling was instituted.

Samples collected in close proximity over time inherently encompass greater variability, which can make trend detection more difficult. Therefore, in an effort to reveal any temporal trends in ammonia in the South Ditch, averages were calculated for each month that remediation samples were collected. Figure 11 shows the monthly average ammonia concentrations at the South Ditch terminus during the remediation period along with a timeline of remediation activities. From this perspective, no clear temporal trend is evident in the data and the monthly trend is contained fully within the 95% confidence bounds of the pre-remediation data (discussed in Section 5.1).

5 DISCUSSION OF VARIABILITY AND BASELINE CONDITIONS

5.1 Sources of Variability

Three major sources of variability need to be addressed in order to fully assess ammonia trends. The three issues are:

1. The high frequency of sampling in the South Ditch during the remediation phase, which allows more accurate characterization of ammonia variability than the pre-remediation data;
2. Moving Plant B discharge from the On-Property West Ditch to the downstream end of the South Ditch probably affected the hydrologic conditions of the South Ditch surface water/groundwater interface;
3. Remedial activities in the South Ditch probably affected the surface water/groundwater hydrologic conditions by temporarily lowering the ditch bottom, thus allowing it to intercept additional ammonia-bearing groundwater.

5.1.1 Sampling Frequency

Historic pre-remediation samples comprised six samples collected over an eight-year period, whereas a total of 93 samples were collected during remediation over a period of just under a year. The overall system variability should be better characterized during a period of higher frequency sampling (Sanders, et. al. 1990). Thus, to properly interpret the water quality data, it is important to examine the effects of sampling frequency.

In order to compare the pre-remediation ammonia population with the remediation era samples, confidence bounds for the historic pre-remediation samples were calculated and compared to the recently collected remediation samples. Confidence bounds represent the probability that the mean of ammonia concentration will lie within a certain interval about the mean. The 95% confidence bounds were calculated from:

$$X - 1.96 \frac{\sigma}{\sqrt{n}} \quad , \quad X + 1.96 \frac{\sigma}{\sqrt{n}}$$

where: x = sample mean,

σ = Sample standard deviation, and

n = number of samples.

Results of this calculation indicate that the upper (UCL) and lower (LCL) 95% confidence levels for the pre-remediation data are 111 and 19 mg/l, respectively.

Only 12 samples out of 93 collected during remediation exceeded the 95% UCL (Figure 11). Seven of the exceedences occurred in the early part of the remediation (prior to 10/30/00) when the ditch system was being excavated and the box culvert installed. The remaining five exceedences are associated with the June 5, 2001 incident, when diffuse layer groundwater was captured in a dewatering sump and discharged to the South Ditch (GEI 2001). In both cases the exceedences were short-lived, with ammonia concentrations returning to pre-remediation levels within a few days (Figure 11). Thus, with brief exceptions that appear to be related to specific remediation activities, the remediation-era ammonia concentrations are generally consistent with the variability expected on the basis of the pre-remediation data. This implies that the higher frequency sampling during the remediation supports the degree of ammonia variability expressed by the pre-remediation data set.

5.1.2 Plant B Discharge

Remediated groundwater from Plant B was originally discharged at the northern end of the On-Property West Ditch (locations identified on Figure 1). Since the beginning of the slurry wall installation, the discharge was periodically moved to two other locations (Figure 1):

- 8/16/00 – The outfall was moved to the lower South Ditch location "A" to facilitate the excavation of the On-Property West Ditch;
- 12/4/00 – The outfall was moved back to the to the historic discharge location at the upstream end of the On-Property West Ditch. However, by this time the On-Property West Ditch had been reconstructed and a concrete culvert installed in close proximity to the outfall. The culvert discharged at the location of the former weir "B" at the upstream end of the South Ditch;

- 4/17/01 – The outfall was moved again to the lower South Ditch location "A". (*pers. comm.* Larry Welch, GEI, 7/18/01).

The objectives of this analysis were to: 1) determine if Plant B discharge affected ammonia concentrations leaving the Property, and if so, quantify the extent of the impact, and 2) determine if the discharge location at "A" or "B" (Figure 1) has an effect on ammonia concentrations exiting the Property, and if so, quantify the impact.

5.1.2.1 Effects of Plant B Discharge in General

To address the first objective, data from surface water samples collected at the ISCO-2 location (Figure 2) were subdivided into two groups, one when Plant B was generating discharge and one when there was no Plant B discharge to the ditch system. Summary statistics (Table 6) were generated for each group of data (discharge vs. no discharge).

The data indicate a clear distinction between samples collected during discharge and non-discharge events (Figure 12). Ammonia concentrations are lower during discharge events, have lower variability, a lower maximum value, and a lower range between maximum and minimum values. These data indicate that Plant B discharge reduces ammonia concentrations leaving the Property by about 25% over levels when not discharging, most likely through dilution and/or increased suppression of groundwater discharge to the South Ditch.

The differences between the two discharge scenarios, however, are not statistically significant. Results of a t-test comparing the two population means (Taylor 1990) indicate that the means of discharge and non-discharge are not statistically different ($p=0.21$, $\alpha=0.05$). Therefore, while Plant B discharge appears to lower ammonia concentrations in the South Ditch, the reduction is not statistically significant.

5.1.2.2 Effects of Plant B Discharge Location

A similar analysis was performed to determine if the location of the Plant B discharge affects downstream ammonia concentrations leaving the property. Ammonia data from the ISCO-2 location were evaluated with reference to the location of the discharge, either at the downstream end of the South Ditch or at the upstream end in the vicinity of the

former weir (Figure 1). When the Plant B remediation system is operating there is typically little variability in the discharge rate (*pers. comm.* Al Peirce, Olin Corporation, 11/21/01).

Results of the statistical analysis (Table 7) show substantially lower concentrations during periods when Plant B is discharging at the West Ditch (Location "B") compared to discharge at the downstream end of the South Ditch (Location "A"). This is attributed to reduced groundwater discharge to the ditch due to the higher surface water stage when Plant B is discharging at Location "B" and, conversely, increased groundwater discharge to the ditch when Plant B is discharging at Location "A." Additionally, there is substantially less variability in ammonia concentrations and, accordingly, a smaller range of ammonia concentrations (Figure 13).

A t-test was performed to determine if the difference in ammonia concentrations between the two discharge points was significant. Results of the test demonstrate a statistically significant difference between mean concentrations (p=0.04, α=0.05). The mean ammonia concentration increases by approximately 30% when Plant B discharge is moved from the upstream end of the South Ditch to the downstream end of the ditch. This effect is expected to be either more or less pronounced depending on seasonal fluctuations in flow rates from the OPWD. However, there were insufficient flow data to quantitatively evaluate the magnitude of the expected variability.

5.1.3 Remediation Activities

Remediation activities included excavation of contaminated sediments from the On-Property West Ditch and portions of the South Ditch, and also the installation of a box culvert in the vicinity of the former weir. The manifestations of the remediation activities were that the ditch bottom was temporarily lowered by the excavation, allowing it to intercept groundwater with a higher concentration of ammonia than otherwise would be introduced into the system. In addition, sump-pump dewatering of the ditch occurred during excavation to install the box culvert and as part of the June 5, 2001 incident, which for a short periods of time drew deeper water from the diffuse layer closer to the surface where it discharged into the ditch. These actions could potentially contribute to

the observed variability in ammonia concentrations in the South Ditch during remediation.

Data collected during the remediation are consistent with the understanding of increased discharge of ammonia-enriched groundwater during dewatering and excavation. As discussed in Section 5.1.1, all but five of the ammonia samples that exceeded the upper 95% confidence limit of the pre-remediation ammonia data were collected during the ditch excavation and box culvert installation phase of the remediation and the final exceedences were associated with the June 5, 2001 dewatering incident.

In addition, groundwater flow modeling indicates that there was flow from the DAPL/diffuse layer into the ditch system during the October 5, 2000 incident (Geomega 2000). Besides drawing deeper groundwater closer to the surface, the dewatering also removed the surficial layer of fresh water that may have provided a reactive and diffusive barrier to the underlying ammonia-enriched groundwater.

Thus, both the remediation data and groundwater flow modeling support the theory that perturbation of the shallow groundwater system during excavation and dewatering resulted in temporary, short-lived increases in ammonia concentrations in the ditch system. Since completion of the dewatering and excavation, South Ditch ammonia levels have been consistent with the range of historic data (Figure 11).

5.2 Baseline Conditions

Certain remediation activities appear to have temporarily increased ammonia concentrations in the South Ditch (Section 5.1.3). Additionally, moving the location of Plant B discharge from the upstream end of the South Ditch to the downstream end of the ditch resulted in a statistically significant increase of approximately 30% in the mean ammonia concentration (Section 5.1.2). Nevertheless, most of the remediation-era ammonia data are consistent with the variability expressed by the available pre-remediation data, and inclusion of the higher frequency data during the remediation should improve the robustness of the statistical characterization of ammonia in the South Ditch (Section 5.1.1).

A determination of baseline ammonia conditions for the South Ditch was made by eliminating the 12 anomalous data points that exceeded the 95% UCL, which are attributed to atypical conditions resulting from temporary remediation activities, and adjusting the measured ammonia concentrations down by 30% during periods when Plant B discharge was being diverted to the downstream end of the South Ditch. Summary statistics, representing baseline conditions, were then computed for the resulting data set (Table 8). The mean baseline ammonia concentration was determined to be 49.5 mg/l with a standard deviation of ±44%.

6 CONCLUSIONS

Conclusions drawn from the data analyses presented in this report are as follows:

1. Baseline conditions were established relative to ammonia concentrations in the South Ditch. The mean baseline ammonia concentration is 49.5 mg/l with a standard deviation of ±44%;
2. The South Ditch gained roughly 80% of its ammonia load after it was joined by the OPWD in February and March 2001. Consideration of these preliminary data suggests that post-RAM improvements in groundwater discharge quality should lead to lower ammonia loading below the OPWD and that OPWD remediation may not significantly improve water quality in the South Ditch;
3. No clear temporal trend is evident in the remediation data from the South Ditch, and the monthly average ammonia concentrations are contained fully within the 95% confidence bounds of the pre-remediation data;
4. Early remediation activities, including sediment excavation and construction-related dewatering and discharge probably caused temporary, short-lived increases in ammonia concentrations in the South Ditch;
5. Remediation ammonia levels in the South Ditch exceeded the pre-remediation 95% UCL only 12 times out of 93 samples. Of these 12 exceedences, seven occurred during the ditch system excavation phase of the remediation and the remaining five were related to the June 5, 2001 dewatering incident;
6. Plant B discharge appears to lower ammonia concentrations in the South Ditch by approximately 25% over levels when not discharging, but the reduction is not statistically significant.
7. The location of the Plant B discharge has a statistically significant impact on ammonia concentrations in the South Ditch. The mean ammonia concentration increases by approximately 30% when Plant B discharge is moved from the upstream end of the South Ditch to the downstream end of the ditch. This is attributed to reduced groundwater discharge to the ditch due to the higher surface water stage when Plant B is discharging at the upstream end of the ditch and,

conversely, increased groundwater discharge to the ditch when Plant B is discharging at the downstream end of the ditch.

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Tables

Table 1. Previously Identified COCs in Surface Water at Olin Site

Parameter	Surface Water COC[1]
Volatile Organics	
1,1,1-Trichloroethane	Yes
1,1,2,2-Tetrachloroethane	NA
1,1,2-Trichloroethane	NA
1,1-Dichloroethane	No
1,1-Dichloroethene	NA
1,2,4-Trimethylbenzene	NA
1,2-Dichloroethane	NA
1,2-Dichloroethene (total)	Yes
1,2-Dichloropropane	NA
1,3,5-Trimethylbenzene	NA
2,4,4-Trimethyl-1-pentene	Yes
2,4,4-Trimethyl-2-pentene	Yes
2-Butanone (MEK)	No
2-Hexanone	NA
4-Methyl-2-Pentanone (MIBK)	Yes
Acetone	Yes
Benzene	NA
bis(Chloromethyl)ether	NA
Bromodichloromethane	NA
Bromoform	Yes
Bromomethane (Methyl Bromide)	NA
Carbon Disulfide	NA
Carbon Tetrachloride	NA
Chlorobenzene	NA
Chloroethane	Yes
Chloroform	NA
Chloromethane (Methyl Chloride)	NA
Dibromochloromethane	No
Dibromomethane	NA
Ethylbenzene	Yes
Isopropyl Benzene	NA
Methylene Chloride	Yes
Methyl-t-butyl ether (MTBE)	NA
Styrene	NA
Tetrachloroethene (PCE)	NA
Toluene	Yes
Trichloroethene (TCE)	Yes
Vinyl Chloride	Yes
Xylenes, Total	Yes
Semivolatile Organics	
1-Methylnaphthalene	NA
1,2,4-Trichlorobenzene	No
1,2-Dichlorobenzene	NA
1,3-Dichlorobenzene	NA
1,4-Dichlorobenzene	No
2,4,6-Trichlorophenol	NA
2,4-Dichlorophenol	NA
2,4-Dimethylphenol	NA
2,6-Dinitrotoluene	NA

Table 1. Previously Identified COCs in Surface Water at Olin Site

Parameter	Surface Water COC[1]
2-Chlorophenol	NA
2-Methylnaphthalene	NA
2-Methylphenol (o-Cresol)	No
2-Nitrophenol	NA
4-Bromophenyl-phenylether	NA
4-Chloro-3-methylphenol	NA
4-Chloroaniline	NA
4-Chlorophenyl-phenylether	NA
4-Methylphenol (p-Cresol)	NA
4-Nitroaniline	NA
4-Nitrophenol	No
Acenaphthene	NA
Acenaphthylene	NA
Anthracene	NA
Benzo(a)Anthracene	NA
Benzo(a)Pyrene	No
Benzo(b)Fluoranthene	NA
Benzo(g,h,i)Perylene	NA
Benzo(k)Fluoranthene	NA
Benzoic Acid	NA
Benzyl Alcohol	NA
bis(2-Ethylhexyl)phthalate	Yes
Butylbenzylphthalate	NA
Chrysene	NA
Dibenzo(a,h)Anthracene	NA
Dibenzofuran	NA
Diethylphthalate	NA
Dimethylphthalate	NA
Di-n-butylphthalate	No
Di-n-octylphthalate	Yes
Fluoranthene	NA
Fluorene	NA
Hexachlorobytadiene	NA
Indeno(1,2,3-cd)Pyrene	NA
Isophorone	NA
Naphthalene	NA
Nitrobenzene	NA
N-Nitrosodimethylamine	NA
N-Nitrosodiphenylamine	Yes
Phenanthrene	NA
Phenol	Yes
Pyrene	NA
Herbicides	
2,4,5-T	NA
2,4-D	NA
Dinoseb	NA
MCPA	NA
MCPP	NA
Picloram	NA

Table 1. Previously Identified COCs in Surface Water at Olin Site

Parameter	Surface Water COC[1]
Pesticides/PCBs	
2,4,5-TP	NA
2,4-D	NA
4,4'-DDD	NA
4,4'-DDT	NA
4,4'-PDE	NA
Aldrin	NA
Alpha-BHC	NA
Alpha-Chlordane	NA
Beta-BHC	NA
Delta-BHC	NA
Dieldrin	NA
Endosulfan I	NA
Endosulfan II	NA
Endosulfan Sulfate	NA
Endrin	NA
Endrin Aldehyde	NA
Endrin Ketone	NA
Gamma-BHC	NA
Gamma-Chlordane	NA
Heptachlor	NA
Heptachlor Epoxide	No
Methoxychlor	NA
PCB-1016	Yes
PCB-1254	Yes
PCB-1260	Yes
Metals	
Aluminum	Yes
Antimony	NA
Arsenic	Yes
Barium	Yes
Beryllium	NA
Cadmium	NA
Calcium	Yes
Chromium	Yes
Cobalt	Yes
Copper	Yes
Cyanide	NA
Hexavalent Chromium	Yes
Iron	Yes
Lead	Yes
Magnesium	Yes
Manganese	Yes
Mercury	Yes
Nickel	Yes
Potassium	Yes
Selenium	NA
Silver	NA
Sodium	Yes
Thallium	NA

Table 1. Previously Identified COCs in Surface Water at Olin Site

Parameter	Surface Water COC[1]
Trivalent Chromium	Yes
Vanadium	Yes
Zinc	Yes
Kempore and Opex	
Kempore (Azodicarbonamide)	NA
Opex	NA
Inorganics	
Alkalinity - Field	Yes
Bicarbonate Alkalinity as CaCO	Yes
Carbonate, Total as C	Yes
Chloride	Yes
Nitrate as N	Yes
Nitrite as N	Yes
Nitrogen, Ammonia	Yes
Nitrogen, total Kheldahl as N	NA
Phosphate as P	NA
Phosphorous	NA
Silica as SiO2	Yes
Silicon	NA
Strontium	NA
Sulfate as SO4	Yes
Sulfide	Yes

Notes:

[1] See text for definition of COC as used in this report.

[2] Sources = Smith (1997), HLA (2000)

NA = not analyzed for in the corresponding media.

No = not retained for risk assessment purposes.

Yes = retained for risk assessment purposes.

Table 2. Summary of Previous Surface Water Sampling Activities in South Ditch

Date	Locations Sampled	Sampling Objective
Aug-92	SW-6	Phase II Characterization
Sep-92	SW-7,8,9,10,11,14,15,17	Phase II Characterization
Dec-92	SW-6,7,8,9,10,11,14,15,17	Phase II Characterization
Feb-95	SW-11,14,15,17	Phase II Characterization
May-95	SW-11,14,15,18	Phase II Characterization
Jul-95	SW-14,17	Phase II Characterization
Oct-95	SW-9,11, GSW-12	Geochemical Characterization, Chromium VI
Apr-96	GSW-1,2,3,P, SW-6	Chromium VI
Jan-97	BS005,6,7,8,9,10,11	Risk Assessment
Apr-00	SD-1,SD-2,SD-3,SD-4,SD-5,SD-6	Stormwater
Jul-00	NP-1, NP-2, NP-3	Pre-remediation samples
Sep-00 through Sep-01	ISCO1,2, NP-1, SD26-2, SD-SW11A-E	Remediation Samples

Table 3. Historic Concentration Ranges for Primary COCs in South Ditch Surface Water

Inorganic Parameter (ppm)	Minimum	Min Location	Maximum	Max Location
Ammonia	ND	GSW-12	170	SW-11
Chromium (dissolved)	ND	All	0.017	SW-11
Sulfate	25	GSW-12	1,100	SW-9
Chloride	35	GSW-12	220	SW-15
Sodium	8.7	NP-2	220	SW-17
Organic Parameter (ppb)				
di-n-butylphthalate	NA	NA	NA	NA
di-n-octylphthalate	ND	ALL	130	SW-6
butylbenzylphthalate	NA	NA	NA	NA
bis(2-ethylhexyl)phthalate	ND	SW-6,7,8,9,10,11,14,15,17, NP1,2,3	31,000	BS006
n-nitrosodiphenlyamine	ND	SW-6,8,9,10,11,14,17,BS005,9,11	930	BS006
2,4,4-Trimethyl-1-pentene	ND	SW-6,7,8,9,10,17,NP1,2,3	200	SW-15
2,4,4-Trimethyl-2-pentene	ND	SW-6,7,8,9,10,17,11,14,17,NP1,2,3	81	SW-15

NA = Not analyzed.
ND = Analyzed for but not detected above method detection limit.

Table 4. Concentration Ranges for Primary COCs in South Ditch Surface Water During Remediation

Inorganic Parameter (ppm)	Minimum	Min Location	Maximum	Max Location
Ammonia	2	ISCO 1	290	SD26-2
Chromium (dissolved)	ND	ISCO1, 2,SD-SW11C, NP-1	1.7	SD26-2
Sulfate	19	ISCO 1	1,400	ISCO 2
Chloride	ND	ISCO 2	540	ISCO 2
Sodium	NA	NA	NA	NA
Organic Parameter (ppb)				
di-n-butylphthalate	NA	NA	NA	NA
di-n-octylphthalate	ND	All	ND	All
butylbenzylphthalate	NA	NA	NA	NA
bis(2-ethylhexyl)phthalate	ND	ISCO 2, NP1	220	NP-1
n-nitrosodiphenlyamine	ND	All	ND	All
2,4,4-Trimethyl-1-pentene	NA	NA	NA	NA
2,4,4-Trimethyl-2-pentene	NA	NA	NA	NA

NA = Not analyzed.
ND = Analyzed for but not detected above method detection limit.

Table 5. Loading Calculations for OPWD and South Ditch Sample Locations

Date	OPWD Flow (gpm)	SD Flow (gpm)	OPWD Ammonia (mg/l)	SD Ammonia (mg/l)	SD Load (lb/day)	OPWD Load (lb/day)	OPWD LOAD (as % of SD Load)
15-Feb-01	47.3	138.8	11.0	27	45.1	6.3	14%
16-Mar-01	75.2	370.2	19.0	15	66.8	17.2	26%
22-Mar-01	345.7	207.0	8.0	9.3	23.2	33.3	144%

Table 6. Summary Statistics for South Ditch Ammonia Concentrations During Plant B Discharge and Non-discharge Scenarios

	Discharge	No Discharge
Mean (mg/l)	53.3	67.8
Median (mg/l)	52.5	70
Standard Deviation (mg/l)	23.5	49.9
Sample Variance $(mg/l)^2$	550	2488
Range (mg/l)	79	164
Minimum (mg/l)	15	16
Maximum (mg/l)	94	180

Table 7. Summary Statistics for South Ditch Ammonia Concentrations for Plant B Discharge at South Ditch and West Ditch Locations

	South Ditch Discharge	West Ditch Discharge
Mean (mg/l)	76.1	58.7
Median (mg/l)	70	60
Standard Deviation (mg/l)	35.9	24.3
Sample Variance $(mg/l)^2$	1287	591.3
Range (mg/l)	162	86.7
Minimum (mg/l)	18	9.3
Maximum (mg/l)	180	96

Table 8. Baseline Conditions Summary Statistics for South Ditch Ammonia Concentrations

	Baseline Condition
Mean (mg/l)	49.5
Median (mg/l)	49.0
Standard Deviation (mg/l)	21.6
Sample Variance $(mg/l)^2$	464.6
Range (mg/l)	89
Minimum (mg/l)	7
Maximum (mg/l)	96

Figures

Generation Date: 11/27/01

Figure 1. Ditch system associated with 51 Eames Street Property.
(The locations of the Plant B discharge and the periods of usage are described in the text.)

Geomega

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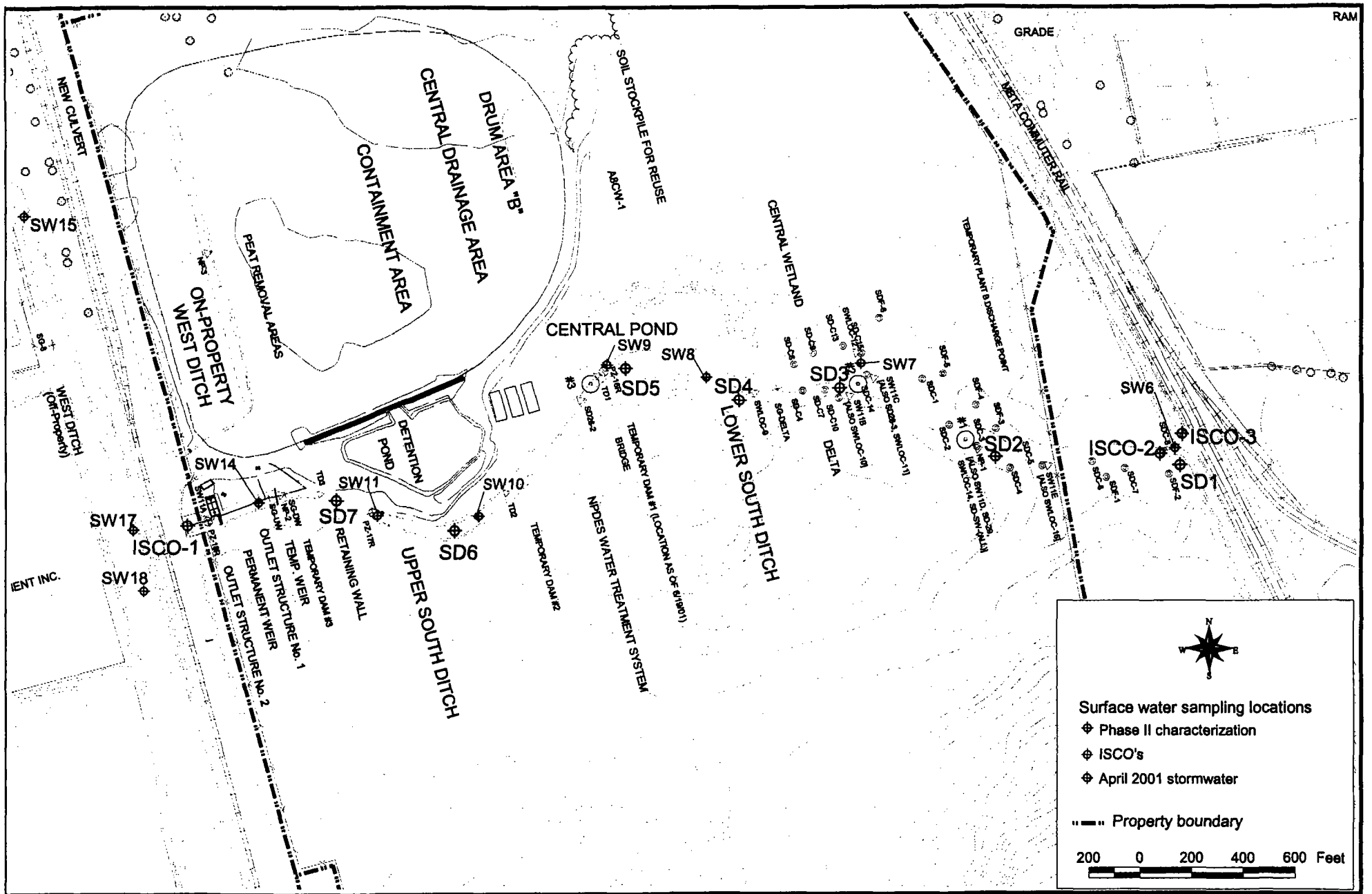

Generation Date: 11/27/01

Figure 2. South ditch surface water sample locations.

Geomega

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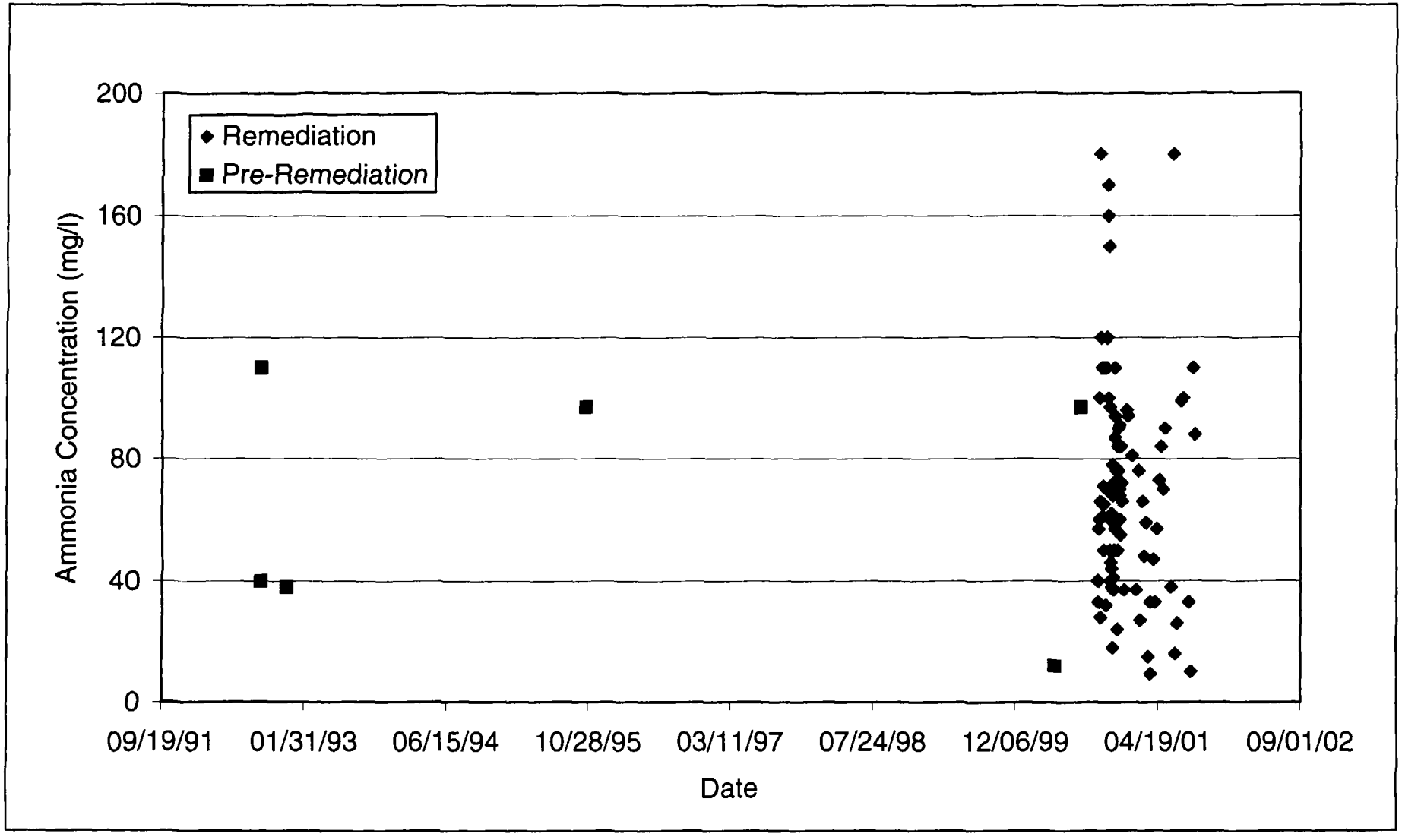

Generation Date: 11/26/01	Figure 3. Temporal density of ammonia samples collected at the terminus of the South Ditch.	Geomega

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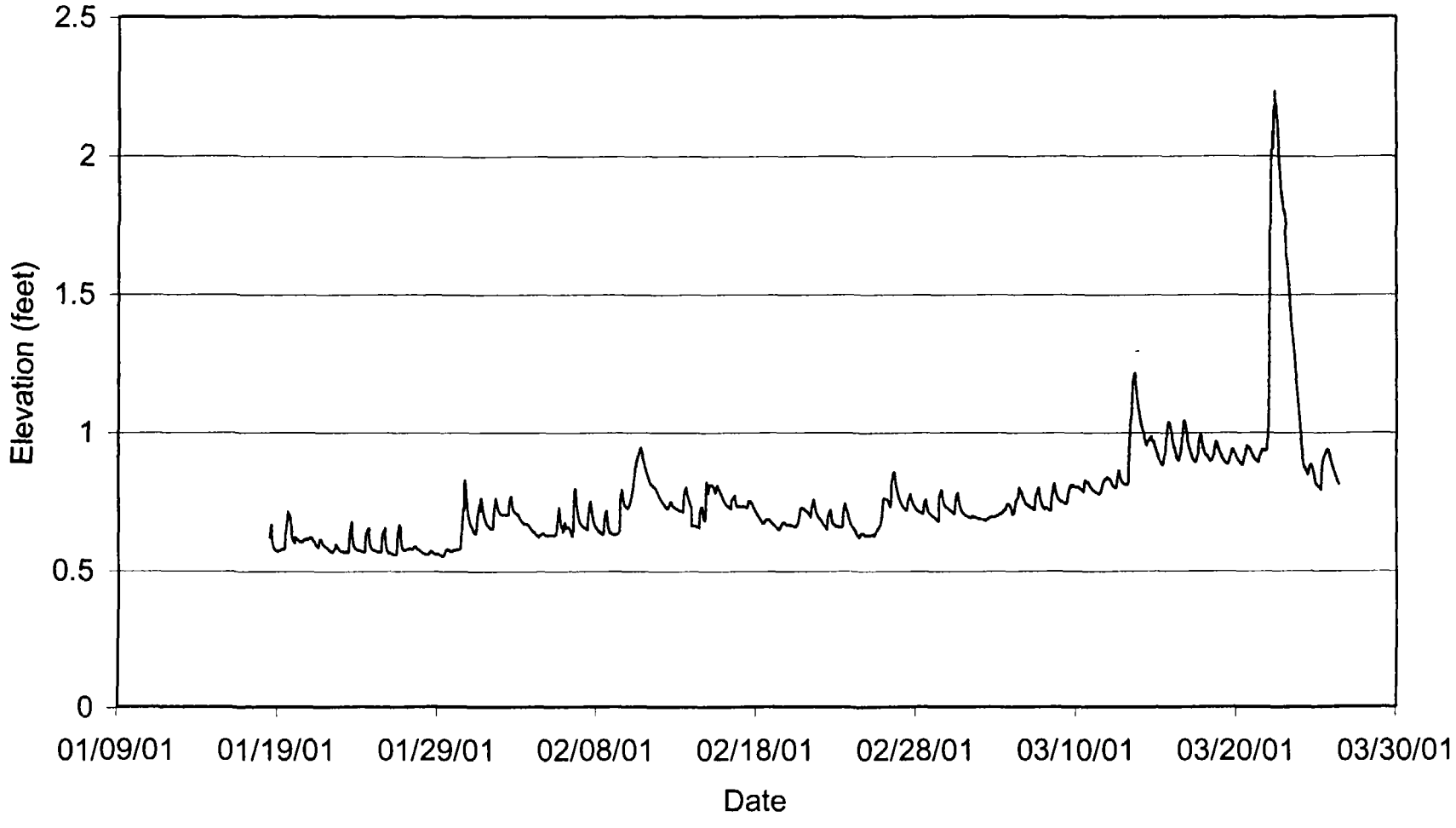

Generation Date: 11/20/01	Figure 4a. Off-Property West Ditch water level elevation.	Geomega

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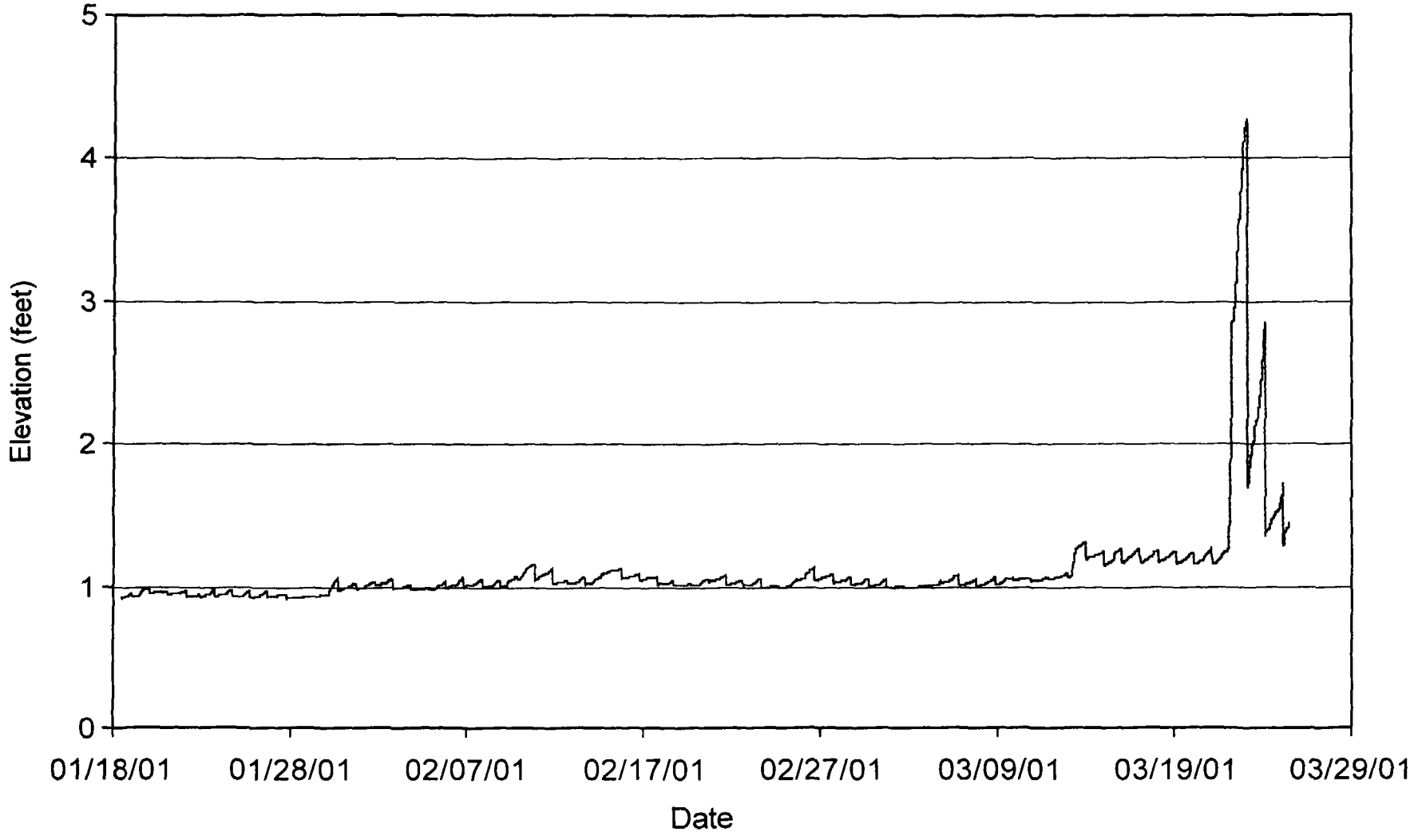

Generation Date: 11/20/01	Figure 4b. South Ditch water level elevation.	Geomega

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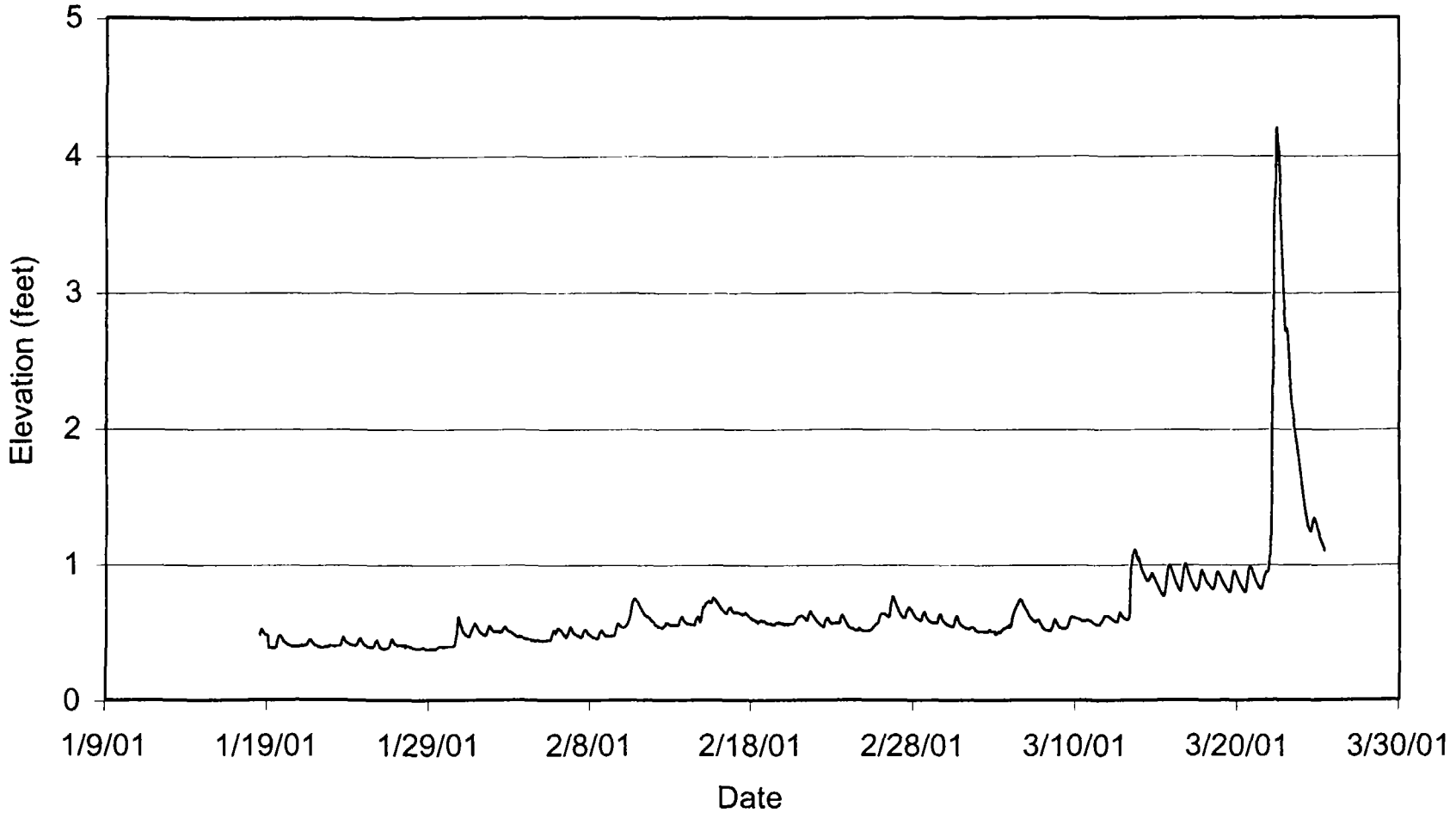
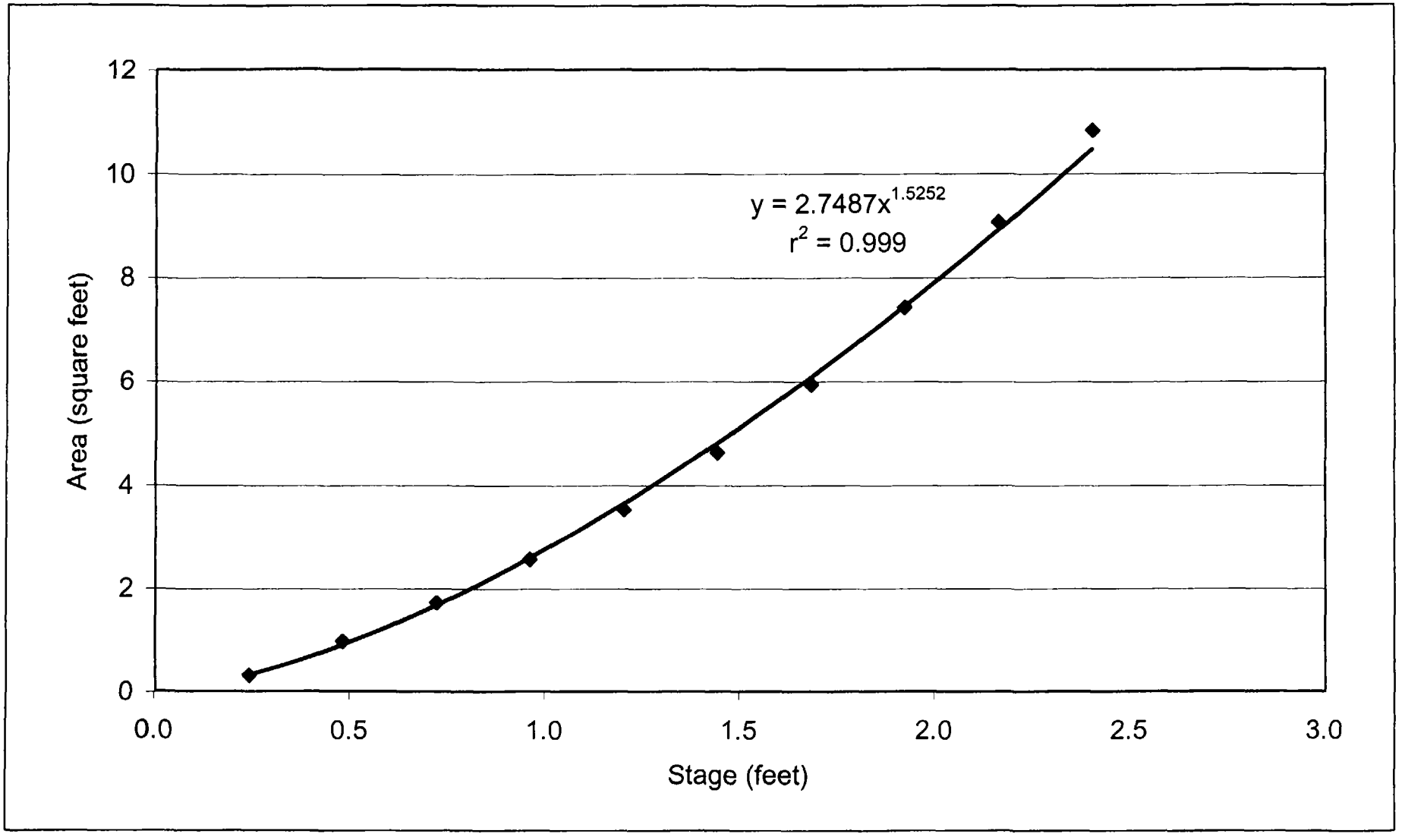


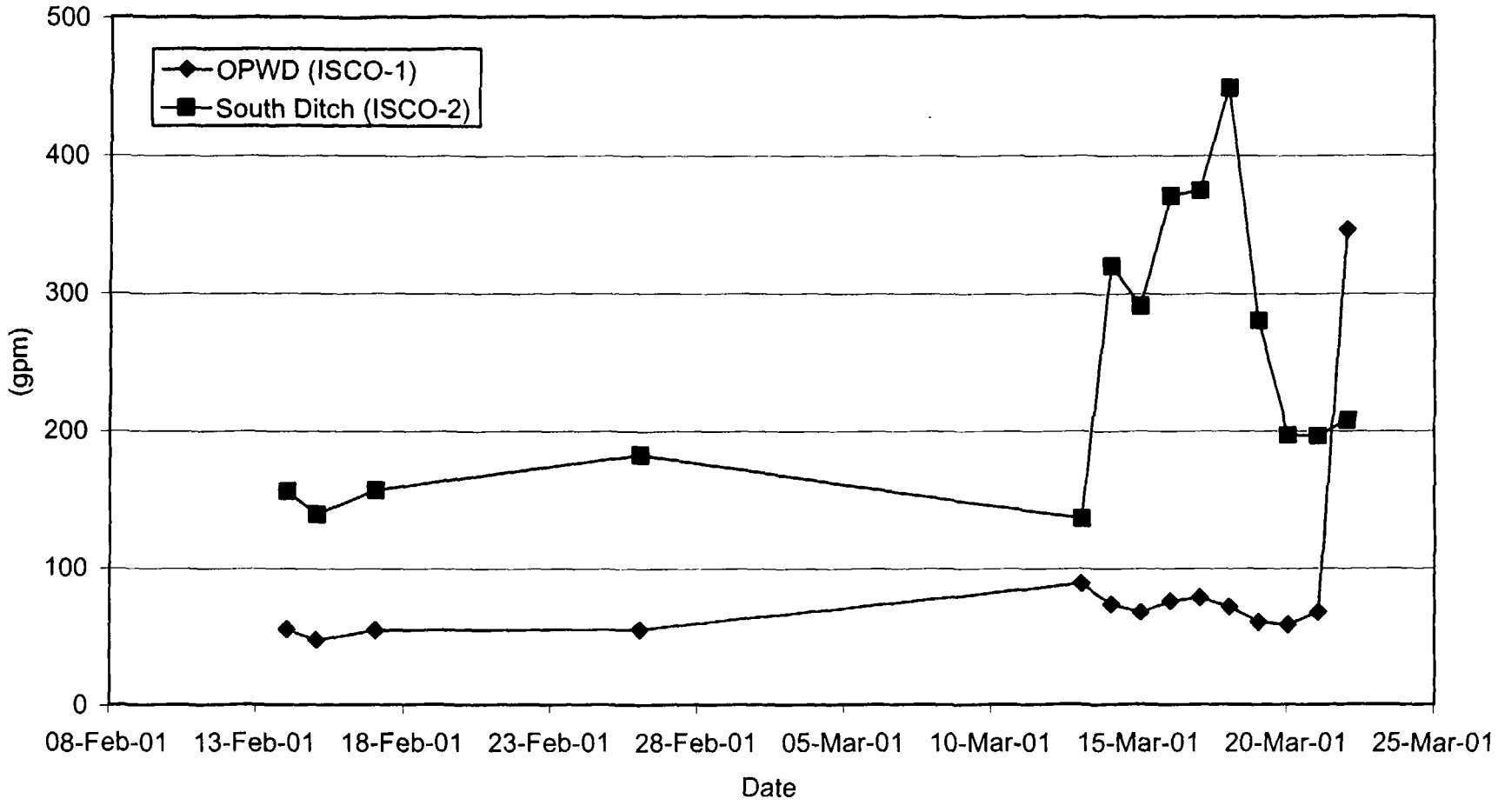
Generation Date: 11/20/01	Figure 4c. East Ditch water level elevation.	Geomega

o:\Olin\South Ditch\South Ditch Figures.xls



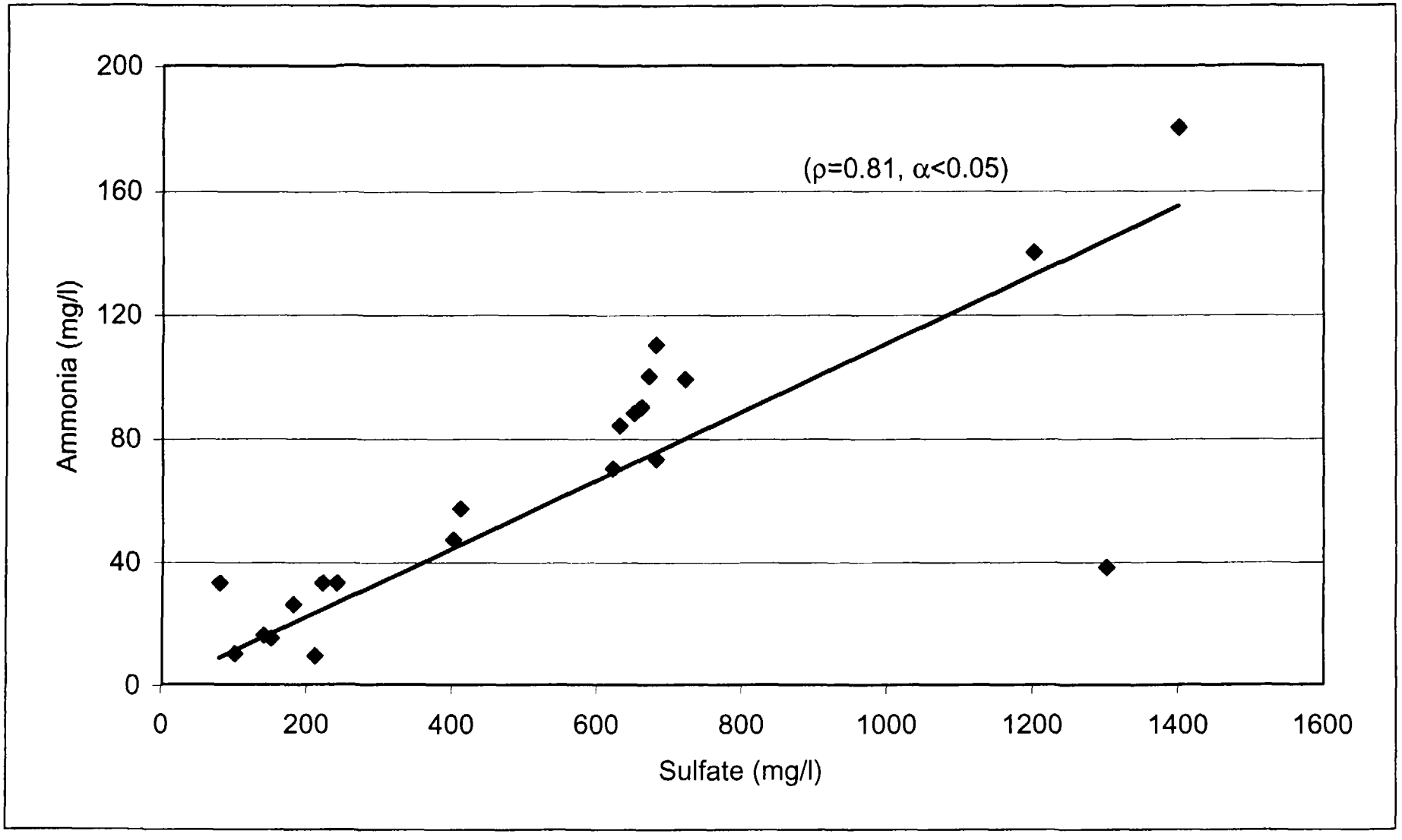
Generation Date: 11/20/01	Figure 5. Depth - cross section relationship at South Ditch.	Geomega

o:\Olin\South Ditch\South Ditch Figures.xls



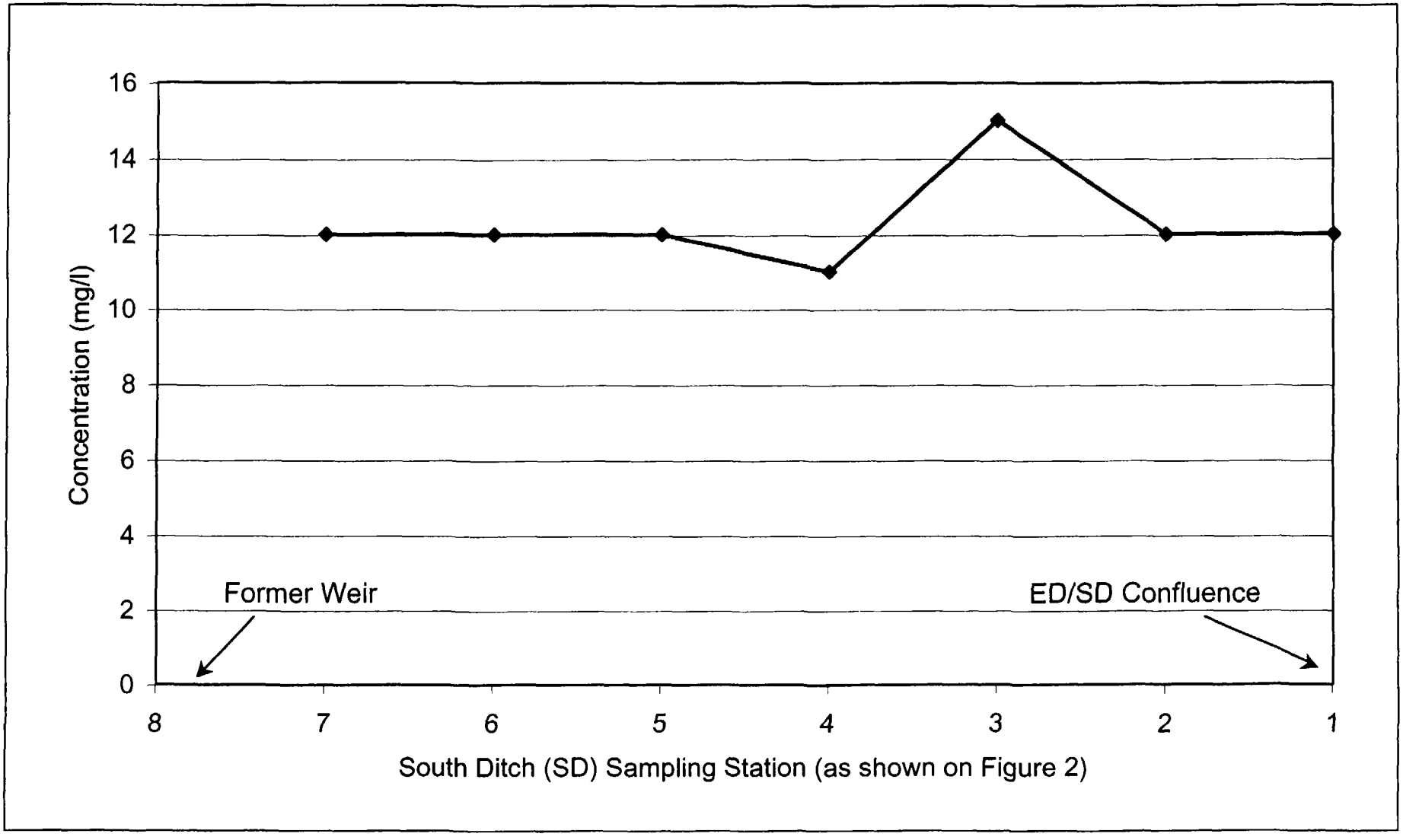
Generation Date: 11/20/01	Figure 6. Average daily flows in OPWD and South Ditch.	Geomega

o:\Olin\South Ditch\Daily Flow.xls



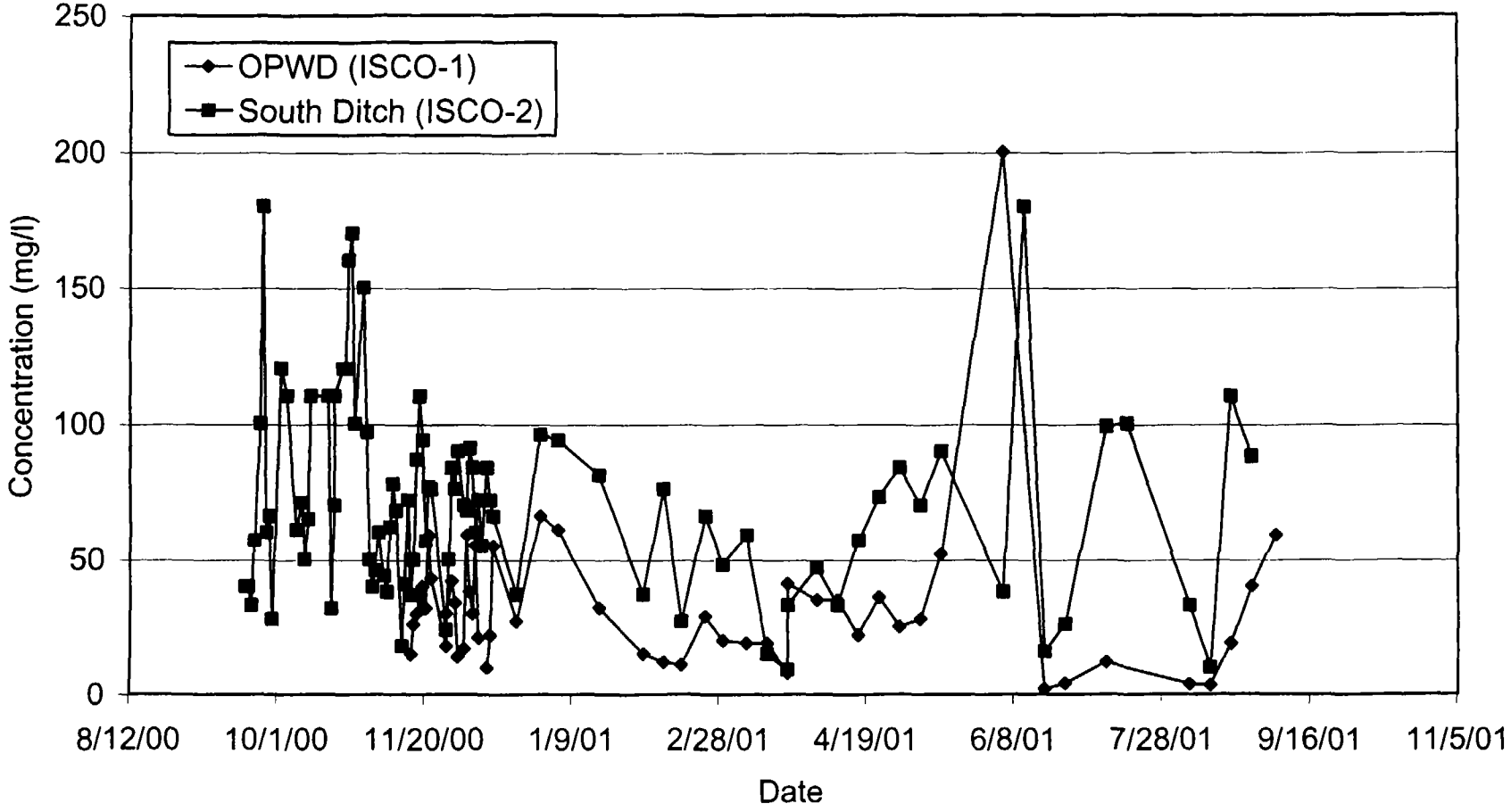
Generation Date: 11/26/01	Figure 7. Correlation of ammonia with sulfate in South Ditch samples.	Geomega

o:\Olin\South Ditch\Figures 11-16.xls



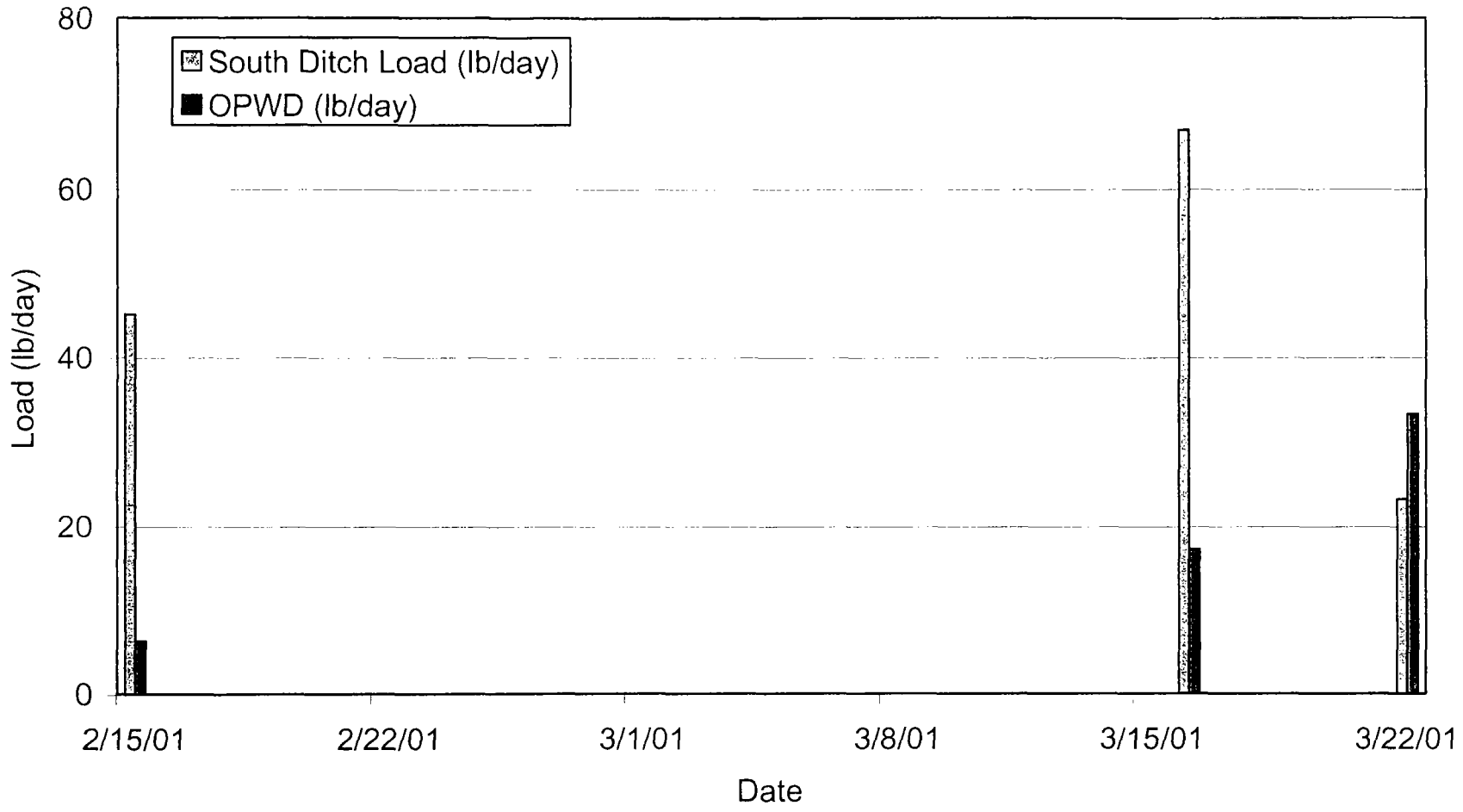
Generation Date: 11/20/01	Figure 8. Spatial distribution of ammonia concentrations in South Ditch surface water April 20, 2000.	Geomega

o:\Olin\South Ditch\Figures 11-16.xls



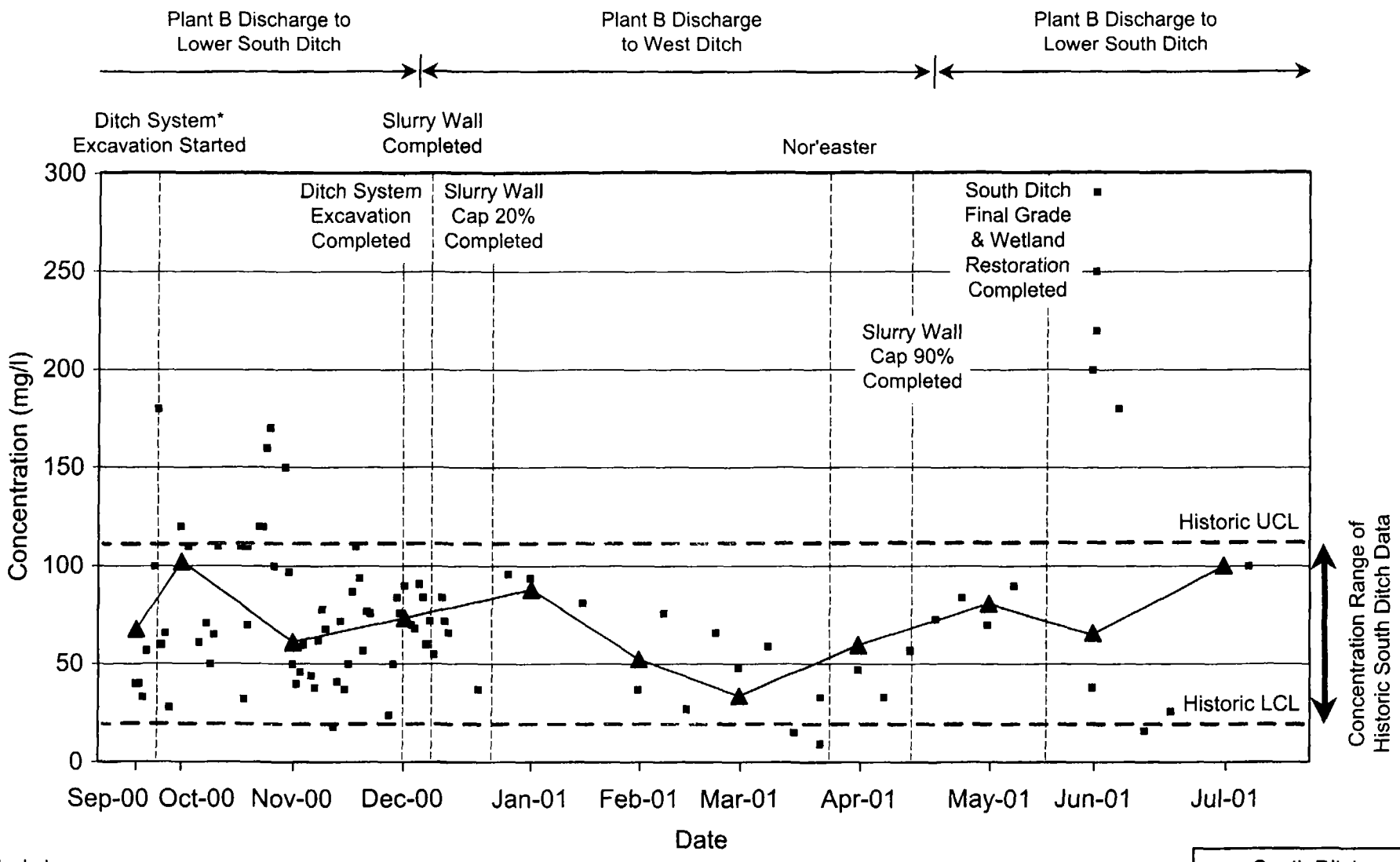
Generation Date: 11/20/01	Figure 9. Variations in ammonia concentrations at upstream (ISCO-1) and downstream (ISCO-2) ends of the South Ditch.	Geomega

o:\Olin\South Ditch\Figures 11-16.xls



Generation Date: 11/20/01	Figure 10. Comparative ammonia loads in OPWD and South Ditch.	Geomega

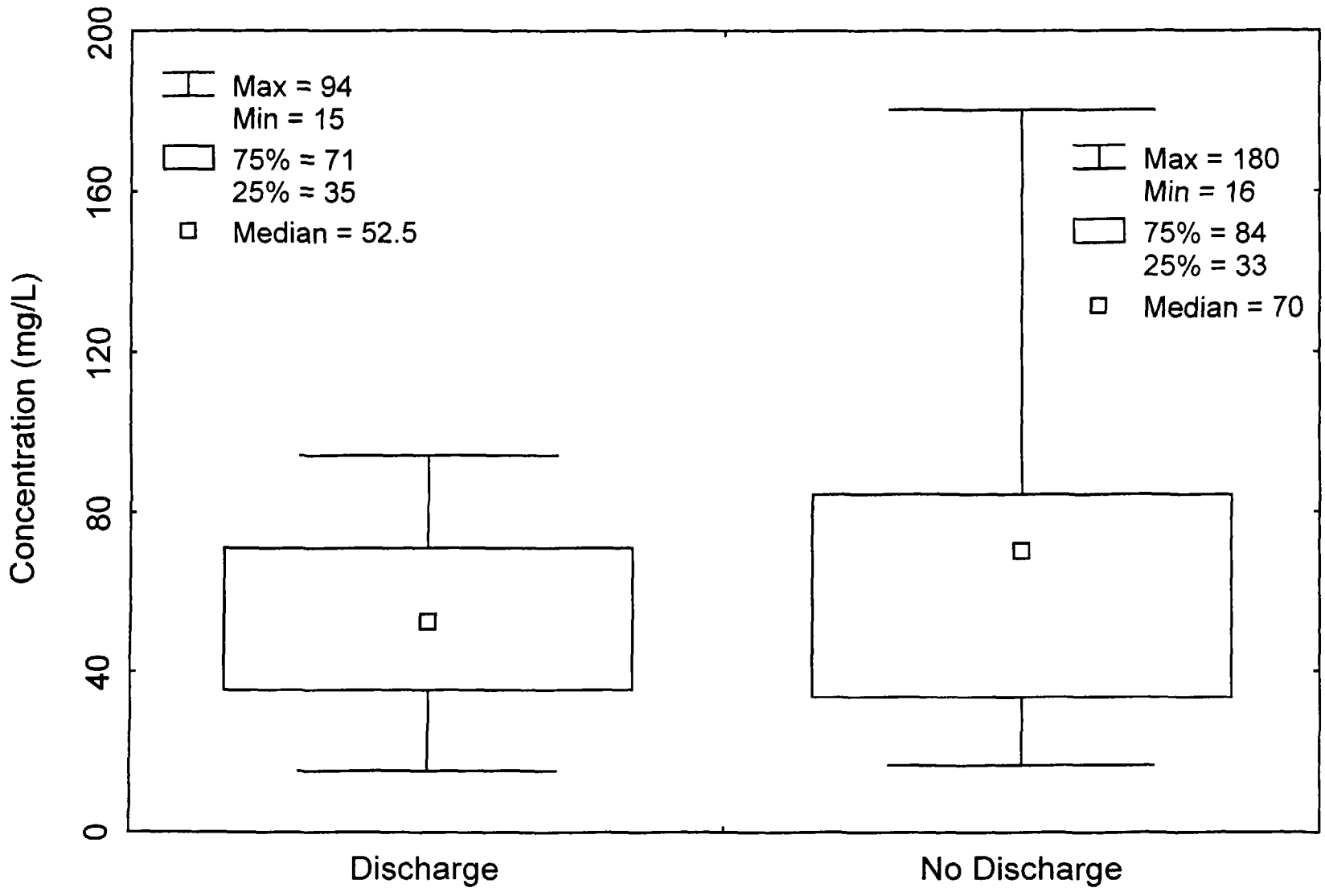
o:\Olin\South Ditch\Figures 11-16 xls



*Includes:
West Ditch Wetland, On-Property West Ditch,
South Ditch, Delta, Cental Pond

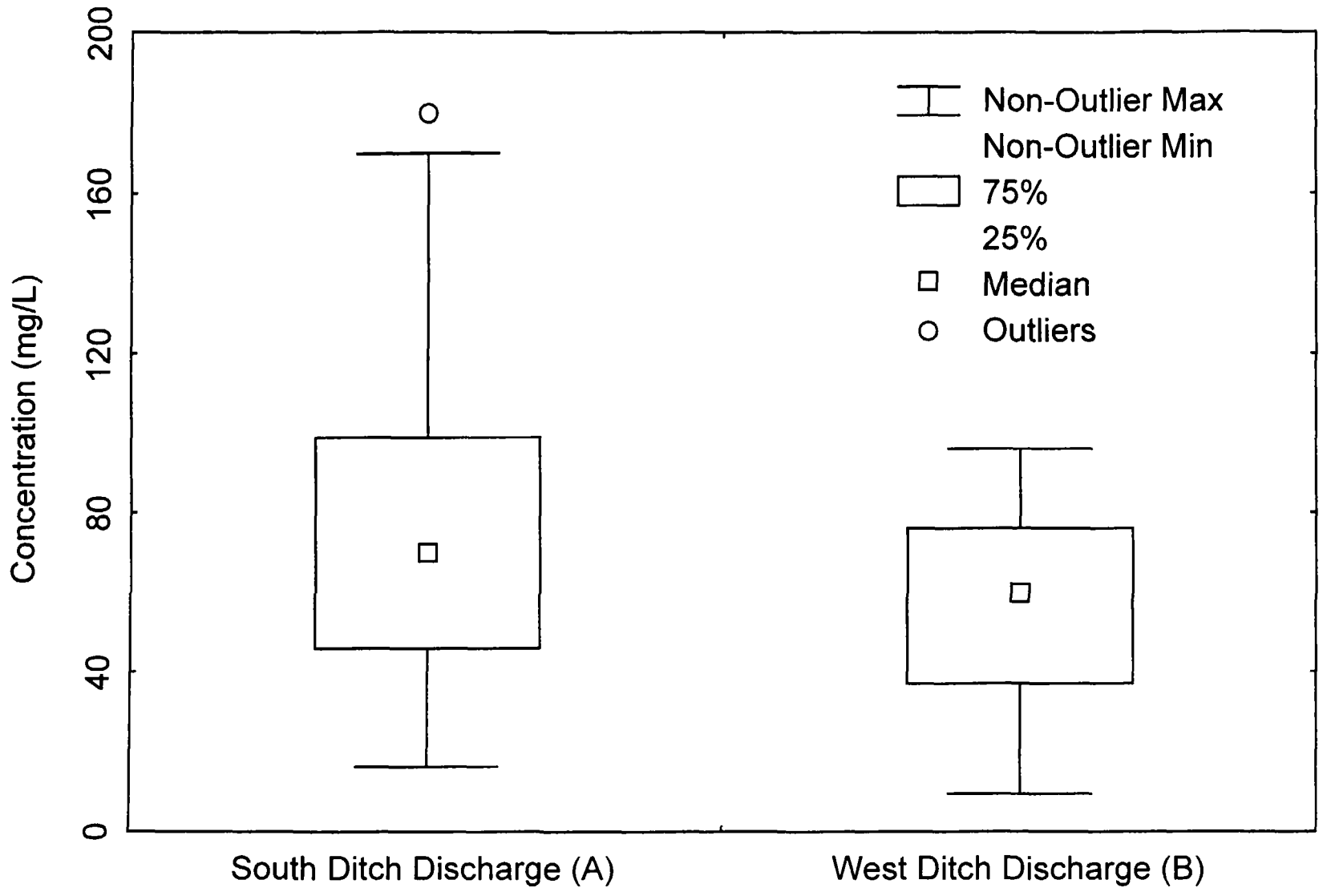
Generation Date: 11/29/01	Figure 11. Discrete sample and monthly average ammonia concentrations during remediation.	Geomega

o:\Olin\South Ditch\Box plot2.ai



Generation Date: 11/26/01	Figure 12. Box plot of South Ditch ammonia concentrations when Plant B is discharging and when it is not discharging.	Geomega

o \Olin\South Ditch\No Discharge ai



Generation Date: 11/26/01	Figure 13. Box plot of South Ditch ammonia concentrations during two different Plant B discharge regimes at locations A and B (Figure 1).	Geomega

o \Olin\South Ditch\Box plot2 ai

Appendix A

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
BS005	Aluminum, Total	23-Jan-97	48.7			mg/l
BS005	Arsenic, Total	23-Jan-97	0.0961			mg/l
BS005	Barium, Total	23-Jan-97	0.462			mg/l
BS005	bis(2-EthylHexyl)phthalate	23-Jan-97	3.9		B	mg/l
BS005	Calcium, Total	23-Jan-97	29.4			mg/l
BS005	Chromium, Total	23-Jan-97	1.74			mg/l
BS005	Cobalt, Total	23-Jan-97	0.0056		B	mg/l
BS005	Copper, Total	23-Jan-97	0.253			mg/l
BS005	Di-n-octylphthalate	23-Jan-97		1	ND	mg/l
BS005	Iron, Total	23-Jan-97	37.2			mg/l
BS005	Lead, Total	23-Jan-97	0.262			mg/l
BS005	Magnesium, Total	23-Jan-97	5.74			mg/l
BS005	Manganese, Total	23-Jan-97	0.283			mg/l
BS005	Mercury, Total	23-Jan-97	0.0046			mg/l
BS005	Nickel, Total	23-Jan-97	0.007		B	mg/l
BS005	N-Nitrosodiphenylamine	23-Jan-97		1	ND	mg/l
BS005	Phenol	23-Jan-97		1	ND	mg/l
BS005	Potassium, Total	23-Jan-97	13.2		E	mg/l
BS005	Sodium, Total	23-Jan-97	122		E	mg/l
BS005	Vanadium, Total	23-Jan-97	0.185			mg/l
BS005	Zinc, Total	23-Jan-97	2.38			mg/l
BS006	Aluminum, Total	23-Jan-97	0.78			mg/l
BS006	Arsenic, Total	23-Jan-97		0.006	ND	mg/l
BS006	Barium, Total	23-Jan-97	0.0456		B	mg/l
BS006	bis(2-EthylHexyl)phthalate	23-Jan-97	31		B	mg/l
BS006	Calcium, Total	23-Jan-97	457			mg/l
BS006	Chromium, Total	23-Jan-97	0.0325			mg/l
BS006	Cobalt, Total	23-Jan-97		0.001	ND	mg/l
BS006	Copper, Total	23-Jan-97	0.0041		B	mg/l
BS006	Di-n-octylphthalate	23-Jan-97		4	ND	mg/l
BS006	Iron, Total	23-Jan-97	0.806			mg/l
BS006	Lead, Total	23-Jan-97	0.0046			mg/l
BS006	Magnesium, Total	23-Jan-97	12.1			mg/l
BS006	Manganese, Total	23-Jan-97	0.196			mg/l
BS006	Mercury, Total	23-Jan-97		0.0002	ND	mg/l
BS006	Nickel, Total	23-Jan-97		0.001	ND	mg/l
BS006	N-Nitrosodiphenylamine	23-Jan-97	0.93		J	mg/l
BS006	Phenol	23-Jan-97		4	ND	mg/l
BS006	Potassium, Total	23-Jan-97	12.5		E	mg/l
BS006	Sodium, Total	23-Jan-97	126		E	mg/l
BS006	Vanadium, Total	23-Jan-97	0.0026		B	mg/l
BS006	Zinc, Total	23-Jan-97	0.0242			mg/l
BS007	Aluminum, Total	23-Jan-97	0.581			mg/l
BS007	Arsenic, Total	23-Jan-97		0.006	ND	mg/l
BS007	Barium, Total	23-Jan-97	0.0199		B	mg/l
BS007	bis(2-EthylHexyl)phthalate	23-Jan-97	0.003		JB	mg/l
BS007	Calcium, Total	23-Jan-97	16.5			mg/l
BS007	Chromium, Total	23-Jan-97	0.0222			mg/l
BS007	Cobalt, Total	23-Jan-97		0.001	ND	mg/l
BS007	Copper, Total	23-Jan-97	0.0018		B	mg/l
BS007	Di-n-octylphthalate	23-Jan-97		0.01	ND	mg/l
BS007	Iron, Total	23-Jan-97	0.141			mg/l
BS007	Lead, Total	23-Jan-97		0.002	ND	mg/l
BS007	Magnesium, Total	23-Jan-97	7.16			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
BS007	Manganese, Total	23-Jan-97	0.197			mg/l
BS007	Mercury, Total	23-Jan-97		0.0002	ND	mg/l
BS007	Nickel, Total	23-Jan-97		0.001	ND	mg/l
BS007	N-Nitrosodiphenylamine	23-Jan-97	0.01		J	mg/l
BS007	Phenol	23-Jan-97		0.01	ND	mg/l
BS007	Potassium, Total	23-Jan-97	12.9		E	mg/l
BS007	Sodium, Total	23-Jan-97	116		E	mg/l
BS007	Vanadium, Total	23-Jan-97		0.001	ND	mg/l
BS007	Zinc, Total	23-Jan-97	0.0218			mg/l
BS008	Aluminum, Total	23-Jan-97	4.93			mg/l
BS008	Arsenic, Total	23-Jan-97		0.006	ND	mg/l
BS008	Barium, Total	23-Jan-97	0.0244		B	mg/l
BS008	bis(2-EthylHexyl)phthalate	23-Jan-97	26		B	mg/l
BS008	Calcium, Total	23-Jan-97	6.07			mg/l
BS008	Chromium, Total	23-Jan-97	2.37			mg/l
BS008	Cobalt, Total	23-Jan-97	0.0012		B	mg/l
BS008	Copper, Total	23-Jan-97	0.0329			mg/l
BS008	Di-n-octylphthalate	23-Jan-97		4	ND	mg/l
BS008	Iron, Total	23-Jan-97	6			mg/l
BS008	Lead, Total	23-Jan-97	0.0146			mg/l
BS008	Magnesium, Total	23-Jan-97	2.82		B	mg/l
BS008	Manganese, Total	23-Jan-97	0.056			mg/l
BS008	Mercury, Total	23-Jan-97	0.0007			mg/l
BS008	Nickel, Total	23-Jan-97		0.001	ND	mg/l
BS008	N-Nitrosodiphenylamine	23-Jan-97	0.85		J	mg/l
BS008	Phenol	23-Jan-97		4	ND	mg/l
BS008	Potassium, Total	23-Jan-97	13.6		E	mg/l
BS008	Sodium, Total	23-Jan-97	132		E	mg/l
BS008	Vanadium, Total	23-Jan-97	0.0107		B	mg/l
BS008	Zinc, Total	23-Jan-97	0.044			mg/l
BS009	Aluminum, Total	23-Jan-97	0.385			mg/l
BS009	Arsenic, Total	23-Jan-97		0.006	ND	mg/l
BS009	Barium, Total	23-Jan-97	0.0166		B	mg/l
BS009	bis(2-EthylHexyl)phthalate	23-Jan-97	0.002		JB	mg/l
BS009	Calcium, Total	23-Jan-97	3.2			mg/l
BS009	Chromium, Total	23-Jan-97	0.0508			mg/l
BS009	Cobalt, Total	23-Jan-97		0.001	ND	mg/l
BS009	Copper, Total	23-Jan-97	0.0021		B	mg/l
BS009	Di-n-octylphthalate	23-Jan-97		0.01	ND	mg/l
BS009	Iron, Total	23-Jan-97	0.129			mg/l
BS009	Lead, Total	23-Jan-97		0.002	ND	mg/l
BS009	Magnesium, Total	23-Jan-97	12			mg/l
BS009	Manganese, Total	23-Jan-97	0.0489			mg/l
BS009	Mercury, Total	23-Jan-97		0.0002	ND	mg/l
BS009	Nickel, Total	23-Jan-97		0.001	ND	mg/l
BS009	N-Nitrosodiphenylamine	23-Jan-97		0.01	ND	mg/l
BS009	Phenol	23-Jan-97		0.01	ND	mg/l
BS009	Potassium, Total	23-Jan-97	17.7		E	mg/l
BS009	Sodium, Total	23-Jan-97	137		E	mg/l
BS009	Vanadium, Total	23-Jan-97		0.001	ND	mg/l
BS009	Zinc, Total	23-Jan-97	0.0143		B	mg/l
BS010	Aluminum, Total	23-Jan-97	1.65			mg/l
BS010	Arsenic, Total	23-Jan-97		0.006	ND	mg/l
BS010	Barium, Total	23-Jan-97	0.0214		B	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
BS010	bis(2-EthylHexyl)phthalate	23-Jan-97	0.76		B	mg/l
BS010	Calcium, Total	23-Jan-97	69.5			mg/l
BS010	Chromium, Total	23-Jan-97	0.37			mg/l
BS010	Cobalt, Total	23-Jan-97	0.0167		B	mg/l
BS010	Copper, Total	23-Jan-97	0.0064		B	mg/l
BS010	Di-n-octylphthalate	23-Jan-97		0.1	ND	mg/l
BS010	Iron, Total	23-Jan-97	2.6			mg/l
BS010	Lead, Total	23-Jan-97	0.003			mg/l
BS010	Magnesium, Total	23-Jan-97	8.34			mg/l
BS010	Manganese, Total	23-Jan-97	0.288			mg/l
BS010	Mercury, Total	23-Jan-97		0.0002	ND	mg/l
BS010	Nickel, Total	23-Jan-97		0.001	ND	mg/l
BS010	N-Nitrosodiphenylamine	23-Jan-97	0.04		J	mg/l
BS010	Phenol	23-Jan-97		0.1	ND	mg/l
BS010	Potassium, Total	23-Jan-97	16.2		E	mg/l
BS010	Sodium, Total	23-Jan-97	128		E	mg/l
BS010	Vanadium, Total	23-Jan-97	0.0013		B	mg/l
BS010	Zinc, Total	23-Jan-97	0.0296			mg/l
BS011	Aluminum, Total	23-Jan-97	2.13			mg/l
BS011	Arsenic, Total	23-Jan-97		0.006	ND	mg/l
BS011	Barium, Total	23-Jan-97	0.0404		B	mg/l
BS011	bis(2-EthylHexyl)phthalate	23-Jan-97	0.002		JB	mg/l
BS011	Calcium, Total	23-Jan-97	32.4			mg/l
BS011	Chromium, Total	23-Jan-97	0.0134			mg/l
BS011	Cobalt, Total	23-Jan-97	0.008		B	mg/l
BS011	Copper, Total	23-Jan-97	0.0012		B	mg/l
BS011	Di-n-octylphthalate	23-Jan-97		0.01	ND	mg/l
BS011	Iron, Total	23-Jan-97	0.331			mg/l
BS011	Lead, Total	23-Jan-97	0.0032			mg/l
BS011	Magnesium, Total	23-Jan-97	9.26			mg/l
BS011	Manganese, Total	23-Jan-97	1.29			mg/l
BS011	Mercury, Total	23-Jan-97		0.0002	ND	mg/l
BS011	Nickel, Total	23-Jan-97		0.001	ND	mg/l
BS011	N-Nitrosodiphenylamine	23-Jan-97		0.01	ND	mg/l
BS011	Phenol	23-Jan-97		0.01	ND	mg/l
BS011	Potassium, Total	23-Jan-97	10		E	mg/l
BS011	Sodium, Total	23-Jan-97	127		E	mg/l
BS011	Vanadium, Total	23-Jan-97	0.0018		B	mg/l
BS011	Zinc, Total	23-Jan-97	0.0182		B	mg/l
GSW-1	Aluminum, Dissolved	19-Apr-96	0.24			mg/l
GSW-1	Arsenic, Dissolved	19-Apr-96		0.008	ND	mg/l
GSW-1	Barium, Dissolved	19-Apr-96	0.042			mg/l
GSW-1	Calcium, Dissolved	19-Apr-96	27			mg/l
GSW-1	Chloride	19-Apr-96	77			mg/l
GSW-1	Chromium, Dissolved	19-Apr-96		0.015	ND	mg/l
GSW-1	Cobalt, Dissolved	19-Apr-96		0.03	ND	mg/l
GSW-1	Copper, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-1	Hexavalent Chromium, Dissolved	18-Apr-96		0.01	ND	mg/l
GSW-1	Iron, Dissolved	19-Apr-96	0.28			mg/l
GSW-1	Lead, Dissolved	19-Apr-96		0.005	ND	mg/l
GSW-1	Magnesium, Dissolved	19-Apr-96	2.7			mg/l
GSW-1	Manganese, Dissolved	19-Apr-96	0.27			mg/l
GSW-1	Mercury, Dissolved	19-Apr-96		0.0002	ND	mg/l
GSW-1	Nickel, Dissolved	19-Apr-96		0.04	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
GSW-1	Potassium, Dissolved	19-Apr-96	1.8			mg/l
GSW-1	Sodium, Dissolved	19-Apr-96	57			mg/l
GSW-1	Sulfate as SO4	19-Apr-96	110			mg/l
GSW-1	Vanadium, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-1	Zinc, Dissolved	19-Apr-96	0.044			mg/l
GSW-12	Aluminum, Dissolved	18-Oct-95	0.31			mg/l
GSW-12	Aluminum, Total	18-Oct-95	0.31			mg/l
GSW-12	Arsenic, Dissolved	18-Oct-95	0.01		J	mg/l
GSW-12	Arsenic, Total	18-Oct-95	0.01		J	mg/l
GSW-12	Barium, Dissolved	18-Oct-95	0.022			mg/l
GSW-12	Barium, Total	18-Oct-95	0.02			mg/l
GSW-12	Calcium, Dissolved	18-Oct-95	7.9		J	mg/l
GSW-12	Calcium, Total	18-Oct-95	7.3		J	mg/l
GSW-12	Chloride	18-Oct-95	37			mg/l
GSW-12	Chloride	18-Oct-95	35			mg/l
GSW-12	Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
GSW-12	Chromium, Total	18-Oct-95		0.015	ND	mg/l
GSW-12	Hexavalent Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
GSW-12	Hexavalent Chromium, Total	18-Oct-95		0.015	ND	mg/l
GSW-12	Iron, Dissolved	18-Oct-95	4.8			mg/l
GSW-12	Iron, Total	18-Oct-95	5.6			mg/l
GSW-12	Lead, Dissolved	18-Oct-95		0.005	ND	mg/l
GSW-12	Lead, Total	18-Oct-95		0.005	ND	mg/l
GSW-12	Magnesium, Dissolved	18-Oct-95	1.3			mg/l
GSW-12	Magnesium, Total	18-Oct-95	1.2			mg/l
GSW-12	Manganese, Dissolved	18-Oct-95	0.51		J	mg/l
GSW-12	Manganese, Total	18-Oct-95	0.49			mg/l
GSW-12	Nitrate as N	18-Oct-95	0.58		J	mg/l
GSW-12	Nitrate as N	18-Oct-95		0.05	ND	mg/l
GSW-12	Nitrite as N	18-Oct-95		0.5	ND	mg/l
GSW-12	Nitrite as N	18-Oct-95		0.5	ND	mg/l
GSW-12	Nitrogen, Ammonia	18-Oct-95		0.05	ND	mg/l
GSW-12	Nitrogen, Ammonia	18-Oct-95	0.1		J	mg/l
GSW-12	Potassium, Dissolved	18-Oct-95	4.7			mg/l
GSW-12	Potassium, Total	18-Oct-95	4.8			mg/l
GSW-12	Sodium, Dissolved	18-Oct-95	27		J	mg/l
GSW-12	Sodium, Total	18-Oct-95	25		J	mg/l
GSW-12	Sulfate as SO4	18-Oct-95	25			mg/l
GSW-12	Sulfate as SO4	18-Oct-95	25			mg/l
GSW-12	Sulfide	18-Oct-95		1	ND	mg/l
GSW-12	Sulfide	18-Oct-95	2			mg/l
GSW-12	Trivalent Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
GSW-12	Trivalent Chromium, Total	18-Oct-95		0.015	ND	mg/l
GSW-2	Aluminum, Dissolved	19-Apr-96	0.26			mg/l
GSW-2	Arsenic, Dissolved	19-Apr-96		0.008	ND	mg/l
GSW-2	Barium, Dissolved	19-Apr-96	0.043			mg/l
GSW-2	Calcium, Dissolved	19-Apr-96	30			mg/l
GSW-2	Chloride	19-Apr-96	75			mg/l
GSW-2	Chromium, Dissolved	19-Apr-96		0.015	ND	mg/l
GSW-2	Cobalt, Dissolved	19-Apr-96		0.03	ND	mg/l
GSW-2	Copper, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-2	Hexavalent Chromium, Dissolved	18-Apr-96		0.01	ND	mg/l
GSW-2	Iron, Dissolved	19-Apr-96	0.27			mg/l
GSW-2	Lead, Dissolved	19-Apr-96		0.005	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
GSW-2	Magnesium, Dissolved	19-Apr-96	2.8			mg/l
GSW-2	Manganese, Dissolved	19-Apr-96	0.28			mg/l
GSW-2	Mercury, Dissolved	19-Apr-96		0.0002	ND	mg/l
GSW-2	Nickel, Dissolved	19-Apr-96		0.04	ND	mg/l
GSW-2	Potassium, Dissolved	19-Apr-96	2.2			mg/l
GSW-2	Sodium, Dissolved	19-Apr-96	58			mg/l
GSW-2	Sulfate as SO4	19-Apr-96	120			mg/l
GSW-2	Vanadium, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-2	Zinc, Dissolved	19-Apr-96	0.044			mg/l
GSW-3	Aluminum, Dissolved	19-Apr-96	0.24			mg/l
GSW-3	Arsenic, Dissolved	19-Apr-96		0.008	ND	mg/l
GSW-3	Barium, Dissolved	19-Apr-96	0.035			mg/l
GSW-3	Calcium, Dissolved	19-Apr-96	30			mg/l
GSW-3	Chloride	19-Apr-96	80			mg/l
GSW-3	Chromium, Dissolved	19-Apr-96		0.015	ND	mg/l
GSW-3	Cobalt, Dissolved	19-Apr-96		0.03	ND	mg/l
GSW-3	Copper, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-3	Hexavalent Chromium, Dissolved	18-Apr-96		0.01	ND	mg/l
GSW-3	Iron, Dissolved	19-Apr-96	0.12			mg/l
GSW-3	Lead, Dissolved	19-Apr-96		0.005	ND	mg/l
GSW-3	Magnesium, Dissolved	19-Apr-96	2.7			mg/l
GSW-3	Manganese, Dissolved	19-Apr-96	0.27			mg/l
GSW-3	Mercury, Dissolved	19-Apr-96		0.0002	ND	mg/l
GSW-3	Nickel, Dissolved	19-Apr-96		0.04	ND	mg/l
GSW-3	Potassium, Dissolved	19-Apr-96	1.7			mg/l
GSW-3	Sodium, Dissolved	19-Apr-96	58			mg/l
GSW-3	Sulfate as SO4	19-Apr-96	130			mg/l
GSW-3	Vanadium, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-3	Zinc, Dissolved	19-Apr-96	0.034			mg/l
GSW-P	Aluminum, Dissolved	19-Apr-96		0.1	ND	mg/l
GSW-P	Aluminum, Total	19-Apr-96	0.84			mg/l
GSW-P	Arsenic, Dissolved	19-Apr-96		0.008	ND	mg/l
GSW-P	Arsenic, Total	19-Apr-96		0.008	ND	mg/l
GSW-P	Barium, Dissolved	19-Apr-96	0.02			mg/l
GSW-P	Barium, Total	19-Apr-96	0.02			mg/l
GSW-P	Calcium, Dissolved	19-Apr-96	190			mg/l
GSW-P	Calcium, Total	19-Apr-96	190			mg/l
GSW-P	Chloride	19-Apr-96	42			mg/l
GSW-P	Chromium, Dissolved	19-Apr-96		0.015	ND	mg/l
GSW-P	Chromium, Total	19-Apr-96	0.02			mg/l
GSW-P	Cobalt, Dissolved	19-Apr-96		0.03	ND	mg/l
GSW-P	Cobalt, Total	19-Apr-96		0.03	ND	mg/l
GSW-P	Copper, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-P	Copper, Total	19-Apr-96		0.025	ND	mg/l
GSW-P	Hexavalent Chromium, Dissolved	18-Apr-96		0.01	ND	mg/l
GSW-P	Iron, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-P	Iron, Total	19-Apr-96	0.082			mg/l
GSW-P	Lead, Dissolved	19-Apr-96		0.005	ND	mg/l
GSW-P	Lead, Total	19-Apr-96		0.005	ND	mg/l
GSW-P	Magnesium, Dissolved	19-Apr-96	3.3			mg/l
GSW-P	Magnesium, Total	19-Apr-96	3.1			mg/l
GSW-P	Manganese, Dissolved	19-Apr-96	0.24			mg/l
GSW-P	Manganese, Total	19-Apr-96	0.23			mg/l
GSW-P	Mercury, Dissolved	19-Apr-96		0.0002	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
GSW-P	Mercury, Total	19-Apr-96		0.0002	ND	mg/l
GSW-P	Nickel, Dissolved	19-Apr-96		0.04	ND	mg/l
GSW-P	Nickel, Total	19-Apr-96		0.04	ND	mg/l
GSW-P	Potassium, Dissolved	19-Apr-96	2			mg/l
GSW-P	Potassium, Total	19-Apr-96	2			mg/l
GSW-P	Sodium, Dissolved	19-Apr-96	46			mg/l
GSW-P	Sodium, Total	19-Apr-96	46			mg/l
GSW-P	Sulfate as SO4	19-Apr-96	630			mg/l
GSW-P	Vanadium, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-P	Vanadium, Total	19-Apr-96		0.025	ND	mg/l
GSW-P	Zinc, Dissolved	19-Apr-96		0.025	ND	mg/l
GSW-P	Zinc, Total	19-Apr-96	0.025			mg/l
ISCO1	Aluminum, Dissolved	30-Nov-00	0.46			mg/L
ISCO1	Aluminum, Dissolved	16-Mar-01	0.35			mg/L
ISCO1	Aluminum, Dissolved	23-Mar-01	0.48			mg/L
ISCO1	Aluminum, Dissolved	23-Mar-01	0.29			mg/L
ISCO1	Aluminum, Dissolved	02-Apr-01	0.57			mg/L
ISCO1	Aluminum, Dissolved	09-Apr-01	0.18			mg/L
ISCO1	Aluminum, Dissolved	16-Apr-01	0.38			mg/L
ISCO1	Aluminum, Dissolved	23-Apr-01	0.16			mg/L
ISCO1	Aluminum, Dissolved	30-Apr-01	0.23			mg/L
ISCO1	Aluminum, Dissolved	07-May-01	0.11			mg/L
ISCO1	Aluminum, Dissolved	14-May-01		0.1	ND	mg/L
ISCO1	Aluminum, Dissolved	04-Jun-01	0.11			mg/L
ISCO1	Aluminum, Dissolved	18-Jun-01	0.21			mg/L
ISCO1	Aluminum, Dissolved	25-Jun-01	0.12			mg/L
ISCO1	Aluminum, Dissolved	02-Jul-01	0.24			mg/L
ISCO1	Aluminum, Dissolved	09-Jul-01		0.1	ND	mg/L
ISCO1	Aluminum, Dissolved	23-Jul-01		0.1	ND	mg/L
ISCO1	Aluminum, Dissolved	30-Jul-01		0.1	ND	mg/L
ISCO1	Aluminum, Dissolved	06-Aug-01	0.12			mg/L
ISCO1	Aluminum, Dissolved	13-Aug-01	0.21			mg/L
ISCO1	Aluminum, Dissolved	20-Aug-01		0.1	ND	mg/L
ISCO1	Aluminum, Dissolved	27-Aug-01		0.1	ND	mg/L
ISCO1	Aluminum, Total	30-Nov-00	1.8			mg/L
ISCO1	Aluminum, Total	20-Aug-01		0.1	ND	mg/L
ISCO1	Aluminum, Total	04-Sep-01		0.1	ND	mg/L
ISCO1	Chloride	16-Mar-01	72			mg/L
ISCO1	Chloride	23-Mar-01	114			mg/L
ISCO1	Chloride	23-Mar-01	47			mg/L
ISCO1	Chloride	02-Apr-01	120			mg/L
ISCO1	Chloride	09-Apr-01	110			mg/L
ISCO1	Chloride	16-Apr-01	120			mg/L
ISCO1	Chloride	23-Apr-01	120			mg/L
ISCO1	Chloride	30-Apr-01	140			mg/L
ISCO1	Chloride	07-May-01	130			mg/L
ISCO1	Chloride	14-May-01	137			mg/L
ISCO1	Chloride	21-May-01	120			mg/L
ISCO1	Chloride	04-Jun-01	100			mg/L
ISCO1	Chloride	18-Jun-01	19			mg/L
ISCO1	Chloride	25-Jun-01	29			mg/L
ISCO1	Chloride	02-Jul-01	18			mg/L
ISCO1	Chloride	09-Jul-01	66			mg/L
ISCO1	Chloride	23-Jul-01	96			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
ISCO1	Chloride	30-Jul-01	77			mg/L
ISCO1	Chloride	06-Aug-01	29			mg/L
ISCO1	Chloride	13-Aug-01	19			mg/L
ISCO1	Chloride	20-Aug-01	76			mg/L
ISCO1	Chloride	27-Aug-01	100			mg/L
ISCO1	Chloride	04-Sep-01	120			mg/L
ISCO1	Chromium, Dissolved	30-Nov-00	0.082			mg/L
ISCO1	Chromium, Dissolved	21-Dec-00	0.068			mg/L
ISCO1	Chromium, Dissolved	29-Dec-00		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	04-Jan-01	0.024			mg/L
ISCO1	Chromium, Dissolved	11-Jan-01	0.037			mg/L
ISCO1	Chromium, Dissolved	18-Jan-01	0.087			mg/L
ISCO1	Chromium, Dissolved	25-Jan-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	02-Feb-01	0.012			mg/L
ISCO1	Chromium, Dissolved	09-Feb-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	15-Feb-01	0.036			mg/L
ISCO1	Chromium, Dissolved	23-Feb-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	01-Mar-01	0.08			mg/L
ISCO1	Chromium, Dissolved	09-Mar-01	0.12			mg/L
ISCO1	Chromium, Dissolved	16-Mar-01	0.075			mg/L
ISCO1	Chromium, Dissolved	23-Mar-01	0.021			mg/L
ISCO1	Chromium, Dissolved	23-Mar-01	0.07			mg/L
ISCO1	Chromium, Dissolved	02-Apr-01	0.12			mg/L
ISCO1	Chromium, Dissolved	09-Apr-01	0.054			mg/L
ISCO1	Chromium, Dissolved	16-Apr-01	0.11			mg/L
ISCO1	Chromium, Dissolved	23-Apr-01	0.062			mg/L
ISCO1	Chromium, Dissolved	30-Apr-01	0.054			mg/L
ISCO1	Chromium, Dissolved	07-May-01	0.031			mg/L
ISCO1	Chromium, Dissolved	14-May-01	0.013			mg/L
ISCO1	Chromium, Dissolved	21-May-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	04-Jun-01	0.039			mg/L
ISCO1	Chromium, Dissolved	05-Jun-01	0.021			mg/L
ISCO1	Chromium, Dissolved	18-Jun-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	25-Jun-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	02-Jul-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	09-Jul-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	23-Jul-01		0.005	ND	mg/L
ISCO1	Chromium, Dissolved	30-Jul-01		0.005	ND	mg/L
ISCO1	Chromium, Dissolved	06-Aug-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	06-Aug-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	13-Aug-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	20-Aug-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	27-Aug-01		0.01	ND	mg/L
ISCO1	Chromium, Dissolved	04-Sep-01		0.01	ND	mg/L
ISCO1	Chromium, Total	30-Nov-00	0.22			mg/L
ISCO1	Chromium, Total	21-Dec-00	0.22			mg/L
ISCO1	Chromium, Total	29-Dec-00	0.5			mg/L
ISCO1	Chromium, Total	04-Jan-01	0.48			mg/L
ISCO1	Chromium, Total	11-Jan-01	0.42			mg/L
ISCO1	Chromium, Total	18-Jan-01	0.26			mg/L
ISCO1	Chromium, Total	25-Jan-01	0.33			mg/L
ISCO1	Chromium, Total	02-Feb-01	0.19			mg/L
ISCO1	Chromium, Total	09-Feb-01	0.2			mg/L
ISCO1	Chromium, Total	15-Feb-01	0.17			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
ISCO1	Chromium, Total	23-Feb-01	0.42			mg/L
ISCO1	Chromium, Total	01-Mar-01	0.34			mg/L
ISCO1	Chromium, Total	09-Mar-01	0.3			mg/L
ISCO1	Chromium, Total	16-Mar-01	0.21			mg/L
ISCO1	Chromium, Total	23-Mar-01	0.03			mg/L
ISCO1	Chromium, Total	23-Mar-01	0.18			mg/L
ISCO1	Chromium, Total	02-Apr-01	0.26			mg/L
ISCO1	Chromium, Total	09-Apr-01	0.19			mg/L
ISCO1	Chromium, Total	16-Apr-01	0.2			mg/L
ISCO1	Chromium, Total	23-Apr-01	0.17			mg/L
ISCO1	Chromium, Total	30-Apr-01	0.091			mg/L
ISCO1	Chromium, Total	07-May-01	0.078			mg/L
ISCO1	Chromium, Total	14-May-01	0.054			mg/L
ISCO1	Chromium, Total	21-May-01	0.025			mg/L
ISCO1	Chromium, Total	04-Jun-01	0.14			mg/L
ISCO1	Chromium, Total	05-Jun-01	0.2			mg/L
ISCO1	Chromium, Total	18-Jun-01		0.01	ND	mg/L
ISCO1	Chromium, Total	25-Jun-01	0.014			mg/L
ISCO1	Chromium, Total	02-Jul-01		0.01	ND	mg/L
ISCO1	Chromium, Total	09-Jul-01		0.01	ND	mg/L
ISCO1	Chromium, Total	23-Jul-01	0.008			mg/L
ISCO1	Chromium, Total	30-Jul-01	0.011			mg/L
ISCO1	Chromium, Total	13-Aug-01		0.01	ND	mg/L
ISCO1	Chromium, Total	20-Aug-01	0.01			mg/L
ISCO1	Chromium, Total	27-Aug-01	0.012			mg/L
ISCO1	Chromium, Total	04-Sep-01	0.019			mg/L
ISCO1	Iron, Dissolved	30-Nov-00	1.6			mg/L
ISCO1	Iron, Total	30-Nov-00	2.2			mg/L
ISCO1	Nitrogen, Ammonia	15-Nov-00	15			mg/L
ISCO1	Nitrogen, Ammonia	16-Nov-00	26			mg/L
ISCO1	Nitrogen, Ammonia	17-Nov-00	30			mg/L
ISCO1	Nitrogen, Ammonia	18-Nov-00	36			mg/L
ISCO1	Nitrogen, Ammonia	19-Nov-00	40			mg/L
ISCO1	Nitrogen, Ammonia	20-Nov-00	32			mg/L
ISCO1	Nitrogen, Ammonia	21-Nov-00	59			mg/L
ISCO1	Nitrogen, Ammonia	22-Nov-00	43			mg/L
ISCO1	Nitrogen, Ammonia	27-Nov-00	18			mg/L
ISCO1	Nitrogen, Ammonia	27-Nov-00	30			mg/L
ISCO1	Nitrogen, Ammonia	29-Nov-00	42			mg/L
ISCO1	Nitrogen, Ammonia	30-Nov-00	34			mg/L
ISCO1	Nitrogen, Ammonia	01-Dec-00	14			mg/L
ISCO1	Nitrogen, Ammonia	03-Dec-00	17			mg/L
ISCO1	Nitrogen, Ammonia	04-Dec-00	59			mg/L
ISCO1	Nitrogen, Ammonia	05-Dec-00	38			mg/L
ISCO1	Nitrogen, Ammonia	06-Dec-00	30			mg/L
ISCO1	Nitrogen, Ammonia	07-Dec-00	55			mg/L
ISCO1	Nitrogen, Ammonia	08-Dec-00	21			mg/L
ISCO1	Nitrogen, Ammonia	11-Dec-00	10			mg/L
ISCO1	Nitrogen, Ammonia	12-Dec-00	22			mg/L
ISCO1	Nitrogen, Ammonia	13-Dec-00	55			mg/L
ISCO1	Nitrogen, Ammonia	21-Dec-00	27			mg/L
ISCO1	Nitrogen, Ammonia	29-Dec-00	66			mg/L
ISCO1	Nitrogen, Ammonia	04-Jan-01	61			mg/L
ISCO1	Nitrogen, Ammonia	11-Jan-01	45			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
ISCO1	Nitrogen, Ammonia	18-Jan-01	32			mg/L
ISCO1	Nitrogen, Ammonia	25-Jan-01	24			mg/L
ISCO1	Nitrogen, Ammonia	02-Feb-01	15			mg/L
ISCO1	Nitrogen, Ammonia	09-Feb-01	12			mg/L
ISCO1	Nitrogen, Ammonia	15-Feb-01	11			mg/L
ISCO1	Nitrogen, Ammonia	23-Feb-01	29			mg/L
ISCO1	Nitrogen, Ammonia	01-Mar-01	20			mg/L
ISCO1	Nitrogen, Ammonia	09-Mar-01	19			mg/L
ISCO1	Nitrogen, Ammonia	16-Mar-01	19			mg/L
ISCO1	Nitrogen, Ammonia	23-Mar-01	8			mg/L
ISCO1	Nitrogen, Ammonia	23-Mar-01	41			mg/L
ISCO1	Nitrogen, Ammonia	02-Apr-01	35			mg/L
ISCO1	Nitrogen, Ammonia	09-Apr-01	35			mg/L
ISCO1	Nitrogen, Ammonia	16-Apr-01	22			mg/L
ISCO1	Nitrogen, Ammonia	23-Apr-01	36			mg/L
ISCO1	Nitrogen, Ammonia	30-Apr-01	25			mg/L
ISCO1	Nitrogen, Ammonia	07-May-01	28			mg/L
ISCO1	Nitrogen, Ammonia	14-May-01	52			mg/L
ISCO1	Nitrogen, Ammonia	21-May-01	33			mg/L
ISCO1	Nitrogen, Ammonia	04-Jun-01	200			mg/L
ISCO1	Nitrogen, Ammonia	05-Jun-01	57			MG/L
ISCO1	Nitrogen, Ammonia	18-Jun-01	2			mg/L
ISCO1	Nitrogen, Ammonia	25-Jun-01	4.1			mg/L
ISCO1	Nitrogen, Ammonia	02-Jul-01	3.6			mg/L
ISCO1	Nitrogen, Ammonia	09-Jul-01	12			mg/L
ISCO1	Nitrogen, Ammonia	23-Jul-01	15			mg/L
ISCO1	Nitrogen, Ammonia	30-Jul-01	20			mg/L
ISCO1	Nitrogen, Ammonia	06-Aug-01	3.8			mg/L
ISCO1	Nitrogen, Ammonia	13-Aug-01	3.4			mg/L
ISCO1	Nitrogen, Ammonia	20-Aug-01	19			mg/L
ISCO1	Nitrogen, Ammonia	27-Aug-01	40			mg/L
ISCO1	Nitrogen, Ammonia	04-Sep-01	59			mg/L
ISCO1	Sulfate as SO4	16-Mar-01	120			mg/L
ISCO1	Sulfate as SO4	23-Mar-01	220			mg/L
ISCO1	Sulfate as SO4	23-Mar-01	55			mg/L
ISCO1	Sulfate as SO4	02-Apr-01	300			mg/L
ISCO1	Sulfate as SO4	09-Apr-01	170			mg/L
ISCO1	Sulfate as SO4	16-Apr-01	180			mg/L
ISCO1	Sulfate as SO4	23-Apr-01	170			mg/L
ISCO1	Sulfate as SO4	30-Apr-01	160			mg/L
ISCO1	Sulfate as SO4	07-May-01	150			mg/L
ISCO1	Sulfate as SO4	14-May-01	220			mg/L
ISCO1	Sulfate as SO4	21-May-01	170			mg/L
ISCO1	Sulfate as SO4	04-Jun-01	180			mg/L
ISCO1	Sulfate as SO4	18-Jun-01	19			mg/L
ISCO1	Sulfate as SO4	25-Jun-01	23			mg/L
ISCO1	Sulfate as SO4	02-Jul-01	47			mg/L
ISCO1	Sulfate as SO4	09-Jul-01	63			mg/L
ISCO1	Sulfate as SO4	23-Jul-01	120			mg/L
ISCO1	Sulfate as SO4	30-Jul-01	110			mg/L
ISCO1	Sulfate as SO4	06-Aug-01	24			mg/L
ISCO1	Sulfate as SO4	13-Aug-01	30			mg/L
ISCO1	Sulfate as SO4	20-Aug-01	110			mg/L
ISCO1	Sulfate as SO4	27-Aug-01	210			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
ISCO1	Sulfate as SO4	04-Sep-01	320			mg/L
ISCO2	Aluminum, Dissolved	16-Mar-01	0.18			mg/L
ISCO2	Aluminum, Dissolved	23-Mar-01	0.23			mg/L
ISCO2	Aluminum, Dissolved	23-Mar-01	0.22			mg/L
ISCO2	Aluminum, Dissolved	02-Apr-01	0.32			mg/L
ISCO2	Aluminum, Dissolved	09-Apr-01	0.15			mg/L
ISCO2	Aluminum, Dissolved	16-Apr-01	0.15			mg/L
ISCO2	Aluminum, Dissolved	23-Apr-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	30-Apr-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	07-May-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	14-May-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	04-Jun-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	11-Jun-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	18-Jun-01	0.21			mg/L
ISCO2	Aluminum, Dissolved	25-Jun-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	02-Jul-01	0.19			mg/L
ISCO2	Aluminum, Dissolved	09-Jul-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	06-Aug-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	13-Aug-01	0.21			mg/L
ISCO2	Aluminum, Dissolved	20-Aug-01		0.1	ND	mg/L
ISCO2	Aluminum, Dissolved	27-Aug-01		0.1	ND	mg/L
ISCO2	Aluminum, Total	20-Aug-01		0.1	ND	mg/L
ISCO2	bis(2-EthylHexyl)phthalate	14-May-01		10	ND	ug/L
ISCO2	bis(2-EthylHexyl)phthalate	15-May-01		10	ND	ug/L
ISCO2	bis(2-EthylHexyl)phthalate	16-May-01		10	ND	ug/L
ISCO2	bis(2-EthylHexyl)phthalate	17-May-01		10	ND	ug/L
ISCO2	bis(2-EthylHexyl)phthalate	18-May-01		10	ND	ug/L
ISCO2	bis(2-EthylHexyl)phthalate	23-May-01	21			ug/L
ISCO2	bis(2-EthylHexyl)phthalate	24-May-01		10	ND	ug/L
ISCO2	Chloride	16-Mar-01	50			mg/L
ISCO2	Chloride	23-Mar-01	78			mg/L
ISCO2	Chloride	23-Mar-01	37			mg/L
ISCO2	Chloride	02-Apr-01	83			mg/L
ISCO2	Chloride	09-Apr-01	88			mg/L
ISCO2	Chloride	16-Apr-01	110			mg/L
ISCO2	Chloride	23-Apr-01	120			mg/L
ISCO2	Chloride	30-Apr-01	120			mg/L
ISCO2	Chloride	07-May-01	120			mg/L
ISCO2	Chloride	14-May-01	147			mg/L
ISCO2	Chloride	21-May-01	260			mg/L
ISCO2	Chloride	04-Jun-01	510			mg/L
ISCO2	Chloride	11-Jun-01	540			mg/L
ISCO2	Chloride	18-Jun-01	48			mg/L
ISCO2	Chloride	25-Jun-01	54			mg/L
ISCO2	Chloride	02-Jul-01		1	ND	mg/L
ISCO2	Chloride	09-Jul-01	150			mg/L
ISCO2	Chloride	16-Jul-01	220		F	mg/L
ISCO2	Chloride	06-Aug-01	58			mg/L
ISCO2	Chloride	13-Aug-01	26			mg/L
ISCO2	Chloride	20-Aug-01	250			mg/L
ISCO2	Chloride	27-Aug-01	160			mg/L
ISCO2	Chromium, Dissolved	09-Feb-01	0.013			mg/L
ISCO2	Chromium, Dissolved	15-Feb-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	23-Feb-01	0.02			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
ISCO2	Chromium, Dissolved	01-Mar-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	09-Mar-01	0.023			mg/L
ISCO2	Chromium, Dissolved	16-Mar-01	0.013			mg/L
ISCO2	Chromium, Dissolved	23-Mar-01	0.011			mg/L
ISCO2	Chromium, Dissolved	23-Mar-01	0.014			mg/L
ISCO2	Chromium, Dissolved	02-Apr-01	0.032			mg/L
ISCO2	Chromium, Dissolved	09-Apr-01	0.015			mg/L
ISCO2	Chromium, Dissolved	16-Apr-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	23-Apr-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	30-Apr-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	07-May-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	14-May-01	0.01			mg/L
ISCO2	Chromium, Dissolved	15-May-01	0.01			mg/L
ISCO2	Chromium, Dissolved	16-May-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	17-May-01	0.012			mg/L
ISCO2	Chromium, Dissolved	18-May-01	0.01			mg/L
ISCO2	Chromium, Dissolved	21-May-01	0.013			mg/L
ISCO2	Chromium, Dissolved	23-May-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	24-May-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	29-May-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	30-May-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	04-Jun-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	05-Jun-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	06-Jun-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	07-Jun-01	0.0039			mg/L
ISCO2	Chromium, Dissolved	11-Jun-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	18-Jun-01	0.017			mg/L
ISCO2	Chromium, Dissolved	25-Jun-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	02-Jul-01	0.016			mg/L
ISCO2	Chromium, Dissolved	09-Jul-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	16-Jul-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	06-Aug-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	06-Aug-01	0.037			mg/L
ISCO2	Chromium, Dissolved	13-Aug-01	0.02			mg/L
ISCO2	Chromium, Dissolved	20-Aug-01		0.01	ND	mg/L
ISCO2	Chromium, Dissolved	27-Aug-01		0.01	ND	mg/L
ISCO2	Chromium, Total	09-Feb-01	0.1			mg/L
ISCO2	Chromium, Total	15-Feb-01	0.092			mg/L
ISCO2	Chromium, Total	23-Feb-01	0.12			mg/L
ISCO2	Chromium, Total	01-Mar-01	0.071			mg/L
ISCO2	Chromium, Total	09-Mar-01	0.11			mg/L
ISCO2	Chromium, Total	16-Mar-01	0.083			mg/L
ISCO2	Chromium, Total	23-Mar-01	0.036			mg/L
ISCO2	Chromium, Total	23-Mar-01	0.09			mg/L
ISCO2	Chromium, Total	02-Apr-01	0.11			mg/L
ISCO2	Chromium, Total	09-Apr-01	0.13			mg/L
ISCO2	Chromium, Total	16-Apr-01	0.036			mg/L
ISCO2	Chromium, Total	23-Apr-01	0.027			mg/L
ISCO2	Chromium, Total	30-Apr-01	0.04			mg/L
ISCO2	Chromium, Total	07-May-01	0.083			mg/L
ISCO2	Chromium, Total	14-May-01	0.062			mg/L
ISCO2	Chromium, Total	15-May-01	0.044			mg/L
ISCO2	Chromium, Total	16-May-01	0.011			mg/L
ISCO2	Chromium, Total	17-May-01	0.033			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
ISCO2	Chromium, Total	18-May-01	0.013			mg/L
ISCO2	Chromium, Total	21-May-01	0.054			mg/L
ISCO2	Chromium, Total	23-May-01	0.19			mg/L
ISCO2	Chromium, Total	24-May-01	0.039			mg/L
ISCO2	Chromium, Total	29-May-01	0.038			mg/L
ISCO2	Chromium, Total	30-May-01		0.01	ND	mg/L
ISCO2	Chromium, Total	04-Jun-01	0.029			mg/L
ISCO2	Chromium, Total	05-Jun-01	0.035			mg/L
ISCO2	Chromium, Total	06-Jun-01		0.01	ND	mg/L
ISCO2	Chromium, Total	07-Jun-01	0.011			mg/L
ISCO2	Chromium, Total	11-Jun-01	0.077			mg/L
ISCO2	Chromium, Total	18-Jun-01	0.069			mg/L
ISCO2	Chromium, Total	25-Jun-01	0.058			mg/L
ISCO2	Chromium, Total	02-Jul-01	0.078			mg/L
ISCO2	Chromium, Total	09-Jul-01	0.025			mg/L
ISCO2	Chromium, Total	16-Jul-01	0.059			mg/L
ISCO2	Chromium, Total	13-Aug-01	0.092			mg/L
ISCO2	Chromium, Total	20-Aug-01	0.02			mg/L
ISCO2	Chromium, Total	27-Aug-01	0.06			mg/L
ISCO2	Di-n-octylphthalate	14-May-01		10	ND	ug/L
ISCO2	Di-n-octylphthalate	15-May-01		10	ND	ug/L
ISCO2	Di-n-octylphthalate	16-May-01		10	ND	ug/L
ISCO2	Di-n-octylphthalate	17-May-01		10	ND	ug/L
ISCO2	Di-n-octylphthalate	18-May-01		10	ND	ug/L
ISCO2	Di-n-octylphthalate	23-May-01		10	ND	ug/L
ISCO2	Di-n-octylphthalate	24-May-01		10	ND	ug/L
ISCO2	Nitrogen, Ammonia	09-Feb-01	76			mg/L
ISCO2	Nitrogen, Ammonia	15-Feb-01	27			mg/L
ISCO2	Nitrogen, Ammonia	23-Feb-01	66			mg/L
ISCO2	Nitrogen, Ammonia	01-Mar-01	48			mg/L
ISCO2	Nitrogen, Ammonia	09-Mar-01	59			mg/L
ISCO2	Nitrogen, Ammonia	16-Mar-01	15			mg/L
ISCO2	Nitrogen, Ammonia	23-Mar-01	33			mg/L
ISCO2	Nitrogen, Ammonia	23-Mar-01	9.3			mg/L
ISCO2	Nitrogen, Ammonia	02-Apr-01	47			mg/L
ISCO2	Nitrogen, Ammonia	09-Apr-01	33			mg/L
ISCO2	Nitrogen, Ammonia	16-Apr-01	57			mg/L
ISCO2	Nitrogen, Ammonia	23-Apr-01	73			mg/L
ISCO2	Nitrogen, Ammonia	30-Apr-01	84			mg/L
ISCO2	Nitrogen, Ammonia	07-May-01	70			mg/L
ISCO2	Nitrogen, Ammonia	14-May-01	90		F	mg/L
ISCO2	Nitrogen, Ammonia	21-May-01	140			mg/L
ISCO2	Nitrogen, Ammonia	04-Jun-01	38			mg/L
ISCO2	Nitrogen, Ammonia	05-Jun-01	220			MG/L
ISCO2	Nitrogen, Ammonia	11-Jun-01	180			mg/L
ISCO2	Nitrogen, Ammonia	18-Jun-01	16			mg/L
ISCO2	Nitrogen, Ammonia	25-Jun-01	26			mg/L
ISCO2	Nitrogen, Ammonia	02-Jul-01	11			mg/L
ISCO2	Nitrogen, Ammonia	09-Jul-01	99			mg/L
ISCO2	Nitrogen, Ammonia	16-Jul-01	100			mg/L
ISCO2	Nitrogen, Ammonia	06-Aug-01	33			mg/L
ISCO2	Nitrogen, Ammonia	13-Aug-01	10			mg/L
ISCO2	Nitrogen, Ammonia	20-Aug-01	110			mg/L
ISCO2	Nitrogen, Ammonia	27-Aug-01	88			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
ISCO2	N-Nitrosodiphenylamine	14-May-01		10	ND	ug/L
ISCO2	N-Nitrosodiphenylamine	15-May-01		10	ND	ug/L
ISCO2	N-Nitrosodiphenylamine	16-May-01		10	ND	ug/L
ISCO2	N-Nitrosodiphenylamine	17-May-01		10	ND	ug/L
ISCO2	N-Nitrosodiphenylamine	18-May-01		10	ND	ug/L
ISCO2	N-Nitrosodiphenylamine	23-May-01		10	ND	ug/L
ISCO2	N-Nitrosodiphenylamine	24-May-01		10	ND	ug/L
ISCO2	Phenol	14-May-01		10	ND	ug/L
ISCO2	Phenol	15-May-01		10	ND	ug/L
ISCO2	Phenol	16-May-01		10	ND	ug/L
ISCO2	Phenol	17-May-01		10	ND	ug/L
ISCO2	Phenol	18-May-01		10	ND	ug/L
ISCO2	Phenol	23-May-01		10	ND	ug/L
ISCO2	Phenol	24-May-01		10	ND	ug/L
ISCO2	Sulfate as SO4	16-Mar-01	150			mg/L
ISCO2	Sulfate as SO4	23-Mar-01	79			mg/L
ISCO2	Sulfate as SO4	23-Mar-01	210			mg/L
ISCO2	Sulfate as SO4	02-Apr-01	400			mg/L
ISCO2	Sulfate as SO4	09-Apr-01	240			mg/L
ISCO2	Sulfate as SO4	16-Apr-01	410			mg/L
ISCO2	Sulfate as SO4	23-Apr-01	680			mg/L
ISCO2	Sulfate as SO4	30-Apr-01	630			mg/L
ISCO2	Sulfate as SO4	07-May-01	620			mg/L
ISCO2	Sulfate as SO4	14-May-01	660			mg/L
ISCO2	Sulfate as SO4	21-May-01	1200			mg/L
ISCO2	Sulfate as SO4	04-Jun-01	1300			mg/L
ISCO2	Sulfate as SO4	11-Jun-01	1400			mg/L
ISCO2	Sulfate as SO4	18-Jun-01	140			mg/L
ISCO2	Sulfate as SO4	25-Jun-01	180			mg/L
ISCO2	Sulfate as SO4	02-Jul-01	21			mg/L
ISCO2	Sulfate as SO4	09-Jul-01	720			mg/L
ISCO2	Sulfate as SO4	16-Jul-01	670			mg/L
ISCO2	Sulfate as SO4	06-Aug-01	220			mg/L
ISCO2	Sulfate as SO4	13-Aug-01	100			mg/L
ISCO2	Sulfate as SO4	20-Aug-01	680			mg/L
ISCO2	Sulfate as SO4	27-Aug-01	650			mg/L
NP-1	1,1,1-Trichloroethane (TCA)	20-Jul-00		1	ND	ug/L
NP-1	2,4,4-Trimethyl-1-pentene	20-Jul-00		1	ND	ug/L
NP-1	2,4,4-Trimethyl-2-Pentene	20-Jul-00		1	ND	ug/L
NP-1	4-Methyl-2-Pentanone (MIBK)	20-Jul-00		10	ND	ug/L
NP-1	Acetone	20-Jul-00		10	ND	ug/L
NP-1	Aluminum, Dissolved	30-Nov-00		0.1	ND	mg/L
NP-1	Aluminum, Total	20-Jul-00	0.11			mg/L
NP-1	Aluminum, Total	30-Nov-00	0.69			mg/L
NP-1	Arsenic, Total	20-Jul-00		0.01	ND	mg/L
NP-1	Barium, Total	20-Jul-00	0.018			mg/L
NP-1	bis(2-EthylHexyl)phthalate	20-Jul-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	20-Sep-00	3		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	21-Sep-00	3.2		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	22-Sep-00	14		A	ug/L
NP-1	bis(2-EthylHexyl)phthalate	23-Sep-00	9.5		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	25-Sep-00	220		A	ug/L
NP-1	bis(2-EthylHexyl)phthalate	26-Sep-00	180		A	ug/L
NP-1	bis(2-EthylHexyl)phthalate	28-Sep-00	2.4		JA	ug/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	bis(2-EthylHexyl)phthalate	29-Sep-00	3.1		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	02-Oct-00	2.8		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	04-Oct-00	4.4		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	05-Oct-00	3.9		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	07-Oct-00	1.8		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	09-Oct-00	9.7		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	10-Oct-00	4.5		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	11-Oct-00	25		A	ug/L
NP-1	bis(2-EthylHexyl)phthalate	12-Oct-00	24		A	ug/L
NP-1	bis(2-EthylHexyl)phthalate	18-Oct-00	20		A	ug/L
NP-1	bis(2-EthylHexyl)phthalate	19-Oct-00		17	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	20-Oct-00	23		A	ug/L
NP-1	bis(2-EthylHexyl)phthalate	20-Oct-00		12	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	23-Oct-00		25	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	24-Oct-00		17	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	25-Oct-00		14	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	26-Oct-00		17	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	27-Oct-00	6		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	30-Oct-00	2.7		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	31-Oct-00		17	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	01-Nov-00		14	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	02-Nov-00		17	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	03-Nov-00	15			ug/L
NP-1	bis(2-EthylHexyl)phthalate	03-Nov-00		17	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	04-Nov-00	1.7		J	ug/L
NP-1	bis(2-EthylHexyl)phthalate	04-Nov-00	7.6		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	06-Nov-00	15		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	06-Nov-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	07-Nov-00		25	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	08-Nov-00	2.3		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	09-Nov-00	4.1		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	09-Nov-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	10-Nov-00	5.5		JA	ug/L
NP-1	bis(2-EthylHexyl)phthalate	10-Nov-00	1.2		J	ug/L
NP-1	bis(2-EthylHexyl)phthalate	27-Nov-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	01-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	03-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	04-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	05-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	06-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	07-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	08-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	09-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	11-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	12-Dec-00		10	ND	ug/L
NP-1	bis(2-EthylHexyl)phthalate	13-Dec-00		10	ND	ug/L
NP-1	Bromoform	20-Jul-00		1	ND	ug/L
NP-1	Calcium, Total	20-Jul-00	64			mg/L
NP-1	Chloride	20-Jul-00	120			mg/L
NP-1	Chloroethane	20-Jul-00		2	ND	ug/L
NP-1	Chromium, Dissolved	07-Oct-00	0.019			mg/L
NP-1	Chromium, Dissolved	09-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	10-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	11-Oct-00	0.012			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	Chromium, Dissolved	12-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	18-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	19-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	20-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	20-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	23-Oct-00	0.01			mg/L
NP-1	Chromium, Dissolved	24-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	25-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	26-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	27-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	30-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	31-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	01-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	02-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	03-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	04-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	06-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	07-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	08-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	09-Nov-00	0.052			mg/L
NP-1	Chromium, Dissolved	10-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	12-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	13-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	14-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	15-Nov-00	0.016			mg/L
NP-1	Chromium, Dissolved	16-Nov-00	0.017			mg/L
NP-1	Chromium, Dissolved	17-Nov-00	0.011			mg/L
NP-1	Chromium, Dissolved	18-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	19-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	20-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	21-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	22-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	27-Nov-00	0.018			mg/L
NP-1	Chromium, Dissolved	28-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	29-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	30-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	01-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	03-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	04-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	05-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	06-Dec-00	0.016			mg/L
NP-1	Chromium, Dissolved	07-Dec-00	0.015			mg/L
NP-1	Chromium, Dissolved	08-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	09-Dec-00	0.01			mg/L
NP-1	Chromium, Dissolved	11-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	12-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	13-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	21-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	29-Dec-00		0.01	ND	mg/L
NP-1	Chromium, Dissolved	04-Jan-01		0.01	ND	mg/L
NP-1	Chromium, Dissolved	11-Jan-01		0.01	ND	mg/L
NP-1	Chromium, Dissolved	18-Jan-01		0.01	ND	mg/L
NP-1	Chromium, Dissolved	25-Jan-01		0.01	ND	mg/L
NP-1	Chromium, Dissolved	02-Feb-01		0.01	ND	mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	Chromium, Dissolved	09-Feb-01	0.013			mg/L
NP-1	Chromium, Dissolved	15-Feb-01		0.01	ND	mg/L
NP-1	Chromium, Dissolved	23-Feb-01	0.027			mg/L
NP-1	Chromium, Dissolved	09-Jun-01	0.0064			mg/L
NP-1	Chromium, Total	20-Jul-00	0.015			mg/L
NP-1	Chromium, Total	20-Sep-00	0.049			mg/L
NP-1	Chromium, Total	21-Sep-00	0.018			mg/L
NP-1	Chromium, Total	22-Sep-00	0.013			mg/L
NP-1	Chromium, Total	23-Sep-00	0.025			mg/L
NP-1	Chromium, Total	25-Sep-00	1.2			mg/L
NP-1	Chromium, Total	26-Sep-00	0.54			mg/L
NP-1	Chromium, Total	27-Sep-00	0.035			mg/L
NP-1	Chromium, Total	28-Sep-00	0.041			mg/L
NP-1	Chromium, Total	29-Sep-00		0.01	ND	mg/L
NP-1	Chromium, Total	02-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Total	04-Oct-00	0.032			mg/L
NP-1	Chromium, Total	07-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Total	09-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Total	10-Oct-00	0.023			mg/L
NP-1	Chromium, Total	11-Oct-00	0.22			mg/L
NP-1	Chromium, Total	12-Oct-00	0.16			mg/L
NP-1	Chromium, Total	18-Oct-00	0.048			mg/L
NP-1	Chromium, Total	19-Oct-00	0.02			mg/L
NP-1	Chromium, Total	20-Oct-00	0.033			mg/L
NP-1	Chromium, Total	20-Oct-00	0.024			mg/L
NP-1	Chromium, Total	23-Oct-00	0.013			mg/L
NP-1	Chromium, Total	24-Oct-00	0.016			mg/L
NP-1	Chromium, Total	25-Oct-00	0.011			mg/L
NP-1	Chromium, Total	26-Oct-00	0.01			mg/L
NP-1	Chromium, Total	27-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Total	30-Oct-00		0.01	ND	mg/L
NP-1	Chromium, Total	31-Oct-00	0.016			mg/L
NP-1	Chromium, Total	01-Nov-00	0.036			mg/L
NP-1	Chromium, Total	02-Nov-00	0.014			mg/L
NP-1	Chromium, Total	03-Nov-00	0.017			mg/L
NP-1	Chromium, Total	04-Nov-00	0.022			mg/L
NP-1	Chromium, Total	06-Nov-00	0.012			mg/L
NP-1	Chromium, Total	07-Nov-00		0.01	ND	mg/L
NP-1	Chromium, Total	08-Nov-00	0.017			mg/L
NP-1	Chromium, Total	09-Nov-00	0.014			mg/L
NP-1	Chromium, Total	10-Nov-00	0.012			mg/L
NP-1	Chromium, Total	12-Nov-00	0.025			mg/L
NP-1	Chromium, Total	13-Nov-00	0.038			mg/L
NP-1	Chromium, Total	14-Nov-00	0.044			mg/L
NP-1	Chromium, Total	15-Nov-00	0.11			mg/L
NP-1	Chromium, Total	16-Nov-00	0.1			mg/L
NP-1	Chromium, Total	17-Nov-00	0.084			mg/L
NP-1	Chromium, Total	18-Nov-00	0.063			mg/L
NP-1	Chromium, Total	19-Nov-00	0.051			mg/L
NP-1	Chromium, Total	20-Nov-00	0.03			mg/L
NP-1	Chromium, Total	21-Nov-00	0.078			mg/L
NP-1	Chromium, Total	22-Nov-00	0.04			mg/L
NP-1	Chromium, Total	27-Nov-00	0.062			mg/L
NP-1	Chromium, Total	28-Nov-00	0.08			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	Chromium, Total	29-Nov-00	0.081			mg/L
NP-1	Chromium, Total	30-Nov-00	0.054			mg/L
NP-1	Chromium, Total	01-Dec-00	0.048			mg/L
NP-1	Chromium, Total	03-Dec-00	0.028			mg/L
NP-1	Chromium, Total	04-Dec-00	0.043			mg/L
NP-1	Chromium, Total	05-Dec-00	0.022			mg/L
NP-1	Chromium, Total	06-Dec-00	0.13			mg/L
NP-1	Chromium, Total	07-Dec-00	0.25			mg/L
NP-1	Chromium, Total	08-Dec-00	0.083			mg/L
NP-1	Chromium, Total	09-Dec-00	0.094			mg/L
NP-1	Chromium, Total	11-Dec-00	0.074			mg/L
NP-1	Chromium, Total	12-Dec-00	0.051			mg/L
NP-1	Chromium, Total	13-Dec-00	0.047			mg/L
NP-1	Chromium, Total	21-Dec-00	0.1			mg/L
NP-1	Chromium, Total	29-Dec-00	0.16			mg/L
NP-1	Chromium, Total	04-Jan-01	0.12			mg/L
NP-1	Chromium, Total	11-Jan-01	0.098			mg/L
NP-1	Chromium, Total	18-Jan-01	0.064			mg/L
NP-1	Chromium, Total	25-Jan-01	0.072			mg/L
NP-1	Chromium, Total	02-Feb-01	0.076			mg/L
NP-1	Chromium, Total	09-Feb-01	0.09			mg/L
NP-1	Chromium, Total	15-Feb-01	0.11			mg/L
NP-1	Chromium, Total	23-Feb-01	0.12			mg/L
NP-1	Chromium, Total	09-Jun-01	0.11			mg/L
NP-1	Cobalt, Total	20-Jul-00		0.01	ND	mg/L
NP-1	Copper, Total	20-Jul-00		0.02	ND	mg/L
NP-1	Di-n-octylphthalate	20-Jul-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	20-Sep-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	21-Sep-00		14	ND	ug/L
NP-1	Di-n-octylphthalate	22-Sep-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	23-Sep-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	25-Sep-00		14	ND	ug/L
NP-1	Di-n-octylphthalate	26-Sep-00		20	ND	ug/L
NP-1	Di-n-octylphthalate	28-Sep-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	29-Sep-00		14	ND	ug/L
NP-1	Di-n-octylphthalate	02-Oct-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	04-Oct-00		25	ND	ug/L
NP-1	Di-n-octylphthalate	05-Oct-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	07-Oct-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	09-Oct-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	10-Oct-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	11-Oct-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	12-Oct-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	18-Oct-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	19-Oct-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	20-Oct-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	20-Oct-00		14	ND	ug/L
NP-1	Di-n-octylphthalate	23-Oct-00		25	ND	ug/L
NP-1	Di-n-octylphthalate	24-Oct-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	25-Oct-00		14	ND	ug/L
NP-1	Di-n-octylphthalate	26-Oct-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	27-Oct-00		20	ND	ug/L
NP-1	Di-n-octylphthalate	30-Oct-00		25	ND	ug/L
NP-1	Di-n-octylphthalate	31-Oct-00		17	ND	ug/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	Di-n-octylphthalate	01-Nov-00		14	ND	ug/L
NP-1	Di-n-octylphthalate	02-Nov-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	03-Nov-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	03-Nov-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	04-Nov-00		20	ND	ug/L
NP-1	Di-n-octylphthalate	04-Nov-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	06-Nov-00		50	ND	ug/L
NP-1	Di-n-octylphthalate	06-Nov-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	07-Nov-00		25	ND	ug/L
NP-1	Di-n-octylphthalate	08-Nov-00		20	ND	ug/L
NP-1	Di-n-octylphthalate	09-Nov-00		12	ND	ug/L
NP-1	Di-n-octylphthalate	09-Nov-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	10-Nov-00		17	ND	ug/L
NP-1	Di-n-octylphthalate	10-Nov-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	27-Nov-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	01-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	03-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	04-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	05-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	06-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	07-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	08-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	09-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	11-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	12-Dec-00		10	ND	ug/L
NP-1	Di-n-octylphthalate	13-Dec-00		10	ND	ug/L
NP-1	Ethylbenzene	20-Jul-00		1	ND	ug/L
NP-1	Ethylbenzene	20-Jul-00		1	ND	ug/l
NP-1	Ethylbenzene	20-Jul-00		5	ND	ug/L
NP-1	Hexavalent Chromium, Total	20-Jul-00		0.005	ND	mg/L
NP-1	Iron, Dissolved	30-Nov-00	1.4			mg/L
NP-1	Iron, Total	20-Jul-00	0.39			mg/L
NP-1	Iron, Total	30-Nov-00	2.3			mg/L
NP-1	Lead, Total	20-Jul-00		0.01	ND	mg/L
NP-1	Magnesium, Total	20-Jul-00	7.7			mg/L
NP-1	Manganese, Total	20-Jul-00	0.39			mg/L
NP-1	Mercury, Total	20-Jul-00		0.0002	ND	mg/L
NP-1	Methylene Chloride	20-Jul-00		1	ND	ug/L
NP-1	Nickel, Total	20-Jul-00		0.02	ND	mg/L
NP-1	Nitrate as N	20-Jul-00	2.6			mg/L
NP-1	Nitrite as N	20-Jul-00	0.011			mg/L
NP-1	Nitrogen, Ammonia	20-Jul-00	97			mg/L
NP-1	Nitrogen, Ammonia	20-Sep-00	40			mg/L
NP-1	Nitrogen, Ammonia	21-Sep-00	40			mg/L
NP-1	Nitrogen, Ammonia	22-Sep-00	33			mg/L
NP-1	Nitrogen, Ammonia	23-Sep-00	57			mg/L
NP-1	Nitrogen, Ammonia	25-Sep-00	100			mg/L
NP-1	Nitrogen, Ammonia	26-Sep-00	180			mg/L
NP-1	Nitrogen, Ammonia	27-Sep-00	60			mg/L
NP-1	Nitrogen, Ammonia	28-Sep-00	66			mg/L
NP-1	Nitrogen, Ammonia	29-Sep-00	28			mg/L
NP-1	Nitrogen, Ammonia	02-Oct-00	120			mg/L
NP-1	Nitrogen, Ammonia	04-Oct-00	110			mg/L
NP-1	Nitrogen, Ammonia	07-Oct-00	61			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	Nitrogen, Ammonia	09-Oct-00	71			mg/L
NP-1	Nitrogen, Ammonia	10-Oct-00	50			mg/L
NP-1	Nitrogen, Ammonia	11-Oct-00	65			mg/L
NP-1	Nitrogen, Ammonia	12-Oct-00	110			mg/L
NP-1	Nitrogen, Ammonia	18-Oct-00	110			mg/L
NP-1	Nitrogen, Ammonia	19-Oct-00	32			mg/L
NP-1	Nitrogen, Ammonia	20-Oct-00	110			mg/L
NP-1	Nitrogen, Ammonia	20-Oct-00	70			mg/L
NP-1	Nitrogen, Ammonia	23-Oct-00	120			mg/L
NP-1	Nitrogen, Ammonia	24-Oct-00	120			mg/L
NP-1	Nitrogen, Ammonia	25-Oct-00	160			mg/L
NP-1	Nitrogen, Ammonia	26-Oct-00	170			mg/L
NP-1	Nitrogen, Ammonia	27-Oct-00	100			mg/L
NP-1	Nitrogen, Ammonia	30-Oct-00	150			mg/L
NP-1	Nitrogen, Ammonia	31-Oct-00	97		F	mg/L
NP-1	Nitrogen, Ammonia	01-Nov-00	50		F	mg/L
NP-1	Nitrogen, Ammonia	02-Nov-00	40		F	mg/L
NP-1	Nitrogen, Ammonia	03-Nov-00	46		F	mg/L
NP-1	Nitrogen, Ammonia	04-Nov-00	60			mg/L
NP-1	Nitrogen, Ammonia	06-Nov-00	44			mg/L
NP-1	Nitrogen, Ammonia	07-Nov-00	38			mg/L
NP-1	Nitrogen, Ammonia	08-Nov-00	62			mg/L
NP-1	Nitrogen, Ammonia	09-Nov-00	78			mg/L
NP-1	Nitrogen, Ammonia	10-Nov-00	68			mg/L
NP-1	Nitrogen, Ammonia	12-Nov-00	18			mg/L
NP-1	Nitrogen, Ammonia	13-Nov-00	41			mg/L
NP-1	Nitrogen, Ammonia	14-Nov-00	72		F	mg/L
NP-1	Nitrogen, Ammonia	15-Nov-00	37			mg/L
NP-1	Nitrogen, Ammonia	16-Nov-00	50			mg/L
NP-1	Nitrogen, Ammonia	17-Nov-00	87			mg/L
NP-1	Nitrogen, Ammonia	18-Nov-00	110		F	mg/L
NP-1	Nitrogen, Ammonia	19-Nov-00	94			mg/L
NP-1	Nitrogen, Ammonia	20-Nov-00	57			mg/L
NP-1	Nitrogen, Ammonia	21-Nov-00	77			mg/L
NP-1	Nitrogen, Ammonia	22-Nov-00	76			mg/L
NP-1	Nitrogen, Ammonia	27-Nov-00	24			mg/L
NP-1	Nitrogen, Ammonia	28-Nov-00	50			mg/L
NP-1	Nitrogen, Ammonia	29-Nov-00	84		F	mg/L
NP-1	Nitrogen, Ammonia	30-Nov-00	76			mg/L
NP-1	Nitrogen, Ammonia	01-Dec-00	90		F	mg/L
NP-1	Nitrogen, Ammonia	03-Dec-00	70			mg/L
NP-1	Nitrogen, Ammonia	04-Dec-00	68		F	mg/L
NP-1	Nitrogen, Ammonia	05-Dec-00	91			mg/L
NP-1	Nitrogen, Ammonia	06-Dec-00	84			mg/L
NP-1	Nitrogen, Ammonia	07-Dec-00	60			mg/L
NP-1	Nitrogen, Ammonia	08-Dec-00	72			mg/L
NP-1	Nitrogen, Ammonia	09-Dec-00	55			mg/L
NP-1	Nitrogen, Ammonia	11-Dec-00	84			mg/L
NP-1	Nitrogen, Ammonia	12-Dec-00	72			mg/L
NP-1	Nitrogen, Ammonia	13-Dec-00	66			mg/L
NP-1	Nitrogen, Ammonia	21-Dec-00	37		F	mg/L
NP-1	Nitrogen, Ammonia	29-Dec-00	96			mg/L
NP-1	Nitrogen, Ammonia	04-Jan-01	94			mg/L
NP-1	Nitrogen, Ammonia	11-Jan-01	80			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	Nitrogen, Ammonia	18-Jan-01	81			mg/L
NP-1	Nitrogen, Ammonia	25-Jan-01	89		F	mg/L
NP-1	Nitrogen, Ammonia	02-Feb-01	37		F	mg/L
NP-1	Nitrogen, Ammonia	09-Feb-01	85			mg/L
NP-1	Nitrogen, Ammonia	15-Feb-01	34			mg/L
NP-1	Nitrogen, Ammonia	23-Feb-01	74			mg/L
NP-1	N-Nitrosodiphenylamine	20-Jul-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	20-Sep-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	21-Sep-00		14	ND	ug/L
NP-1	N-Nitrosodiphenylamine	22-Sep-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	23-Sep-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	25-Sep-00		14	ND	ug/L
NP-1	N-Nitrosodiphenylamine	26-Sep-00		20	ND	ug/L
NP-1	N-Nitrosodiphenylamine	28-Sep-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	29-Sep-00		14	ND	ug/L
NP-1	N-Nitrosodiphenylamine	02-Oct-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	04-Oct-00		25	ND	ug/L
NP-1	N-Nitrosodiphenylamine	05-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	07-Oct-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	09-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	10-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	11-Oct-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	12-Oct-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	18-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	19-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	20-Oct-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	20-Oct-00		14	ND	ug/L
NP-1	N-Nitrosodiphenylamine	23-Oct-00		25	ND	ug/L
NP-1	N-Nitrosodiphenylamine	24-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	25-Oct-00		14	ND	ug/L
NP-1	N-Nitrosodiphenylamine	26-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	27-Oct-00		20	ND	ug/L
NP-1	N-Nitrosodiphenylamine	30-Oct-00		25	ND	ug/L
NP-1	N-Nitrosodiphenylamine	31-Oct-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	01-Nov-00		14	ND	ug/L
NP-1	N-Nitrosodiphenylamine	02-Nov-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	03-Nov-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	03-Nov-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	04-Nov-00		20	ND	ug/L
NP-1	N-Nitrosodiphenylamine	04-Nov-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	06-Nov-00		50	ND	ug/L
NP-1	N-Nitrosodiphenylamine	06-Nov-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	07-Nov-00		25	ND	ug/L
NP-1	N-Nitrosodiphenylamine	08-Nov-00		20	ND	ug/L
NP-1	N-Nitrosodiphenylamine	09-Nov-00		12	ND	ug/L
NP-1	N-Nitrosodiphenylamine	09-Nov-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	10-Nov-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	10-Nov-00		17	ND	ug/L
NP-1	N-Nitrosodiphenylamine	27-Nov-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	01-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	03-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	04-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	05-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	06-Dec-00		10	ND	ug/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	N-Nitrosodiphenylamine	07-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	08-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	09-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	11-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	12-Dec-00		10	ND	ug/L
NP-1	N-Nitrosodiphenylamine	13-Dec-00		10	ND	ug/L
NP-1	PCB-1016	20-Jul-00		0.6	ND	ug/L
NP-1	PCB-1254	20-Jul-00		0.6	ND	ug/L
NP-1	PCB-1260	20-Jul-00		0.6	ND	ug/L
NP-1	Phenol	20-Jul-00		10	ND	ug/L
NP-1	Phenol	20-Sep-00		12	ND	ug/L
NP-1	Phenol	21-Sep-00		14	ND	ug/L
NP-1	Phenol	22-Sep-00		12	ND	ug/L
NP-1	Phenol	23-Sep-00		12	ND	ug/L
NP-1	Phenol	25-Sep-00		14	ND	ug/L
NP-1	Phenol	26-Sep-00		20	ND	ug/L
NP-1	Phenol	28-Sep-00		12	ND	ug/L
NP-1	Phenol	29-Sep-00		14	ND	ug/L
NP-1	Phenol	02-Oct-00		12	ND	ug/L
NP-1	Phenol	04-Oct-00		25	ND	ug/L
NP-1	Phenol	05-Oct-00		17	ND	ug/L
NP-1	Phenol	07-Oct-00		12	ND	ug/L
NP-1	Phenol	09-Oct-00		17	ND	ug/L
NP-1	Phenol	10-Oct-00		17	ND	ug/L
NP-1	Phenol	11-Oct-00		12	ND	ug/L
NP-1	Phenol	12-Oct-00		12	ND	ug/L
NP-1	Phenol	18-Oct-00		17	ND	ug/L
NP-1	Phenol	19-Oct-00		17	ND	ug/L
NP-1	Phenol	20-Oct-00		14	ND	ug/L
NP-1	Phenol	20-Oct-00		12	ND	ug/L
NP-1	Phenol	23-Oct-00		25	ND	ug/L
NP-1	Phenol	24-Oct-00		17	ND	ug/L
NP-1	Phenol	25-Oct-00		14	ND	ug/L
NP-1	Phenol	26-Oct-00		17	ND	ug/L
NP-1	Phenol	27-Oct-00		20	ND	ug/L
NP-1	Phenol	30-Oct-00		25	ND	ug/L
NP-1	Phenol	31-Oct-00		17	ND	ug/L
NP-1	Phenol	01-Nov-00		14	ND	ug/L
NP-1	Phenol	02-Nov-00		17	ND	ug/L
NP-1	Phenol	03-Nov-00		17	ND	ug/L
NP-1	Phenol	03-Nov-00		10	ND	ug/L
NP-1	Phenol	04-Nov-00		20	ND	ug/L
NP-1	Phenol	04-Nov-00		10	ND	ug/L
NP-1	Phenol	06-Nov-00		50	ND	ug/L
NP-1	Phenol	06-Nov-00		10	ND	ug/L
NP-1	Phenol	07-Nov-00		25	ND	ug/L
NP-1	Phenol	08-Nov-00		20	ND	ug/L
NP-1	Phenol	09-Nov-00		12	ND	ug/L
NP-1	Phenol	09-Nov-00		10	ND	ug/L
NP-1	Phenol	10-Nov-00		17	ND	ug/L
NP-1	Phenol	10-Nov-00		10	ND	ug/L
NP-1	Phenol	27-Nov-00		10	ND	ug/L
NP-1	Phenol	01-Dec-00		10	ND	ug/L
NP-1	Phenol	03-Dec-00		10	ND	ug/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-1	Phenol	04-Dec-00		10	ND	ug/L
NP-1	Phenol	05-Dec-00		10	ND	ug/L
NP-1	Phenol	06-Dec-00		10	ND	ug/L
NP-1	Phenol	07-Dec-00		10	ND	ug/L
NP-1	Phenol	08-Dec-00		10	ND	ug/L
NP-1	Phenol	09-Dec-00		10	ND	ug/L
NP-1	Phenol	11-Dec-00		10	ND	ug/L
NP-1	Phenol	12-Dec-00		10	ND	ug/L
NP-1	Phenol	13-Dec-00		10	ND	ug/L
NP-1	Potassium, Total	20-Jul-00	1.7			mg/L
NP-1	Sodium, Total	20-Jul-00	92			mg/L
NP-1	Sulfate as SO4	20-Jul-00	410			mg/L
NP-1	Toluene	20-Jul-00		1	ND	ug/l
NP-1	Toluene	20-Jul-00		5	ND	ug/L
NP-1	Toluene	20-Jul-00		1	ND	ug/L
NP-1	Trichloroethene (TCE)	20-Jul-00		1	ND	ug/L
NP-1	Vanadium, Total	20-Jul-00		0.01	ND	mg/L
NP-1	Vinyl Chloride	20-Jul-00		2	ND	ug/L
NP-1	Xylenes, Total	20-Jul-00		5	ND	ug/L
NP-1	Zinc, Total	20-Jul-00		0.05	ND	mg/L
NP-2	1,1,1-Trichloroethane (TCA)	20-Jul-00		1	ND	ug/L
NP-2	1,1,1-Trichloroethane (TCA)	20-Jul-00		1	ND	ug/L
NP-2	2,4,4-Trimethyl-1-pentene	20-Jul-00		1	ND	ug/L
NP-2	2,4,4-Trimethyl-1-pentene	20-Jul-00		1	ND	ug/L
NP-2	2,4,4-Trimethyl-2-Pentene	20-Jul-00		1	ND	ug/L
NP-2	2,4,4-Trimethyl-2-Pentene	20-Jul-00		1	ND	ug/L
NP-2	4-Methyl-2-Pentanone (MIBK)	20-Jul-00		10	ND	ug/L
NP-2	4-Methyl-2-Pentanone (MIBK)	20-Jul-00		10	ND	ug/L
NP-2	Acetone	20-Jul-00		10	ND	ug/L
NP-2	Acetone	20-Jul-00		10	ND	ug/L
NP-2	Aluminum, Dissolved	20-Jul-00		0.1	ND	mg/L
NP-2	Aluminum, Total	20-Jul-00	60			mg/L
NP-2	Aluminum, Total	20-Jul-00	0.33			mg/L
NP-2	Arsenic, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-2	Arsenic, Total	20-Jul-00	0.041			mg/L
NP-2	Arsenic, Total	20-Jul-00		0.01	ND	mg/L
NP-2	Barium, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-2	Barium, Total	20-Jul-00		0.01	ND	mg/L
NP-2	Barium, Total	20-Jul-00	0.045			mg/L
NP-2	bis(2-EthylHexyl)phthalate	20-Jul-00		10	ND	ug/L
NP-2	bis(2-EthylHexyl)phthalate	20-Jul-00		10	ND	ug/L
NP-2	Bromoform	20-Jul-00		1	ND	ug/L
NP-2	Bromoform	20-Jul-00		1	ND	ug/L
NP-2	Calcium, Dissolved	20-Jul-00	31			mg/L
NP-2	Calcium, Total	20-Jul-00	33			mg/L
NP-2	Calcium, Total	20-Jul-00	50			mg/L
NP-2	Chloride	20-Jul-00	83			mg/L
NP-2	Chloride	20-Jul-00	84			mg/L
NP-2	Chloroethane	20-Jul-00		2	ND	ug/L
NP-2	Chloroethane	20-Jul-00		2	ND	ug/L
NP-2	Chromium, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-2	Chromium, Total	20-Jul-00	8.5			mg/L
NP-2	Chromium, Total	20-Jul-00	0.037			mg/L
NP-2	Cobalt, Dissolved	20-Jul-00		0.01	ND	mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-2	Cobalt, Total	20-Jul-00	0.014			mg/L
NP-2	Cobalt, Total	20-Jul-00		0.01	ND	mg/L
NP-2	Copper, Dissolved	20-Jul-00		0.02	ND	mg/L
NP-2	Copper, Total	20-Jul-00	0.25			mg/L
NP-2	Copper, Total	20-Jul-00		0.02	ND	mg/L
NP-2	Di-n-octylphthalate	20-Jul-00		10	ND	ug/L
NP-2	Di-n-octylphthalate	20-Jul-00		10	ND	ug/L
NP-2	Ethylbenzene	20-Jul-00		5	ND	ug/L
NP-2	Ethylbenzene	20-Jul-00		1	ND	ug/L
NP-2	Ethylbenzene	20-Jul-00		1	ND	ug/l
NP-2	Ethylbenzene	20-Jul-00		1	ND	ug/L
NP-2	Ethylbenzene	20-Jul-00		5	ND	ug/L
NP-2	Ethylbenzene	20-Jul-00		1	ND	ug/l
NP-2	Hexavalent Chromium, Total	20-Jul-00		0.005	ND	mg/L
NP-2	Hexavalent Chromium, Total	20-Jul-00		0.005	ND	mg/L
NP-2	Iron, Dissolved	20-Jul-00		0.05	ND	mg/L
NP-2	Iron, Total	20-Jul-00	81			mg/L
NP-2	Iron, Total	20-Jul-00	0.37			mg/L
NP-2	Lead, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-2	Lead, Total	20-Jul-00	0.028			mg/L
NP-2	Lead, Total	20-Jul-00		0.01	ND	mg/L
NP-2	Magnesium, Dissolved	20-Jul-00	2.4			mg/L
NP-2	Magnesium, Total	20-Jul-00	4			mg/L
NP-2	Magnesium, Total	20-Jul-00	3			mg/L
NP-2	Manganese, Dissolved	20-Jul-00	0.026			mg/L
NP-2	Manganese, Total	20-Jul-00	0.17			mg/L
NP-2	Manganese, Total	20-Jul-00	0.02			mg/L
NP-2	Mercury, Dissolved	20-Jul-00		0.0002	ND	mg/L
NP-2	Mercury, Total	20-Jul-00		0.0002	ND	mg/L
NP-2	Mercury, Total	20-Jul-00		0.0002	ND	mg/L
NP-2	Methylene Chloride	20-Jul-00		1	ND	ug/L
NP-2	Methylene Chloride	20-Jul-00		1	ND	ug/L
NP-2	Nickel, Dissolved	20-Jul-00		0.02	ND	mg/L
NP-2	Nickel, Total	20-Jul-00		0.02	ND	mg/L
NP-2	Nickel, Total	20-Jul-00	0.034			mg/L
NP-2	Nitrate as N	20-Jul-00	8.6			mg/L
NP-2	Nitrate as N	20-Jul-00	8.5			mg/L
NP-2	Nitrite as N	20-Jul-00	0.024			mg/L
NP-2	Nitrite as N	20-Jul-00	0.038			mg/L
NP-2	Nitrogen, Ammonia	20-Jul-00	1.5			mg/L
NP-2	Nitrogen, Ammonia	20-Jul-00	2			mg/L
NP-2	N-Nitrosodiphenylamine	20-Jul-00		10	ND	ug/L
NP-2	N-Nitrosodiphenylamine	20-Jul-00		10	ND	ug/L
NP-2	PCB-1016	20-Jul-00		0.6	ND	ug/L
NP-2	PCB-1016	20-Jul-00		0.6	ND	ug/L
NP-2	PCB-1254	20-Jul-00		0.6	ND	ug/L
NP-2	PCB-1254	20-Jul-00		0.6	ND	ug/L
NP-2	PCB-1260	20-Jul-00		0.6	ND	ug/L
NP-2	PCB-1260	20-Jul-00		0.6	ND	ug/L
NP-2	Phenol	20-Jul-00		10	ND	ug/L
NP-2	Phenol	20-Jul-00		10	ND	ug/L
NP-2	Potassium, Dissolved	20-Jul-00	1.7			mg/L
NP-2	Potassium, Total	20-Jul-00	2			mg/L
NP-2	Potassium, Total	20-Jul-00	1.8			mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	Detection Limit	Flags	Units
NP-2	Sodium, Dissolved	20-Jul-00	92			mg/L
NP-2	Sodium, Total	20-Jul-00	100			mg/L
NP-2	Sodium, Total	20-Jul-00	8.7			mg/L
NP-2	Sulfate as SO4	20-Jul-00	59			mg/L
NP-2	Sulfate as SO4	20-Jul-00	72			mg/L
NP-2	Toluene	20-Jul-00		5	ND	ug/L
NP-2	Toluene	20-Jul-00		1	ND	ug/l
NP-2	Toluene	20-Jul-00		1	ND	ug/L
NP-2	Toluene	20-Jul-00		1	ND	ug/L
NP-2	Toluene	20-Jul-00		1	ND	ug/l
NP-2	Toluene	20-Jul-00		5	ND	ug/L
NP-2	Trichloroethene (TCE)	20-Jul-00		1	ND	ug/L
NP-2	Trichloroethene (TCE)	20-Jul-00		1	ND	ug/L
NP-2	Vanadium, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-2	Vanadium, Total	20-Jul-00	0.038			mg/L
NP-2	Vanadium, Total	20-Jul-00		0.01	ND	mg/L
NP-2	Vinyl Chloride	20-Jul-00		2	ND	ug/L
NP-2	Vinyl Chloride	20-Jul-00		2	ND	ug/L
NP-2	Xylenes, Total	20-Jul-00		5	ND	ug/L
NP-2	Xylenes, Total	20-Jul-00		5	ND	ug/L
NP-2	Zinc, Dissolved	20-Jul-00		0.05	ND	mg/L
NP-2	Zinc, Total	20-Jul-00		0.05	ND	mg/L
NP-2	Zinc, Total	20-Jul-00	0.17			mg/L
NP-3	1,1,1-Trichloroethane (TCA)	20-Jul-00		1	ND	ug/L
NP-3	1,1,1-Trichloroethane (TCA)	20-Jul-00		1	ND	ug/L
NP-3	2,4,4-Trimethyl-1-pentene	20-Jul-00		1	ND	ug/L
NP-3	2,4,4-Trimethyl-1-pentene	20-Jul-00		1	ND	ug/L
NP-3	2,4,4-Trimethyl-2-Pentene	20-Jul-00		1	ND	ug/L
NP-3	2,4,4-Trimethyl-2-Pentene	20-Jul-00		1	ND	ug/L
NP-3	4-Methyl-2-Pentanone (MIBK)	20-Jul-00		10	ND	ug/L
NP-3	4-Methyl-2-Pentanone (MIBK)	20-Jul-00		10	ND	ug/L
NP-3	Acetone	20-Jul-00		10	ND	ug/L
NP-3	Acetone	20-Jul-00		10	ND	ug/L
NP-3	Aluminum, Dissolved	20-Jul-00		0.1	ND	mg/L
NP-3	Aluminum, Total	20-Jul-00	0.07			mg/L
NP-3	Aluminum, Total	20-Jul-00	8.7			mg/L
NP-3	Arsenic, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-3	Arsenic, Total	20-Jul-00	0.021			mg/L
NP-3	Arsenic, Total	20-Jul-00		0.01	ND	mg/L
NP-3	Barium, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-3	Barium, Total	20-Jul-00	0.056			mg/L
NP-3	Barium, Total	20-Jul-00		0.01	ND	mg/L
NP-3	bis(2-EthylHexyl)phthalate	20-Jul-00		10	ND	ug/L
NP-3	bis(2-EthylHexyl)phthalate	20-Jul-00	74			ug/L
NP-3	Bromoform	20-Jul-00		1	ND	ug/L
NP-3	Bromoform	20-Jul-00		1	ND	ug/L
NP-3	Calcium, Dissolved	20-Jul-00	36			mg/L
NP-3	Calcium, Total	20-Jul-00	56			mg/L
NP-3	Calcium, Total	20-Jul-00	37			mg/L
NP-3	Chloride	20-Jul-00	85			mg/L
NP-3	Chloride	20-Jul-00	84			mg/L
NP-3	Chloroethane	20-Jul-00		2	ND	ug/L
NP-3	Chloroethane	20-Jul-00		2	ND	ug/L
NP-3	Chromium, Dissolved	20-Jul-00		0.01	ND	mg/L

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
NP-3	Chromium, Total	20-Jul-00	0.1			mg/L
NP-3	Chromium, Total	20-Jul-00		0.01	ND	mg/L
NP-3	Cobalt, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-3	Cobalt, Total	20-Jul-00		0.01	ND	mg/L
NP-3	Cobalt, Total	20-Jul-00		0.01	ND	mg/L
NP-3	Copper, Dissolved	20-Jul-00		0.02	ND	mg/L
NP-3	Copper, Total	20-Jul-00	0.023			mg/L
NP-3	Copper, Total	20-Jul-00	0.031			mg/L
NP-3	Di-n-octylphthalate	20-Jul-00		10	ND	ug/L
NP-3	Di-n-octylphthalate	20-Jul-00		10	ND	ug/L
NP-3	Ethylbenzene	20-Jul-00		1	ND	ug/l
NP-3	Ethylbenzene	20-Jul-00		1	ND	ug/L
NP-3	Ethylbenzene	20-Jul-00		5	ND	ug/L
NP-3	Ethylbenzene	20-Jul-00		5	ND	ug/L
NP-3	Ethylbenzene	20-Jul-00		1	ND	ug/l
NP-3	Ethylbenzene	20-Jul-00		1	ND	ug/L
NP-3	Hexavalent Chromium, Total	20-Jul-00		0.005	ND	mg/L
NP-3	Hexavalent Chromium, Total	20-Jul-00		0.005	ND	mg/L
NP-3	Iron, Dissolved	20-Jul-00		0.05	ND	mg/L
NP-3	Iron, Total	20-Jul-00	0.082			mg/L
NP-3	Iron, Total	20-Jul-00	13			mg/L
NP-3	Lead, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-3	Lead, Total	20-Jul-00		0.01	ND	mg/L
NP-3	Lead, Total	20-Jul-00	0.068			mg/L
NP-3	Magnesium, Dissolved	20-Jul-00	2.9			mg/L
NP-3	Magnesium, Total	20-Jul-00	3.5			mg/L
NP-3	Magnesium, Total	20-Jul-00	5.2			mg/L
NP-3	Manganese, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-3	Manganese, Total	20-Jul-00		0.01	ND	mg/L
NP-3	Manganese, Total	20-Jul-00	0.16			mg/L
NP-3	Mercury, Dissolved	20-Jul-00		0.0002	ND	mg/L
NP-3	Mercury, Total	20-Jul-00	0.0007			mg/L
NP-3	Mercury, Total	20-Jul-00		0.0002	ND	mg/L
NP-3	Methylene Chloride	20-Jul-00		1	ND	ug/L
NP-3	Methylene Chloride	20-Jul-00		1	ND	ug/L
NP-3	Nickel, Dissolved	20-Jul-00		0.02	ND	mg/L
NP-3	Nickel, Total	20-Jul-00		0.02	ND	mg/L
NP-3	Nickel, Total	20-Jul-00	0.026			mg/L
NP-3	Nitrate as N	20-Jul-00	9			mg/L
NP-3	Nitrate as N	20-Jul-00	8.9			mg/L
NP-3	Nitrite as N	20-Jul-00	0.019			mg/L
NP-3	Nitrite as N	20-Jul-00	0.017			mg/L
NP-3	Nitrogen, Ammonia	20-Jul-00	0.36			mg/L
NP-3	Nitrogen, Ammonia	20-Jul-00		0.1	ND	mg/L
NP-3	N-Nitrosodiphenylamine	20-Jul-00		10	ND	ug/L
NP-3	N-Nitrosodiphenylamine	20-Jul-00		10	ND	ug/L
NP-3	PCB-1016	20-Jul-00		0.6	ND	ug/L
NP-3	PCB-1016	20-Jul-00		0.6	ND	ug/L
NP-3	PCB-1254	20-Jul-00		0.6	ND	ug/L
NP-3	PCB-1254	20-Jul-00		0.6	ND	ug/L
NP-3	PCB-1260	20-Jul-00		0.6	ND	ug/L
NP-3	PCB-1260	20-Jul-00		0.6	ND	ug/L
NP-3	Phenol	20-Jul-00		10	ND	ug/L
NP-3	Phenol	20-Jul-00		10	ND	ug/L

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
NP-3	Potassium, Dissolved	20-Jul-00	2.1			mg/L
NP-3	Potassium, Total	20-Jul-00	2.5			mg/L
NP-3	Potassium, Total	20-Jul-00	2.1			mg/L
NP-3	Sodium, Dissolved	20-Jul-00	110			mg/L
NP-3	Sodium, Total	20-Jul-00	9.5			mg/L
NP-3	Sodium, Total	20-Jul-00	92			mg/L
NP-3	Sulfate as SO4	20-Jul-00	54			mg/L
NP-3	Sulfate as SO4	20-Jul-00	52			mg/L
NP-3	Toluene	20-Jul-00		5	ND	ug/L
NP-3	Toluene	20-Jul-00		5	ND	ug/L
NP-3	Toluene	20-Jul-00		1	ND	ug/L
NP-3	Toluene	20-Jul-00		1	ND	ug/L
NP-3	Toluene	20-Jul-00		1	ND	ug/l
NP-3	Toluene	20-Jul-00		1	ND	ug/l
NP-3	Trichloroethene (TCE)	20-Jul-00		1	ND	ug/L
NP-3	Trichloroethene (TCE)	20-Jul-00		1	ND	ug/L
NP-3	Vanadium, Dissolved	20-Jul-00		0.01	ND	mg/L
NP-3	Vanadium, Total	20-Jul-00	0.034			mg/L
NP-3	Vanadium, Total	20-Jul-00		0.01	ND	mg/L
NP-3	Vinyl Chloride	20-Jul-00		2	ND	ug/L
NP-3	Vinyl Chloride	20-Jul-00		2	ND	ug/L
NP-3	Xylenes, Total	20-Jul-00		5	ND	ug/L
NP-3	Xylenes, Total	20-Jul-00		5	ND	ug/L
NP-3	Zinc, Dissolved	20-Jul-00		0.05	ND	mg/L
NP-3	Zinc, Total	20-Jul-00	0.21			mg/L
NP-3	Zinc, Total	20-Jul-00		0.05	ND	mg/L
SD26-2	Chromium, Dissolved	05-Jun-01	1.7			mg/L
SD26-2	Chromium, Total	05-Jun-01	3.2			mg/L
SD26-2	Nitrogen, Ammonia	05-Jun-01	290			MG/L
SD-	bis(2-EthylHexyl)phthalate	05-Oct-00	3.4		JA	ug/L
SD-	Di-n-octylphthalate	05-Oct-00		17	ND	ug/L
SD-	N-Nitrosodiphenylamine	05-Oct-00		17	ND	ug/L
SD-	Phenol	05-Oct-00		17	ND	ug/L
SD-	bis(2-EthylHexyl)phthalate	05-Oct-00	2.6		JA	ug/L
SD-	Di-n-octylphthalate	05-Oct-00		17	ND	ug/L
SD-	N-Nitrosodiphenylamine	05-Oct-00		17	ND	ug/L
SD-	Phenol	05-Oct-00		17	ND	ug/L
SD-	bis(2-EthylHexyl)phthalate	05-Oct-00	2.5		JA	ug/L
SD-	Chromium, Dissolved	05-Jun-01		0.01	ND	mg/L
SD-	Chromium, Total	05-Jun-01	0.16			mg/L
SD-	Di-n-octylphthalate	05-Oct-00		17	ND	ug/L
SD-	Nitrogen, Ammonia	05-Jun-01	250			MG/L
SD-	N-Nitrosodiphenylamine	05-Oct-00		17	ND	ug/L
SD-	Phenol	05-Oct-00		17	ND	ug/L
SD-	bis(2-EthylHexyl)phthalate	05-Oct-00	3.9		JA	ug/L
SD-	Di-n-octylphthalate	05-Oct-00		20	ND	ug/L
SD-	N-Nitrosodiphenylamine	05-Oct-00		20	ND	ug/L
SD-	Phenol	05-Oct-00		20	ND	ug/L
SW-10	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-10	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l
SW-10	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l
SW-10	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-10	2,4,4-Trimethyl-1-pentene	01-Sep-92		0.01	ND	mg/l
SW-10	2,4,4-Trimethyl-1-pentene	01-Dec-92	0.011			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-10	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-10	2,4,4-Trimethyl-2-Pentene	01-Dec-92	0.005		J	mg/l
SW-10	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-10	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-10	Acetone	01-Sep-92		0.015	ND	mg/l
SW-10	Acetone	01-Dec-92		0.015	ND	mg/l
SW-10	Aluminum, Total	01-Sep-92	0.34			mg/l
SW-10	Aluminum, Total	01-Dec-92	2.4			mg/l
SW-10	Arsenic, Total	01-Sep-92		0.005	ND	mg/l
SW-10	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-10	Barium, Total	01-Sep-92	0.01			mg/l
SW-10	Barium, Total	01-Dec-92	0.017			mg/l
SW-10	bis(2-EthylHexyl)phthalate	01-Sep-92		0.01	ND	mg/l
SW-10	bis(2-EthylHexyl)phthalate	01-Dec-92	0.002		J	mg/l
SW-10	Bromoform	01-Sep-92		0.005	ND	mg/l
SW-10	Bromoform	01-Dec-92	0.001		J	mg/l
SW-10	Calcium, Total	01-Sep-92	32			mg/l
SW-10	Calcium, Total	01-Dec-92	24			mg/l
SW-10	Chloride	01-Sep-92	170			mg/l
SW-10	Chloride	01-Dec-92	190			mg/l
SW-10	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-10	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-10	Chromium, Total	01-Sep-92	0.054			mg/l
SW-10	Chromium, Total	01-Dec-92	0.44			mg/l
SW-10	Cobalt, Total	01-Sep-92		0.015	ND	mg/l
SW-10	Cobalt, Total	01-Dec-92		0.015	ND	mg/l
SW-10	Copper, Total	01-Sep-92		0.025	ND	mg/l
SW-10	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-10	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-10	Di-n-octylphthalate	01-Dec-92		0.01	ND	mg/l
SW-10	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-10	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-10	Iron, Total	01-Sep-92	0.48			mg/l
SW-10	Iron, Total	01-Dec-92	2.2			mg/l
SW-10	Lead, Total	01-Sep-92		0.005	ND	mg/l
SW-10	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-10	Magnesium, Total	01-Sep-92	6.3			mg/l
SW-10	Magnesium, Total	01-Dec-92	6.2			mg/l
SW-10	Manganese, Total	01-Sep-92	0.6			mg/l
SW-10	Manganese, Total	01-Dec-92	1.1			mg/l
SW-10	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-10	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-10	Methylene Chloride	01-Sep-92		0.01	ND	mg/l
SW-10	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-10	Nickel, Total	01-Sep-92		0.04	ND	mg/l
SW-10	Nickel, Total	01-Dec-92		0.04	ND	mg/l
SW-10	Nitrogen, Ammonia	01-Sep-92	47			mg/l
SW-10	Nitrogen, Ammonia	01-Dec-92	45			mg/l
SW-10	N-Nitrosodiphenylamine	01-Sep-92		0.01	ND	mg/l
SW-10	N-Nitrosodiphenylamine	01-Dec-92	0.002		J	mg/l
SW-10	Phenol	01-Sep-92		0.01	ND	mg/l
SW-10	Phenol	01-Dec-92		0.01	ND	mg/l
SW-10	Potassium, Total	01-Sep-92	2.5			mg/l
SW-10	Potassium, Total	01-Dec-92	2.6			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-10	Sodium, Total	01-Sep-92	200			mg/l
SW-10	Sodium, Total	01-Dec-92	180			mg/l
SW-10	Sulfate as SO4	01-Sep-92	480		J	mg/l
SW-10	Sulfate as SO4	01-Dec-92	330			mg/l
SW-10	Toluene	01-Sep-92		0.005	ND	mg/l
SW-10	Toluene	01-Dec-92		0.005	ND	mg/l
SW-10	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-10	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-10	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-10	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-10	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-10	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l
SW-10	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-10	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-10	Zinc, Total	01-Sep-92	0.032			mg/l
SW-10	Zinc, Total	01-Dec-92	0.061			mg/l
SW-11	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-11	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l
SW-11	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l
SW-11	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-11	2,4,4-Trimethyl-1-pentene	01-Sep-92	0.004			mg/l
SW-11	2,4,4-Trimethyl-1-pentene	01-Dec-92	0.013			mg/l
SW-11	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-11	2,4,4-Trimethyl-2-Pentene	01-Dec-92	0.003		J	mg/l
SW-11	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-11	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-11	Acetone	01-Sep-92		0.015	ND	mg/l
SW-11	Acetone	01-Dec-92		0.015	ND	mg/l
SW-11	Aluminum, Dissolved	02-Feb-95	0.23			mg/l
SW-11	Aluminum, Dissolved	03-May-95		0.1	ND	mg/l
SW-11	Aluminum, Dissolved	18-Oct-95	0.14			mg/l
SW-11	Aluminum, Dissolved	18-Oct-95	0.12			mg/l
SW-11	Aluminum, Total	01-Sep-92	0.2			mg/l
SW-11	Aluminum, Total	01-Dec-92	3			mg/l
SW-11	Aluminum, Total	02-Feb-95	0.53		J	mg/l
SW-11	Aluminum, Total	03-May-95	0.11			mg/l
SW-11	Aluminum, Total	18-Oct-95	0.78			mg/l
SW-11	Aluminum, Total	18-Oct-95	0.84			mg/l
SW-11	Arsenic, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-11	Arsenic, Dissolved	03-May-95		0.005	ND	mg/l
SW-11	Arsenic, Dissolved	18-Oct-95	0.007		J	mg/l
SW-11	Arsenic, Dissolved	18-Oct-95	0.009		J	mg/l
SW-11	Arsenic, Total	01-Sep-92		0.005	ND	mg/l
SW-11	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-11	Arsenic, Total	02-Feb-95		0.005	ND	mg/l
SW-11	Arsenic, Total	03-May-95		0.005	ND	mg/l
SW-11	Arsenic, Total	18-Oct-95		0.005	ND	mg/l
SW-11	Arsenic, Total	18-Oct-95		0.005	ND	mg/l
SW-11	Barium, Dissolved	02-Feb-95	0.057			mg/l
SW-11	Barium, Dissolved	03-May-95	0.013			mg/l
SW-11	Barium, Dissolved	18-Oct-95	0.044			mg/l
SW-11	Barium, Dissolved	18-Oct-95	0.047			mg/l
SW-11	Barium, Total	01-Sep-92	0.011			mg/l
SW-11	Barium, Total	01-Dec-92	0.016			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-11	Barium, Total	02-Feb-95	0.072			mg/l
SW-11	Barium, Total	03-May-95	0.015			mg/l
SW-11	Barium, Total	18-Oct-95	0.044		J	mg/l
SW-11	Barium, Total	18-Oct-95	0.032		J	mg/l
SW-11	bis(2-EthylHexyl)phthalate	01-Sep-92		0.01	ND	mg/l
SW-11	bis(2-EthylHexyl)phthalate	01-Dec-92	0.003		J	mg/l
SW-11	Bromoform	01-Sep-92		0.005	ND	mg/l
SW-11	Bromoform	01-Dec-92	0.001		J	mg/l
SW-11	Calcium, Dissolved	02-Feb-95	31			mg/l
SW-11	Calcium, Dissolved	03-May-95	15			mg/l
SW-11	Calcium, Dissolved	18-Oct-95	110		J	mg/l
SW-11	Calcium, Dissolved	18-Oct-95	120		J	mg/l
SW-11	Calcium, Total	01-Sep-92	29			mg/l
SW-11	Calcium, Total	01-Dec-92	25			mg/l
SW-11	Calcium, Total	02-Feb-95	39			mg/l
SW-11	Calcium, Total	03-May-95	15			mg/l
SW-11	Calcium, Total	18-Oct-95	89		J	mg/l
SW-11	Calcium, Total	18-Oct-95	120		J	mg/l
SW-11	Chloride	01-Sep-92	170			mg/l
SW-11	Chloride	01-Dec-92	190			mg/l
SW-11	Chloride	02-Feb-95	63			mg/l
SW-11	Chloride	02-Feb-95	66			mg/l
SW-11	Chloride	03-May-95	82			mg/l
SW-11	Chloride	03-May-95	82			mg/l
SW-11	Chloride	18-Oct-95	160			mg/l
SW-11	Chloride	18-Oct-95	160			mg/l
SW-11	Chloride	18-Oct-95	160			mg/l
SW-11	Chloride	18-Oct-95	160			mg/l
SW-11	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-11	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-11	Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-11	Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-11	Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
SW-11	Chromium, Dissolved	18-Oct-95	0.017			mg/l
SW-11	Chromium, Total	01-Sep-92	0.034			mg/l
SW-11	Chromium, Total	01-Dec-92	0.52			mg/l
SW-11	Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-11	Chromium, Total	03-May-95		0.015	ND	mg/l
SW-11	Chromium, Total	18-Oct-95	0.023			mg/l
SW-11	Chromium, Total	18-Oct-95	0.016			mg/l
SW-11	Cobalt, Total	01-Sep-92		0.015	ND	mg/l
SW-11	Cobalt, Total	01-Dec-92	0.025			mg/l
SW-11	Copper, Total	01-Sep-92		0.025	ND	mg/l
SW-11	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-11	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-11	Di-n-octylphthalate	01-Dec-92		0.01	ND	mg/l
SW-11	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-11	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-11	Hexavalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-11	Hexavalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-11	Hexavalent Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
SW-11	Hexavalent Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
SW-11	Hexavalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-11	Hexavalent Chromium, Total	03-May-95		0.015	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-11	Hexavalent Chromium, Total	18-Oct-95		0.015	ND	mg/l
SW-11	Hexavalent Chromium, Total	18-Oct-95		0.015	ND	mg/l
SW-11	Iron, Dissolved	02-Feb-95	4.3		J	mg/l
SW-11	Iron, Dissolved	03-May-95	0.52			mg/l
SW-11	Iron, Dissolved	18-Oct-95	3.7			mg/l
SW-11	Iron, Dissolved	18-Oct-95	4.1			mg/l
SW-11	Iron, Total	01-Sep-92	0.64			mg/l
SW-11	Iron, Total	01-Dec-92	2.4			mg/l
SW-11	Iron, Total	02-Feb-95	5.5		J	mg/l
SW-11	Iron, Total	03-May-95	1.5			mg/l
SW-11	Iron, Total	18-Oct-95	3.6			mg/l
SW-11	Iron, Total	18-Oct-95	3.7			mg/l
SW-11	Lead, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-11	Lead, Dissolved	03-May-95		0.005	ND	mg/l
SW-11	Lead, Dissolved	18-Oct-95		0.005	ND	mg/l
SW-11	Lead, Dissolved	18-Oct-95		0.005	ND	mg/l
SW-11	Lead, Total	01-Sep-92		0.005	ND	mg/l
SW-11	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-11	Lead, Total	02-Feb-95		0.005	ND	mg/l
SW-11	Lead, Total	03-May-95		0.005	ND	mg/l
SW-11	Lead, Total	18-Oct-95		0.005	ND	mg/l
SW-11	Lead, Total	18-Oct-95		0.005	ND	mg/l
SW-11	Magnesium, Dissolved	02-Feb-95	4.8			mg/l
SW-11	Magnesium, Dissolved	03-May-95	2.7			mg/l
SW-11	Magnesium, Dissolved	18-Oct-95	7.1			mg/l
SW-11	Magnesium, Dissolved	18-Oct-95	6.8			mg/l
SW-11	Magnesium, Total	01-Sep-92	6			mg/l
SW-11	Magnesium, Total	01-Dec-92	6.2			mg/l
SW-11	Magnesium, Total	02-Feb-95	6			mg/l
SW-11	Magnesium, Total	03-May-95	2.7			mg/l
SW-11	Magnesium, Total	18-Oct-95	7.3		J	mg/l
SW-11	Magnesium, Total	18-Oct-95	5.3		J	mg/l
SW-11	Manganese, Dissolved	02-Feb-95	0.35		J	mg/l
SW-11	Manganese, Dissolved	03-May-95	0.098			mg/l
SW-11	Manganese, Dissolved	18-Oct-95	0.8		J	mg/l
SW-11	Manganese, Dissolved	18-Oct-95	0.75		J	mg/l
SW-11	Manganese, Total	01-Sep-92	0.67			mg/l
SW-11	Manganese, Total	01-Dec-92	1.1			mg/l
SW-11	Manganese, Total	02-Feb-95	0.46		J	mg/l
SW-11	Manganese, Total	03-May-95	0.098			mg/l
SW-11	Manganese, Total	18-Oct-95	0.66			mg/l
SW-11	Manganese, Total	18-Oct-95	0.89			mg/l
SW-11	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-11	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-11	Methylene Chloride	01-Sep-92		0.01	ND	mg/l
SW-11	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-11	Nickel, Total	01-Sep-92		0.04	ND	mg/l
SW-11	Nickel, Total	01-Dec-92		0.04	ND	mg/l
SW-11	Nitrate as N	02-Feb-95	0.31		J	mg/l
SW-11	Nitrate as N	02-Feb-95	0.33			mg/l
SW-11	Nitrate as N	03-May-95	0.55			mg/l
SW-11	Nitrate as N	03-May-95	0.53			mg/l
SW-11	Nitrate as N	18-Oct-95	6.7		J	mg/l
SW-11	Nitrate as N	18-Oct-95	7.5		J	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-11	Nitrate as N	18-Oct-95	6.9		J	mg/l
SW-11	Nitrate as N	18-Oct-95	6		J	mg/l
SW-11	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-11	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-11	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-11	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-11	Nitrite as N	18-Oct-95		0.5	ND	mg/l
SW-11	Nitrite as N	18-Oct-95		0.5	ND	mg/l
SW-11	Nitrite as N	18-Oct-95		0.5	ND	mg/l
SW-11	Nitrite as N	18-Oct-95		0.5	ND	mg/l
SW-11	Nitrogen, Ammonia	01-Sep-92	41			mg/l
SW-11	Nitrogen, Ammonia	01-Dec-92	50			mg/l
SW-11	Nitrogen, Ammonia	02-Feb-95	31		J	mg/l
SW-11	Nitrogen, Ammonia	02-Feb-95	35		J	mg/l
SW-11	Nitrogen, Ammonia	03-May-95	6.8			mg/l
SW-11	Nitrogen, Ammonia	03-May-95	7			mg/l
SW-11	Nitrogen, Ammonia	18-Oct-95	160		J	mg/l
SW-11	Nitrogen, Ammonia	18-Oct-95	89		J	mg/l
SW-11	Nitrogen, Ammonia	18-Oct-95	93		J	mg/l
SW-11	Nitrogen, Ammonia	18-Oct-95	170		J	mg/l
SW-11	N-Nitrosodiphenylamine	01-Sep-92		0.01	ND	mg/l
SW-11	N-Nitrosodiphenylamine	01-Dec-92	0.002		J	mg/l
SW-11	Phenol	01-Sep-92		0.01	ND	mg/l
SW-11	Phenol	01-Dec-92	0.001		J	mg/l
SW-11	Potassium, Dissolved	02-Feb-95	3			mg/l
SW-11	Potassium, Dissolved	03-May-95	2			mg/l
SW-11	Potassium, Dissolved	18-Oct-95	4.4			mg/l
SW-11	Potassium, Dissolved	18-Oct-95	4.6			mg/l
SW-11	Potassium, Total	01-Sep-92	2.6			mg/l
SW-11	Potassium, Total	01-Dec-92	2.6			mg/l
SW-11	Potassium, Total	02-Feb-95	4.6			mg/l
SW-11	Potassium, Total	03-May-95	1.3			mg/l
SW-11	Potassium, Total	18-Oct-95	4.3			mg/l
SW-11	Potassium, Total	18-Oct-95	3.5			mg/l
SW-11	Sodium, Dissolved	02-Feb-95	72			mg/l
SW-11	Sodium, Dissolved	03-May-95	60			mg/l
SW-11	Sodium, Dissolved	18-Oct-95	150		J	mg/l
SW-11	Sodium, Dissolved	18-Oct-95	140		J	mg/l
SW-11	Sodium, Total	01-Sep-92	200			mg/l
SW-11	Sodium, Total	01-Dec-92	190			mg/l
SW-11	Sodium, Total	02-Feb-95	89		J	mg/l
SW-11	Sodium, Total	03-May-95	57			mg/l
SW-11	Sodium, Total	18-Oct-95	150		J	mg/l
SW-11	Sodium, Total	18-Oct-95	110		J	mg/l
SW-11	Sulfate as SO4	01-Sep-92	230		J	mg/l
SW-11	Sulfate as SO4	01-Dec-92	380			mg/l
SW-11	Sulfate as SO4	02-Feb-95	190			mg/l
SW-11	Sulfate as SO4	02-Feb-95	200			mg/l
SW-11	Sulfate as SO4	03-May-95	55			mg/l
SW-11	Sulfate as SO4	03-May-95	55			mg/l
SW-11	Sulfate as SO4	18-Oct-95	510		J	mg/l
SW-11	Sulfate as SO4	18-Oct-95	540			mg/l
SW-11	Sulfate as SO4	18-Oct-95	520			mg/l
SW-11	Sulfate as SO4	18-Oct-95	340		J	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-11	Sulfide	02-Feb-95		1	ND	mg/l
SW-11	Sulfide	02-Feb-95		1	ND	mg/l
SW-11	Sulfide	03-May-95		1	ND	mg/l
SW-11	Sulfide	03-May-95		1	ND	mg/l
SW-11	Sulfide	18-Oct-95	5		J	mg/l
SW-11	Sulfide	18-Oct-95		1	ND	mg/l
SW-11	Sulfide	18-Oct-95		1	ND	mg/l
SW-11	Sulfide	18-Oct-95		1	ND	mg/l
SW-11	Toluene	01-Sep-92		0.005	ND	mg/l
SW-11	Toluene	01-Dec-92		0.005	ND	mg/l
SW-11	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-11	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-11	Trivalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-11	Trivalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-11	Trivalent Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
SW-11	Trivalent Chromium, Dissolved	18-Oct-95	0.017		J	mg/l
SW-11	Trivalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-11	Trivalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-11	Trivalent Chromium, Total	18-Oct-95	0.016		J	mg/l
SW-11	Trivalent Chromium, Total	18-Oct-95	0.023		J	mg/l
SW-11	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-11	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-11	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-11	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l
SW-11	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-11	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-11	Zinc, Total	01-Sep-92	0.031			mg/l
SW-11	Zinc, Total	01-Dec-92	0.054			mg/l
SW-14	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-14	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l
SW-14	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l
SW-14	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-14	2,4,4-Trimethyl-1-pentene	01-Sep-92	0.004			mg/l
SW-14	2,4,4-Trimethyl-1-pentene	01-Dec-92	0.028			mg/l
SW-14	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-14	2,4,4-Trimethyl-2-Pentene	01-Dec-92	0.01			mg/l
SW-14	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-14	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-14	Acetone	01-Sep-92		0.015	ND	mg/l
SW-14	Acetone	01-Dec-92		0.015	ND	mg/l
SW-14	Aluminum, Dissolved	02-Feb-95		0.1	ND	mg/l
SW-14	Aluminum, Dissolved	02-Feb-95	0.11			mg/l
SW-14	Aluminum, Dissolved	03-May-95		0.1	ND	mg/l
SW-14	Aluminum, Dissolved	03-May-95		0.1	ND	mg/l
SW-14	Aluminum, Dissolved	19-Jul-95		0.1	ND	mg/l
SW-14	Aluminum, Dissolved	19-Jul-95		0.1	ND	mg/l
SW-14	Aluminum, Total	01-Sep-92	1.7			mg/l
SW-14	Aluminum, Total	01-Dec-92	6.9			mg/l
SW-14	Aluminum, Total	02-Feb-95		0.1	ND	mg/l
SW-14	Aluminum, Total	02-Feb-95	0.21		J	mg/l
SW-14	Aluminum, Total	03-May-95	0.14			mg/l
SW-14	Aluminum, Total	03-May-95		0.1	ND	mg/l
SW-14	Aluminum, Total	19-Jul-95		0.1	ND	mg/l
SW-14	Aluminum, Total	19-Jul-95		0.1	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-14	Arsenic, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-14	Arsenic, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-14	Arsenic, Dissolved	03-May-95		0.005	ND	mg/l
SW-14	Arsenic, Dissolved	03-May-95		0.005	ND	mg/l
SW-14	Arsenic, Dissolved	19-Jul-95		0.005	ND	mg/l
SW-14	Arsenic, Dissolved	19-Jul-95		0.005	ND	mg/l
SW-14	Arsenic, Total	01-Sep-92		0.005	ND	mg/l
SW-14	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-14	Arsenic, Total	02-Feb-95		0.005	ND	mg/l
SW-14	Arsenic, Total	02-Feb-95		0.005	ND	mg/l
SW-14	Arsenic, Total	03-May-95		0.005	ND	mg/l
SW-14	Arsenic, Total	03-May-95		0.005	ND	mg/l
SW-14	Arsenic, Total	19-Jul-95		0.005	ND	mg/l
SW-14	Arsenic, Total	19-Jul-95		0.005	ND	mg/l
SW-14	Barium, Dissolved	02-Feb-95	0.01			mg/l
SW-14	Barium, Dissolved	02-Feb-95	0.01			mg/l
SW-14	Barium, Dissolved	03-May-95	0.011			mg/l
SW-14	Barium, Dissolved	03-May-95	0.008			mg/l
SW-14	Barium, Dissolved	19-Jul-95	0.022			mg/l
SW-14	Barium, Dissolved	19-Jul-95	0.019			mg/l
SW-14	Barium, Total	01-Sep-92	0.02			mg/l
SW-14	Barium, Total	01-Dec-92	0.029			mg/l
SW-14	Barium, Total	02-Feb-95	0.01			mg/l
SW-14	Barium, Total	02-Feb-95	0.011			mg/l
SW-14	Barium, Total	03-May-95	0.011			mg/l
SW-14	Barium, Total	03-May-95	0.013			mg/l
SW-14	Barium, Total	19-Jul-95	0.022			mg/l
SW-14	Barium, Total	19-Jul-95	0.021			mg/l
SW-14	bis(2-EthylHexyl)phthalate	01-Sep-92		0.01	ND	mg/l
SW-14	bis(2-EthylHexyl)phthalate	01-Dec-92		0.12	ND	mg/l
SW-14	Bromoform	01-Sep-92		0.005	ND	mg/l
SW-14	Bromoform	01-Dec-92	0.003		J	mg/l
SW-14	Calcium, Dissolved	02-Feb-95	19			mg/l
SW-14	Calcium, Dissolved	02-Feb-95	20			mg/l
SW-14	Calcium, Dissolved	03-May-95	17			mg/l
SW-14	Calcium, Dissolved	03-May-95	20			mg/l
SW-14	Calcium, Dissolved	19-Jul-95	37			mg/l
SW-14	Calcium, Dissolved	19-Jul-95	40			mg/l
SW-14	Calcium, Total	01-Sep-92	40			mg/l
SW-14	Calcium, Total	01-Dec-92	38			mg/l
SW-14	Calcium, Total	02-Feb-95	19			mg/l
SW-14	Calcium, Total	02-Feb-95	19			mg/l
SW-14	Calcium, Total	03-May-95	18			mg/l
SW-14	Calcium, Total	03-May-95	21			mg/l
SW-14	Calcium, Total	19-Jul-95	36			mg/l
SW-14	Calcium, Total	19-Jul-95	34			mg/l
SW-14	Chloride	01-Sep-92	96			mg/l
SW-14	Chloride	01-Dec-92	170			mg/l
SW-14	Chloride	02-Feb-95	38			mg/l
SW-14	Chloride	02-Feb-95	40			mg/l
SW-14	Chloride	02-Feb-95	40			mg/l
SW-14	Chloride	02-Feb-95	38			mg/l
SW-14	Chloride	03-May-95	88			mg/l
SW-14	Chloride	03-May-95	88			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-14	Chloride	03-May-95	88			mg/l
SW-14	Chloride	03-May-95	87			mg/l
SW-14	Chloride	19-Jul-95	170			mg/l
SW-14	Chloride	19-Jul-95	170			mg/l
SW-14	Chloride	19-Jul-95	180			mg/l
SW-14	Chloride	19-Jul-95	170			mg/l
SW-14	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-14	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-14	Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-14	Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-14	Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-14	Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-14	Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-14	Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-14	Chromium, Total	01-Sep-92	0.32			mg/l
SW-14	Chromium, Total	01-Dec-92	1.2			mg/l
SW-14	Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-14	Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-14	Chromium, Total	03-May-95		0.015	ND	mg/l
SW-14	Chromium, Total	03-May-95		0.015	ND	mg/l
SW-14	Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-14	Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-14	Cobalt, Total	01-Sep-92		0.015	ND	mg/l
SW-14	Cobalt, Total	01-Dec-92	0.046			mg/l
SW-14	Copper, Total	01-Sep-92		0.025	ND	mg/l
SW-14	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-14	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-14	Di-n-octylphthalate	01-Dec-92		0.01	ND	mg/l
SW-14	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-14	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-14	Hexavalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-14	Hexavalent Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-14	Iron, Dissolved	02-Feb-95	1.3		J	mg/l
SW-14	Iron, Dissolved	02-Feb-95	0.74		J	mg/l
SW-14	Iron, Dissolved	03-May-95	0.46			mg/l
SW-14	Iron, Dissolved	03-May-95	0.42			mg/l
SW-14	Iron, Dissolved	19-Jul-95	0.35			mg/l
SW-14	Iron, Dissolved	19-Jul-95	0.36			mg/l
SW-14	Iron, Total	01-Sep-92	3.2			mg/l
SW-14	Iron, Total	01-Dec-92	5.1			mg/l
SW-14	Iron, Total	02-Feb-95	2.1		J	mg/l
SW-14	Iron, Total	02-Feb-95	1.2		J	mg/l
SW-14	Iron, Total	03-May-95	0.61			mg/l
SW-14	Iron, Total	03-May-95	0.74			mg/l
SW-14	Iron, Total	19-Jul-95	0.29			mg/l
SW-14	Iron, Total	19-Jul-95	0.31			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
SW-14	Lead, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-14	Lead, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-14	Lead, Dissolved	03-May-95		0.005	ND	mg/l
SW-14	Lead, Dissolved	03-May-95		0.005	ND	mg/l
SW-14	Lead, Dissolved	19-Jul-95		0.005	ND	mg/l
SW-14	Lead, Dissolved	19-Jul-95		0.005	ND	mg/l
SW-14	Lead, Total	01-Sep-92		0.005	ND	mg/l
SW-14	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-14	Lead, Total	02-Feb-95		0.005	ND	mg/l
SW-14	Lead, Total	02-Feb-95		0.005	ND	mg/l
SW-14	Lead, Total	03-May-95		0.005	ND	mg/l
SW-14	Lead, Total	03-May-95		0.005	ND	mg/l
SW-14	Lead, Total	19-Jul-95		0.005	ND	mg/l
SW-14	Lead, Total	19-Jul-95		0.005	ND	mg/l
SW-14	Magnesium, Dissolved	02-Feb-95	1.9			mg/l
SW-14	Magnesium, Dissolved	02-Feb-95	1.9			mg/l
SW-14	Magnesium, Dissolved	03-May-95	2.5			mg/l
SW-14	Magnesium, Dissolved	03-May-95	2.8			mg/l
SW-14	Magnesium, Dissolved	19-Jul-95	3.3			mg/l
SW-14	Magnesium, Dissolved	19-Jul-95	3.2			mg/l
SW-14	Magnesium, Total	01-Sep-92	8.2			mg/l
SW-14	Magnesium, Total	01-Dec-92	12			mg/l
SW-14	Magnesium, Total	02-Feb-95	1.9			mg/l
SW-14	Magnesium, Total	02-Feb-95	2.1			mg/l
SW-14	Magnesium, Total	03-May-95	2.7			mg/l
SW-14	Magnesium, Total	03-May-95	3.1			mg/l
SW-14	Magnesium, Total	19-Jul-95	2.9			mg/l
SW-14	Magnesium, Total	19-Jul-95	2.8			mg/l
SW-14	Manganese, Dissolved	02-Feb-95	0.18		J	mg/l
SW-14	Manganese, Dissolved	02-Feb-95	0.14		J	mg/l
SW-14	Manganese, Dissolved	03-May-95	0.059			mg/l
SW-14	Manganese, Dissolved	03-May-95	0.048			mg/l
SW-14	Manganese, Dissolved	19-Jul-95	0.086			mg/l
SW-14	Manganese, Dissolved	19-Jul-95	0.094			mg/l
SW-14	Manganese, Total	01-Sep-92	1.8			mg/l
SW-14	Manganese, Total	01-Dec-92	2.3			mg/l
SW-14	Manganese, Total	02-Feb-95	0.26		J	mg/l
SW-14	Manganese, Total	02-Feb-95	0.16		J	mg/l
SW-14	Manganese, Total	03-May-95	0.059			mg/l
SW-14	Manganese, Total	03-May-95	0.049			mg/l
SW-14	Manganese, Total	19-Jul-95	0.078			mg/l
SW-14	Manganese, Total	19-Jul-95	0.083			mg/l
SW-14	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-14	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-14	Methylene Chloride	01-Sep-92		0.01	ND	mg/l
SW-14	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-14	Nickel, Total	01-Sep-92		0.04	ND	mg/l
SW-14	Nickel, Total	01-Dec-92	0.049			mg/l
SW-14	Nitrate as N	02-Feb-95	0.4		J	mg/l
SW-14	Nitrate as N	02-Feb-95	0.32			mg/l
SW-14	Nitrate as N	02-Feb-95	0.2		J	mg/l
SW-14	Nitrate as N	02-Feb-95	0.38			mg/l
SW-14	Nitrate as N	03-May-95	0.78			mg/l
SW-14	Nitrate as N	03-May-95	0.77			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	Detection Limit	Flag	Units
SW-14	Nitrate as N	03-May-95	0.72			mg/l
SW-14	Nitrate as N	03-May-95	0.82			mg/l
SW-14	Nitrate as N	19-Jul-95	1.8			mg/l
SW-14	Nitrate as N	19-Jul-95	3			mg/l
SW-14	Nitrate as N	19-Jul-95	1.7			mg/l
SW-14	Nitrate as N	19-Jul-95	2.1			mg/l
SW-14	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-14	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-14	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-14	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-14	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-14	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-14	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-14	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-14	Nitrite as N	19-Jul-95	0.063			mg/l
SW-14	Nitrite as N	19-Jul-95	0.06			mg/l
SW-14	Nitrite as N	19-Jul-95	0.059			mg/l
SW-14	Nitrite as N	19-Jul-95	0.059			mg/l
SW-14	Nitrogen, Ammonia	01-Sep-92	65			mg/l
SW-14	Nitrogen, Ammonia	01-Dec-92	85			mg/l
SW-14	Nitrogen, Ammonia	02-Feb-95	0.09		J	mg/l
SW-14	Nitrogen, Ammonia	02-Feb-95	0.1		J	mg/l
SW-14	Nitrogen, Ammonia	02-Feb-95	0.12		J	mg/l
SW-14	Nitrogen, Ammonia	02-Feb-95	0.1		J	mg/l
SW-14	Nitrogen, Ammonia	03-May-95	1.7			mg/l
SW-14	Nitrogen, Ammonia	03-May-95	1.6			mg/l
SW-14	Nitrogen, Ammonia	03-May-95	1.6			mg/l
SW-14	Nitrogen, Ammonia	03-May-95	1.7			mg/l
SW-14	Nitrogen, Ammonia	19-Jul-95	1.1			mg/l
SW-14	Nitrogen, Ammonia	19-Jul-95	1.1			mg/l
SW-14	Nitrogen, Ammonia	19-Jul-95	1.1			mg/l
SW-14	Nitrogen, Ammonia	19-Jul-95	1.1			mg/l
SW-14	N-Nitrosodiphenylamine	01-Sep-92		0.01	ND	mg/l
SW-14	N-Nitrosodiphenylamine	01-Dec-92	0.003		J	mg/l
SW-14	Phenol	01-Sep-92		0.01	ND	mg/l
SW-14	Phenol	01-Dec-92	0.002		J	mg/l
SW-14	Potassium, Dissolved	02-Feb-95	1			mg/l
SW-14	Potassium, Dissolved	02-Feb-95	1.1			mg/l
SW-14	Potassium, Dissolved	03-May-95	1.6			mg/l
SW-14	Potassium, Dissolved	03-May-95	1.7			mg/l
SW-14	Potassium, Dissolved	19-Jul-95	2.5			mg/l
SW-14	Potassium, Dissolved	19-Jul-95	2.4			mg/l
SW-14	Potassium, Total	01-Sep-92	2.1			mg/l
SW-14	Potassium, Total	01-Dec-92	2.5			mg/l
SW-14	Potassium, Total	02-Feb-95	1.3			mg/l
SW-14	Potassium, Total	02-Feb-95	1.2			mg/l
SW-14	Potassium, Total	03-May-95	1.3			mg/l
SW-14	Potassium, Total	03-May-95	1.5			mg/l
SW-14	Potassium, Total	19-Jul-95	2.2			mg/l
SW-14	Potassium, Total	19-Jul-95	1.9			mg/l
SW-14	Sodium, Dissolved	02-Feb-95	30			mg/l
SW-14	Sodium, Dissolved	02-Feb-95	31			mg/l
SW-14	Sodium, Dissolved	03-May-95	61			mg/l
SW-14	Sodium, Dissolved	03-May-95	70			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
SW-14	Sodium, Dissolved	19-Jul-95	150			mg/l
SW-14	Sodium, Dissolved	19-Jul-95	160			mg/l
SW-14	Sodium, Total	01-Sep-92	92			mg/l
SW-14	Sodium, Total	01-Dec-92	150			mg/l
SW-14	Sodium, Total	02-Feb-95	35		J	mg/l
SW-14	Sodium, Total	02-Feb-95	31		J	mg/l
SW-14	Sodium, Total	03-May-95	73			mg/l
SW-14	Sodium, Total	03-May-95	64			mg/l
SW-14	Sodium, Total	19-Jul-95	140			mg/l
SW-14	Sodium, Total	19-Jul-95	140			mg/l
SW-14	Sulfate as SO4	01-Sep-92	400		J	mg/l
SW-14	Sulfate as SO4	01-Dec-92	600			mg/l
SW-14	Sulfate as SO4	02-Feb-95	30			mg/l
SW-14	Sulfate as SO4	02-Feb-95	28			mg/l
SW-14	Sulfate as SO4	02-Feb-95	28			mg/l
SW-14	Sulfate as SO4	02-Feb-95	30			mg/l
SW-14	Sulfate as SO4	03-May-95	46			mg/l
SW-14	Sulfate as SO4	03-May-95	46			mg/l
SW-14	Sulfate as SO4	03-May-95	45			mg/l
SW-14	Sulfate as SO4	03-May-95	45			mg/l
SW-14	Sulfate as SO4	19-Jul-95	54			mg/l
SW-14	Sulfate as SO4	19-Jul-95	53			mg/l
SW-14	Sulfate as SO4	19-Jul-95	54			mg/l
SW-14	Sulfate as SO4	19-Jul-95	53			mg/l
SW-14	Sulfide	02-Feb-95		1	ND	mg/l
SW-14	Sulfide	02-Feb-95		1	ND	mg/l
SW-14	Sulfide	02-Feb-95		1	ND	mg/l
SW-14	Sulfide	02-Feb-95		1	ND	mg/l
SW-14	Sulfide	03-May-95	1			mg/l
SW-14	Sulfide	03-May-95		1	ND	mg/l
SW-14	Sulfide	03-May-95		1	ND	mg/l
SW-14	Sulfide	03-May-95		1	ND	mg/l
SW-14	Sulfide	19-Jul-95		1	ND	mg/l
SW-14	Sulfide	19-Jul-95		1	ND	mg/l
SW-14	Sulfide	19-Jul-95		1	ND	mg/l
SW-14	Sulfide	19-Jul-95		1	ND	mg/l
SW-14	Toluene	01-Sep-92		0.005	ND	mg/l
SW-14	Toluene	01-Dec-92		0.005	ND	mg/l
SW-14	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-14	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-14	Trivalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-14	Trivalent Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-14	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-14	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-14	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-14	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-14	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-14	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-14	Zinc, Total	01-Sep-92	0.065			mg/l
SW-14	Zinc, Total	01-Dec-92	0.11			mg/l
SW-15	1,1,1-Trichloroethane (TCA)	02-Sep-92		0.005	ND	mg/l
SW-15	1,1,1-Trichloroethane (TCA)	02-Dec-92		0.005	ND	mg/l
SW-15	1,2-Dichloroethene (total)	02-Sep-92		0.005	ND	mg/l
SW-15	1,2-Dichloroethene (total)	02-Dec-92		0.005	ND	mg/l
SW-15	2,4,4-Trimethyl-1-pentene	02-Sep-92	0.034			mg/l
SW-15	2,4,4-Trimethyl-1-pentene	02-Dec-92	0.2			mg/l
SW-15	2,4,4-Trimethyl-2-Pentene	02-Sep-92	0.016			mg/l
SW-15	2,4,4-Trimethyl-2-Pentene	02-Dec-92	0.081			mg/l
SW-15	4-Methyl-2-Pentanone (MIBK)	02-Sep-92		0.015	ND	mg/l
SW-15	4-Methyl-2-Pentanone (MIBK)	02-Dec-92		0.015	ND	mg/l
SW-15	Acetone	02-Sep-92	0.015			mg/l
SW-15	Acetone	02-Dec-92		0.015	ND	mg/l
SW-15	Aluminum, Dissolved	02-Feb-95		0.1	ND	mg/l
SW-15	Aluminum, Dissolved	03-May-95		0.1	ND	mg/l
SW-15	Aluminum, Total	02-Sep-92	59			mg/l
SW-15	Aluminum, Total	02-Dec-92		0.1	ND	mg/l
SW-15	Aluminum, Total	02-Feb-95	0.94		J	mg/l
SW-15	Aluminum, Total	03-May-95	1.6			mg/l
SW-15	Arsenic, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-15	Arsenic, Dissolved	03-May-95		0.005	ND	mg/l
SW-15	Arsenic, Total	02-Sep-92	0.015			mg/l
SW-15	Arsenic, Total	02-Dec-92		0.005	ND	mg/l
SW-15	Arsenic, Total	02-Feb-95		0.005	ND	mg/l
SW-15	Arsenic, Total	03-May-95		0.005	ND	mg/l
SW-15	Barium, Dissolved	02-Feb-95	0.015			mg/l
SW-15	Barium, Dissolved	03-May-95	0.016			mg/l
SW-15	Barium, Total	02-Sep-92	0.019			mg/l
SW-15	Barium, Total	02-Dec-92	0.04			mg/l
SW-15	Barium, Total	02-Feb-95	0.014			mg/l
SW-15	Barium, Total	03-May-95	0.019			mg/l
SW-15	bis(2-EthylHexyl)phthalate	02-Sep-92	0.003		J	mg/l
SW-15	bis(2-EthylHexyl)phthalate	02-Dec-92		0.01	ND	mg/l
SW-15	Bromoform	02-Sep-92		0.005	ND	mg/l
SW-15	Bromoform	02-Dec-92		0.005	ND	mg/l
SW-15	Calcium, Dissolved	02-Feb-95	30			mg/l
SW-15	Calcium, Dissolved	03-May-95	50			mg/l
SW-15	Calcium, Total	02-Sep-92	14			mg/l
SW-15	Calcium, Total	02-Dec-92	15			mg/l
SW-15	Calcium, Total	02-Feb-95	29			mg/l
SW-15	Calcium, Total	03-May-95	56			mg/l
SW-15	Chloride	02-Sep-92	220			mg/l
SW-15	Chloride	02-Dec-92	130			mg/l
SW-15	Chloride	02-Feb-95	130			mg/l
SW-15	Chloride	02-Feb-95	130			mg/l
SW-15	Chloride	03-May-95	120			mg/l
SW-15	Chloride	03-May-95	120			mg/l
SW-15	Chloroethane	02-Sep-92		0.01	ND	mg/l
SW-15	Chloroethane	02-Dec-92		0.01	ND	mg/l
SW-15	Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-15	Chromium, Dissolved	03-May-95		0.015	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-15	Chromium, Total	02-Sep-92	0.55			mg/l
SW-15	Chromium, Total	02-Dec-92		0.015	ND	mg/l
SW-15	Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-15	Chromium, Total	03-May-95	0.023			mg/l
SW-15	Cobalt, Total	02-Sep-92		0.015	ND	mg/l
SW-15	Cobalt, Total	02-Dec-92		0.015	ND	mg/l
SW-15	Copper, Total	02-Sep-92	0.08			mg/l
SW-15	Copper, Total	02-Dec-92		0.025	ND	mg/l
SW-15	Di-n-octylphthalate	02-Sep-92		0.01	ND	mg/l
SW-15	Di-n-octylphthalate	02-Dec-92		0.01	ND	mg/l
SW-15	Ethylbenzene	02-Sep-92		0.005	ND	mg/l
SW-15	Ethylbenzene	02-Dec-92		0.005	ND	mg/l
SW-15	Hexavalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-15	Hexavalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-15	Hexavalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-15	Hexavalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-15	Iron, Dissolved	02-Feb-95	0.12		J	mg/l
SW-15	Iron, Dissolved	03-May-95	0.081			mg/l
SW-15	Iron, Total	02-Sep-92	10			mg/l
SW-15	Iron, Total	02-Dec-92	0.33			mg/l
SW-15	Iron, Total	02-Feb-95	0.6		J	mg/l
SW-15	Iron, Total	03-May-95	0.54			mg/l
SW-15	Lead, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-15	Lead, Dissolved	03-May-95		0.005	ND	mg/l
SW-15	Lead, Total	02-Sep-92	0.02			mg/l
SW-15	Lead, Total	02-Dec-92		0.005	ND	mg/l
SW-15	Lead, Total	02-Feb-95		0.005	ND	mg/l
SW-15	Lead, Total	03-May-95		0.005	ND	mg/l
SW-15	Magnesium, Dissolved	02-Feb-95	2.9			mg/l
SW-15	Magnesium, Dissolved	03-May-95	4.2			mg/l
SW-15	Magnesium, Total	02-Sep-92	4.8			mg/l
SW-15	Magnesium, Total	02-Dec-92	2.4			mg/l
SW-15	Magnesium, Total	02-Feb-95	2.8			mg/l
SW-15	Magnesium, Total	03-May-95	4.7			mg/l
SW-15	Manganese, Dissolved	02-Feb-95	0.24		J	mg/l
SW-15	Manganese, Dissolved	03-May-95	0.24			mg/l
SW-15	Manganese, Total	02-Sep-92	0.4			mg/l
SW-15	Manganese, Total	02-Dec-92	0.22			mg/l
SW-15	Manganese, Total	02-Feb-95	0.22		J	mg/l
SW-15	Manganese, Total	03-May-95	0.26			mg/l
SW-15	Mercury, Total	02-Sep-92	0.0008			mg/l
SW-15	Mercury, Total	02-Dec-92		0.0002	ND	mg/l
SW-15	Methylene Chloride	02-Sep-92		0.01	ND	mg/l
SW-15	Methylene Chloride	02-Dec-92		0.01	ND	mg/l
SW-15	Nickel, Total	02-Sep-92		0.04	ND	mg/l
SW-15	Nickel, Total	02-Dec-92		0.04	ND	mg/l
SW-15	Nitrate as N	02-Feb-95	2.8		J	mg/l
SW-15	Nitrate as N	02-Feb-95	2.8			mg/l
SW-15	Nitrate as N	03-May-95	2.7			mg/l
SW-15	Nitrate as N	03-May-95	2.8			mg/l
SW-15	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-15	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-15	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-15	Nitrite as N	03-May-95		0.05	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-15	Nitrogen, Ammonia	02-Sep-92	83			mg/l
SW-15	Nitrogen, Ammonia	02-Dec-92	44			mg/l
SW-15	Nitrogen, Ammonia	02-Feb-95	13			mg/l
SW-15	Nitrogen, Ammonia	02-Feb-95	15			mg/l
SW-15	Nitrogen, Ammonia	03-May-95	28			mg/l
SW-15	Nitrogen, Ammonia	03-May-95	28			mg/l
SW-15	N-Nitrosodiphenylamine	02-Sep-92	0.002		J	mg/l
SW-15	N-Nitrosodiphenylamine	02-Dec-92	0.031			mg/l
SW-15	Phenol	02-Sep-92	0.003		J	mg/l
SW-15	Phenol	02-Dec-92	0.002		J	mg/l
SW-15	Potassium, Dissolved	02-Feb-95	1.8			mg/l
SW-15	Potassium, Dissolved	03-May-95	1.8			mg/l
SW-15	Potassium, Total	02-Sep-92	3.2			mg/l
SW-15	Potassium, Total	02-Dec-92	1.3			mg/l
SW-15	Potassium, Total	02-Feb-95	1.6			mg/l
SW-15	Potassium, Total	03-May-95	1.9			mg/l
SW-15	Sodium, Dissolved	02-Feb-95	110			mg/l
SW-15	Sodium, Dissolved	03-May-95	120			mg/l
SW-15	Sodium, Total	02-Sep-92	160			mg/l
SW-15	Sodium, Total	02-Dec-92	120			mg/l
SW-15	Sodium, Total	02-Feb-95	110		J	mg/l
SW-15	Sodium, Total	03-May-95	120			mg/l
SW-15	Sulfate as SO4	02-Sep-92	380		J	mg/l
SW-15	Sulfate as SO4	02-Dec-92	280			mg/l
SW-15	Sulfate as SO4	02-Feb-95	140			mg/l
SW-15	Sulfate as SO4	02-Feb-95	160			mg/l
SW-15	Sulfate as SO4	03-May-95	280			mg/l
SW-15	Sulfate as SO4	03-May-95	270			mg/l
SW-15	Sulfide	02-Feb-95	2			mg/l
SW-15	Sulfide	02-Feb-95		1	ND	mg/l
SW-15	Sulfide	03-May-95	2			mg/l
SW-15	Sulfide	03-May-95	2			mg/l
SW-15	Toluene	02-Sep-92		0.005	ND	mg/l
SW-15	Toluene	02-Dec-92		0.005	ND	mg/l
SW-15	Trichloroethene (TCE)	02-Sep-92		0.005	ND	mg/l
SW-15	Trichloroethene (TCE)	02-Dec-92		0.005	ND	mg/l
SW-15	Trivalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-15	Trivalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-15	Trivalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-15	Trivalent Chromium, Total	03-May-95	0.023			mg/l
SW-15	Vanadium, Total	02-Sep-92		0.025	ND	mg/l
SW-15	Vanadium, Total	02-Dec-92		0.025	ND	mg/l
SW-15	Vinyl Chloride	02-Sep-92		0.01	ND	mg/l
SW-15	Vinyl Chloride	02-Dec-92		0.01	ND	mg/l
SW-15	Xylenes, Total	02-Sep-92		0.005	ND	mg/l
SW-15	Xylenes, Total	02-Dec-92		0.005	ND	mg/l
SW-15	Zinc, Total	02-Sep-92	0.044			mg/l
SW-15	Zinc, Total	02-Dec-92		0.025	ND	mg/l
SW-17	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-17	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-17	1,1,1-Trichloroethane (TCA)	02-Dec-92		0.005	ND	mg/l
SW-17	1,1,1-Trichloroethane (TCA)	02-Dec-92		0.005	ND	mg/l
SW-17	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l
SW-17	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
SW-17	1,2-Dichloroethene (total)	02-Dec-92		0.005	ND	mg/l
SW-17	1,2-Dichloroethene (total)	02-Dec-92		0.005	ND	mg/l
SW-17	2,4,4-Trimethyl-1-pentene	01-Sep-92	0.003			mg/l
SW-17	2,4,4-Trimethyl-1-pentene	01-Sep-92	0.004			mg/l
SW-17	2,4,4-Trimethyl-1-pentene	02-Dec-92		0.01	ND	mg/l
SW-17	2,4,4-Trimethyl-1-pentene	02-Dec-92	0.006		J	mg/l
SW-17	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-17	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-17	2,4,4-Trimethyl-2-Pentene	02-Dec-92	0.002		J	mg/l
SW-17	2,4,4-Trimethyl-2-Pentene	02-Dec-92		0.01	ND	mg/l
SW-17	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-17	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-17	4-Methyl-2-Pentanone (MIBK)	02-Dec-92		0.015	ND	mg/l
SW-17	4-Methyl-2-Pentanone (MIBK)	02-Dec-92		0.015	ND	mg/l
SW-17	Acetone	01-Sep-92		0.015	ND	mg/l
SW-17	Acetone	01-Sep-92		0.015	ND	mg/l
SW-17	Acetone	02-Dec-92		0.015	ND	mg/l
SW-17	Acetone	02-Dec-92	0.093			mg/l
SW-17	Aluminum, Dissolved	02-Feb-95		0.1	ND	mg/l
SW-17	Aluminum, Dissolved	03-May-95		0.1	ND	mg/l
SW-17	Aluminum, Dissolved	19-Jul-95		0.1	ND	mg/l
SW-17	Aluminum, Total	01-Sep-92	52			mg/l
SW-17	Aluminum, Total	01-Sep-92	29		J	mg/l
SW-17	Aluminum, Total	02-Dec-92	17		J	mg/l
SW-17	Aluminum, Total	02-Dec-92	8.1		J	mg/l
SW-17	Aluminum, Total	02-Feb-95	0.45		J	mg/l
SW-17	Aluminum, Total	03-May-95	0.83			mg/l
SW-17	Aluminum, Total	19-Jul-95		0.1	ND	mg/l
SW-17	Arsenic, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-17	Arsenic, Dissolved	03-May-95		0.005	ND	mg/l
SW-17	Arsenic, Dissolved	19-Jul-95		0.005	ND	mg/l
SW-17	Arsenic, Total	01-Sep-92		0.005	ND	mg/l
SW-17	Arsenic, Total	01-Sep-92	0.018			mg/l
SW-17	Arsenic, Total	02-Dec-92		0.005	ND	mg/l
SW-17	Arsenic, Total	02-Dec-92		0.005	ND	mg/l
SW-17	Arsenic, Total	02-Feb-95		0.005	ND	mg/l
SW-17	Arsenic, Total	03-May-95		0.005	ND	mg/l
SW-17	Arsenic, Total	19-Jul-95		0.005	ND	mg/l
SW-17	Barium, Dissolved	02-Feb-95	0.016			mg/l
SW-17	Barium, Dissolved	03-May-95	0.013			mg/l
SW-17	Barium, Dissolved	19-Jul-95	0.043			mg/l
SW-17	Barium, Total	01-Sep-92	0.026			mg/l
SW-17	Barium, Total	01-Sep-92	0.027			mg/l
SW-17	Barium, Total	02-Dec-92	0.025			mg/l
SW-17	Barium, Total	02-Dec-92	0.021			mg/l
SW-17	Barium, Total	02-Feb-95	0.017			mg/l
SW-17	Barium, Total	03-May-95	0.016			mg/l
SW-17	Barium, Total	19-Jul-95	0.056			mg/l
SW-17	bis(2-EthylHexyl)phthalate	01-Sep-92		0.01	ND	mg/l
SW-17	bis(2-EthylHexyl)phthalate	01-Sep-92		0.01	ND	mg/l
SW-17	bis(2-EthylHexyl)phthalate	02-Dec-92	0.006		J	mg/l
SW-17	bis(2-EthylHexyl)phthalate	02-Dec-92		0.011	ND	mg/l
SW-17	Bromoform	01-Sep-92	0.002			mg/l
SW-17	Bromoform	01-Sep-92	0.002			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-17	Bromoform	02-Dec-92	0.003		J	mg/l
SW-17	Bromoform	02-Dec-92	0.002		J	mg/l
SW-17	Calcium, Dissolved	02-Feb-95	25			mg/l
SW-17	Calcium, Dissolved	03-May-95	32			mg/l
SW-17	Calcium, Dissolved	19-Jul-95	130			mg/l
SW-17	Calcium, Total	01-Sep-92	58			mg/l
SW-17	Calcium, Total	01-Sep-92	54			mg/l
SW-17	Calcium, Total	02-Dec-92	38			mg/l
SW-17	Calcium, Total	02-Dec-92	36			mg/l
SW-17	Calcium, Total	02-Feb-95	26			mg/l
SW-17	Calcium, Total	03-May-95	36			mg/l
SW-17	Calcium, Total	19-Jul-95	140			mg/l
SW-17	Chloride	01-Sep-92	180			mg/l
SW-17	Chloride	01-Sep-92	160			mg/l
SW-17	Chloride	02-Dec-92	100			mg/l
SW-17	Chloride	02-Dec-92	94			mg/l
SW-17	Chloride	02-Feb-95	120			mg/l
SW-17	Chloride	02-Feb-95	160			mg/l
SW-17	Chloride	03-May-95	110			mg/l
SW-17	Chloride	03-May-95	100			mg/l
SW-17	Chloride	19-Jul-95	150			mg/l
SW-17	Chloride	19-Jul-95	160			mg/l
SW-17	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-17	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-17	Chloroethane	02-Dec-92		0.01	ND	mg/l
SW-17	Chloroethane	02-Dec-92		0.01	ND	mg/l
SW-17	Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-17	Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-17	Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-17	Chromium, Total	01-Sep-92	11			mg/l
SW-17	Chromium, Total	01-Sep-92	5.4			mg/l
SW-17	Chromium, Total	02-Dec-92	2.8		J	mg/l
SW-17	Chromium, Total	02-Dec-92	1.5		J	mg/l
SW-17	Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-17	Chromium, Total	03-May-95		0.015	ND	mg/l
SW-17	Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-17	Cobalt, Total	01-Sep-92	0.079			mg/l
SW-17	Cobalt, Total	01-Sep-92	0.089			mg/l
SW-17	Cobalt, Total	02-Dec-92	0.016			mg/l
SW-17	Cobalt, Total	02-Dec-92		0.015	ND	mg/l
SW-17	Copper, Total	01-Sep-92	0.075			mg/l
SW-17	Copper, Total	01-Sep-92	0.055			mg/l
SW-17	Copper, Total	02-Dec-92		0.025	ND	mg/l
SW-17	Copper, Total	02-Dec-92		0.025	ND	mg/l
SW-17	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-17	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-17	Di-n-octylphthalate	02-Dec-92		0.01	ND	mg/l
SW-17	Di-n-octylphthalate	02-Dec-92		0.01	ND	mg/l
SW-17	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-17	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-17	Ethylbenzene	02-Dec-92		0.005	ND	mg/l
SW-17	Ethylbenzene	02-Dec-92		0.005	ND	mg/l
SW-17	Hexavalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-17	Hexavalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-17	Hexavalent Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-17	Hexavalent Chromium, Total	01-Sep-92	0.4		J	mg/l
SW-17	Hexavalent Chromium, Total	01-Sep-92	0.25		J	mg/l
SW-17	Hexavalent Chromium, Total	02-Dec-92	0.051		J	mg/l
SW-17	Hexavalent Chromium, Total	02-Dec-92	0.051		J	mg/l
SW-17	Hexavalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-17	Hexavalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-17	Hexavalent Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-17	Iron, Dissolved	02-Feb-95	0.38		J	mg/l
SW-17	Iron, Dissolved	03-May-95	0.091			mg/l
SW-17	Iron, Dissolved	19-Jul-95	0.48			mg/l
SW-17	Iron, Total	01-Sep-92	14			mg/l
SW-17	Iron, Total	01-Sep-92	26			mg/l
SW-17	Iron, Total	02-Dec-92	4.6			mg/l
SW-17	Iron, Total	02-Dec-92	6.6			mg/l
SW-17	Iron, Total	02-Feb-95	0.91		J	mg/l
SW-17	Iron, Total	03-May-95	0.34			mg/l
SW-17	Iron, Total	19-Jul-95	0.65			mg/l
SW-17	Lead, Dissolved	02-Feb-95		0.005	ND	mg/l
SW-17	Lead, Dissolved	03-May-95		0.005	ND	mg/l
SW-17	Lead, Dissolved	19-Jul-95		0.005	ND	mg/l
SW-17	Lead, Total	01-Sep-92		0.005	ND	mg/l
SW-17	Lead, Total	01-Sep-92	0.015			mg/l
SW-17	Lead, Total	02-Dec-92		0.005	ND	mg/l
SW-17	Lead, Total	02-Dec-92		0.005	ND	mg/l
SW-17	Lead, Total	02-Feb-95		0.005	ND	mg/l
SW-17	Lead, Total	03-May-95		0.005	ND	mg/l
SW-17	Lead, Total	19-Jul-95		0.005	ND	mg/l
SW-17	Magnesium, Dissolved	02-Feb-95	2.6			mg/l
SW-17	Magnesium, Dissolved	03-May-95	3.9			mg/l
SW-17	Magnesium, Dissolved	19-Jul-95	8.5			mg/l
SW-17	Magnesium, Total	01-Sep-92	21			mg/l
SW-17	Magnesium, Total	01-Sep-92	21			mg/l
SW-17	Magnesium, Total	02-Dec-92	9.7			mg/l
SW-17	Magnesium, Total	02-Dec-92	8.7			mg/l
SW-17	Magnesium, Total	02-Feb-95	2.7			mg/l
SW-17	Magnesium, Total	03-May-95	3.6			mg/l
SW-17	Magnesium, Total	19-Jul-95	8.7			mg/l
SW-17	Manganese, Dissolved	02-Feb-95	0.19		J	mg/l
SW-17	Manganese, Dissolved	03-May-95	0.089			mg/l
SW-17	Manganese, Dissolved	19-Jul-95	0.38			mg/l
SW-17	Manganese, Total	01-Sep-92	4			mg/l
SW-17	Manganese, Total	01-Sep-92	4.2			mg/l
SW-17	Manganese, Total	02-Dec-92	1.6			mg/l
SW-17	Manganese, Total	02-Dec-92	1.2			mg/l
SW-17	Manganese, Total	02-Feb-95	0.19		J	mg/l
SW-17	Manganese, Total	03-May-95	0.097			mg/l
SW-17	Manganese, Total	19-Jul-95	0.48			mg/l
SW-17	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-17	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-17	Mercury, Total	02-Dec-92		0.0002	ND	mg/l
SW-17	Mercury, Total	02-Dec-92		0.0002	ND	mg/l
SW-17	Methylene Chloride	01-Sep-92		0.01	ND	mg/l
SW-17	Methylene Chloride	01-Sep-92		0.01	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-17	Methylene Chloride	02-Dec-92		0.01	ND	mg/l
SW-17	Methylene Chloride	02-Dec-92		0.01	ND	mg/l
SW-17	Nickel, Total	01-Sep-92	0.071			mg/l
SW-17	Nickel, Total	01-Sep-92	0.082			mg/l
SW-17	Nickel, Total	02-Dec-92		0.04	ND	mg/l
SW-17	Nickel, Total	02-Dec-92		0.04	ND	mg/l
SW-17	Nitrate as N	02-Dec-92	1.3		J	mg/l
SW-17	Nitrate as N	02-Dec-92	1.1		J	mg/l
SW-17	Nitrate as N	02-Feb-95	2.4		J	mg/l
SW-17	Nitrate as N	02-Feb-95	2.5			mg/l
SW-17	Nitrate as N	03-May-95	2.2			mg/l
SW-17	Nitrate as N	03-May-95	2.1			mg/l
SW-17	Nitrate as N	19-Jul-95	0.68			mg/l
SW-17	Nitrate as N	19-Jul-95	0.63			mg/l
SW-17	Nitrite as N	02-Dec-92		0.05	ND	mg/l
SW-17	Nitrite as N	02-Dec-92		0.05	ND	mg/l
SW-17	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-17	Nitrite as N	02-Feb-95		0.05	ND	mg/l
SW-17	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-17	Nitrite as N	03-May-95		0.05	ND	mg/l
SW-17	Nitrite as N	19-Jul-95	0.053			mg/l
SW-17	Nitrite as N	19-Jul-95	0.056			mg/l
SW-17	Nitrogen, Ammonia	01-Sep-92	89			mg/l
SW-17	Nitrogen, Ammonia	01-Sep-92	120			mg/l
SW-17	Nitrogen, Ammonia	02-Dec-92	69			mg/l
SW-17	Nitrogen, Ammonia	02-Dec-92	74			mg/l
SW-17	Nitrogen, Ammonia	02-Feb-95	11			mg/l
SW-17	Nitrogen, Ammonia	02-Feb-95	12			mg/l
SW-17	Nitrogen, Ammonia	03-May-95	25			mg/l
SW-17	Nitrogen, Ammonia	03-May-95	25			mg/l
SW-17	Nitrogen, Ammonia	19-Jul-95	150			mg/l
SW-17	Nitrogen, Ammonia	19-Jul-95	150			mg/l
SW-17	N-Nitrosodiphenylamine	01-Sep-92		0.01	ND	mg/l
SW-17	N-Nitrosodiphenylamine	01-Sep-92		0.01	ND	mg/l
SW-17	N-Nitrosodiphenylamine	02-Dec-92	0.004		J	mg/l
SW-17	N-Nitrosodiphenylamine	02-Dec-92	0.003		J	mg/l
SW-17	Phenol	01-Sep-92	0.002			mg/l
SW-17	Phenol	01-Sep-92	0.002			mg/l
SW-17	Phenol	02-Dec-92	0.002		J	mg/l
SW-17	Phenol	02-Dec-92		0.01	ND	mg/l
SW-17	Potassium, Dissolved	02-Feb-95	1.6			mg/l
SW-17	Potassium, Dissolved	03-May-95	1.8			mg/l
SW-17	Potassium, Dissolved	19-Jul-95	3			mg/l
SW-17	Potassium, Total	01-Sep-92	4.4			mg/l
SW-17	Potassium, Total	01-Sep-92	4.5			mg/l
SW-17	Potassium, Total	02-Dec-92	1.9			mg/l
SW-17	Potassium, Total	02-Dec-92	2.3			mg/l
SW-17	Potassium, Total	02-Feb-95	1.9			mg/l
SW-17	Potassium, Total	03-May-95	1.8			mg/l
SW-17	Potassium, Total	19-Jul-95	3.5			mg/l
SW-17	Sodium, Dissolved	02-Feb-95	110			mg/l
SW-17	Sodium, Dissolved	03-May-95	82			mg/l
SW-17	Sodium, Dissolved	19-Jul-95	130			mg/l
SW-17	Sodium, Total	01-Sep-92	220			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
SW-17	Sodium, Total	01-Sep-92	200			mg/l
SW-17	Sodium, Total	02-Dec-92	130			mg/l
SW-17	Sodium, Total	02-Dec-92	110			mg/l
SW-17	Sodium, Total	02-Feb-95	110		J	mg/l
SW-17	Sodium, Total	03-May-95	88			mg/l
SW-17	Sodium, Total	19-Jul-95	140			mg/l
SW-17	Sulfate as SO4	01-Sep-92	520		J	mg/l
SW-17	Sulfate as SO4	01-Sep-92	760		J	mg/l
SW-17	Sulfate as SO4	02-Dec-92	290			mg/l
SW-17	Sulfate as SO4	02-Dec-92	400			mg/l
SW-17	Sulfate as SO4	02-Feb-95	110			mg/l
SW-17	Sulfate as SO4	02-Feb-95	140			mg/l
SW-17	Sulfate as SO4	03-May-95	190			mg/l
SW-17	Sulfate as SO4	03-May-95	200			mg/l
SW-17	Sulfate as SO4	19-Jul-95	650			mg/l
SW-17	Sulfate as SO4	19-Jul-95	660			mg/l
SW-17	Sulfide	02-Feb-95		1	ND	mg/l
SW-17	Sulfide	02-Feb-95		1	ND	mg/l
SW-17	Sulfide	03-May-95	2			mg/l
SW-17	Sulfide	03-May-95		1	ND	mg/l
SW-17	Sulfide	19-Jul-95	2			mg/l
SW-17	Sulfide	19-Jul-95	2			mg/l
SW-17	Toluene	01-Sep-92		0.005	ND	mg/l
SW-17	Toluene	01-Sep-92		0.005	ND	mg/l
SW-17	Toluene	02-Dec-92		0.005	ND	mg/l
SW-17	Toluene	02-Dec-92		0.005	ND	mg/l
SW-17	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-17	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-17	Trichloroethene (TCE)	02-Dec-92		0.005	ND	mg/l
SW-17	Trichloroethene (TCE)	02-Dec-92		0.005	ND	mg/l
SW-17	Trivalent Chromium, Dissolved	02-Feb-95		0.015	ND	mg/l
SW-17	Trivalent Chromium, Dissolved	03-May-95		0.015	ND	mg/l
SW-17	Trivalent Chromium, Dissolved	19-Jul-95		0.015	ND	mg/l
SW-17	Trivalent Chromium, Total	02-Feb-95		0.015	ND	mg/l
SW-17	Trivalent Chromium, Total	03-May-95		0.015	ND	mg/l
SW-17	Trivalent Chromium, Total	19-Jul-95		0.015	ND	mg/l
SW-17	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-17	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-17	Vanadium, Total	02-Dec-92		0.025	ND	mg/l
SW-17	Vanadium, Total	02-Dec-92		0.025	ND	mg/l
SW-17	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-17	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-17	Vinyl Chloride	02-Dec-92		0.01	ND	mg/l
SW-17	Vinyl Chloride	02-Dec-92		0.01	ND	mg/l
SW-17	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-17	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-17	Xylenes, Total	02-Dec-92		0.005	ND	mg/l
SW-17	Xylenes, Total	02-Dec-92		0.005	ND	mg/l
SW-17	Zinc, Total	01-Sep-92	0.18			mg/l
SW-17	Zinc, Total	01-Sep-92	0.19			mg/l
SW-17	Zinc, Total	02-Dec-92	0.096			mg/l
SW-17	Zinc, Total	02-Dec-92	0.085			mg/l
SW-6	1,1,1-Trichloroethane (TCA)	31-Aug-92		0.005	ND	mg/l
SW-6	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-6	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l
SW-6	1,2-Dichloroethene (total)	31-Aug-92		0.005	ND	mg/l
SW-6	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-6	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-6	2,4,4-Trimethyl-1-pentene	31-Aug-92		0.01	ND	mg/l
SW-6	2,4,4-Trimethyl-1-pentene	01-Dec-92	0.005		J	mg/l
SW-6	2,4,4-Trimethyl-1-pentene	01-Dec-92	0.002		J	mg/l
SW-6	2,4,4-Trimethyl-2-Pentene	31-Aug-92		0.01	ND	mg/l
SW-6	2,4,4-Trimethyl-2-Pentene	01-Dec-92		0.01	ND	mg/l
SW-6	2,4,4-Trimethyl-2-Pentene	01-Dec-92		0.01	ND	mg/l
SW-6	4-Methyl-2-Pentanone (MIBK)	31-Aug-92		0.015	ND	mg/l
SW-6	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-6	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-6	Acetone	31-Aug-92		0.015	ND	mg/l
SW-6	Acetone	01-Dec-92		0.015	ND	mg/l
SW-6	Acetone	01-Dec-92		0.015	ND	mg/l
SW-6	Aluminum, Dissolved	19-Apr-96	0.24			mg/l
SW-6	Aluminum, Total	31-Aug-92	0.39			mg/l
SW-6	Aluminum, Total	01-Dec-92	3.8			mg/l
SW-6	Aluminum, Total	01-Dec-92	2.7			mg/l
SW-6	Arsenic, Dissolved	19-Apr-96		0.008	ND	mg/l
SW-6	Arsenic, Total	31-Aug-92		0.005	ND	mg/l
SW-6	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-6	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-6	Barium, Dissolved	19-Apr-96	0.037			mg/l
SW-6	Barium, Total	31-Aug-92	0.017			mg/l
SW-6	Barium, Total	01-Dec-92	0.018			mg/l
SW-6	Barium, Total	01-Dec-92	0.024			mg/l
SW-6	bis(2-EthylHexyl)phthalate	31-Aug-92		0.016	ND	mg/l
SW-6	bis(2-EthylHexyl)phthalate	01-Dec-92		0.023	ND	mg/l
SW-6	bis(2-EthylHexyl)phthalate	01-Dec-92	0.02			mg/l
SW-6	Bromoform	31-Aug-92		0.005	ND	mg/l
SW-6	Bromoform	01-Dec-92		0.005	ND	mg/l
SW-6	Bromoform	01-Dec-92		0.005	ND	mg/l
SW-6	Calcium, Dissolved	19-Apr-96	32			mg/l
SW-6	Calcium, Total	31-Aug-92	38			mg/l
SW-6	Calcium, Total	01-Dec-92	38			mg/l
SW-6	Calcium, Total	01-Dec-92	32			mg/l
SW-6	Chloride	31-Aug-92	73			mg/l
SW-6	Chloride	01-Dec-92	170			mg/l
SW-6	Chloride	01-Dec-92	170			mg/l
SW-6	Chloride	19-Apr-96	73			mg/l
SW-6	Chloroethane	31-Aug-92		0.01	ND	mg/l
SW-6	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-6	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-6	Chromium, Dissolved	19-Apr-96		0.015	ND	mg/l
SW-6	Chromium, Total	31-Aug-92	0.044			mg/l
SW-6	Chromium, Total	01-Dec-92	0.25			mg/l
SW-6	Chromium, Total	01-Dec-92	0.39			mg/l
SW-6	Cobalt, Dissolved	19-Apr-96		0.03	ND	mg/l
SW-6	Cobalt, Total	31-Aug-92		0.015	ND	mg/l
SW-6	Cobalt, Total	01-Dec-92		0.015	ND	mg/l
SW-6	Cobalt, Total	01-Dec-92		0.015	ND	mg/l
SW-6	Copper, Dissolved	19-Apr-96		0.025	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-6	Copper, Total	31-Aug-92		0.025	ND	mg/l
SW-6	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-6	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-6	Di-n-octylphthalate	31-Aug-92		0.01	ND	mg/l
SW-6	Di-n-octylphthalate	01-Dec-92	0.004		J	mg/l
SW-6	Di-n-octylphthalate	01-Dec-92	0.013			mg/l
SW-6	Ethylbenzene	31-Aug-92		0.005	ND	mg/l
SW-6	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-6	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-6	Hexavalent Chromium, Dissolved	18-Apr-96		0.01	ND	mg/l
SW-6	Hexavalent Chromium, Total	01-Dec-92	0.033		J	mg/l
SW-6	Hexavalent Chromium, Total	01-Dec-92	0.028		J	mg/l
SW-6	Iron, Dissolved	19-Apr-96	0.094			mg/l
SW-6	Iron, Total	31-Aug-92	2.4			mg/l
SW-6	Iron, Total	01-Dec-92	2.4			mg/l
SW-6	Iron, Total	01-Dec-92	1.9			mg/l
SW-6	Lead, Dissolved	19-Apr-96		0.005	ND	mg/l
SW-6	Lead, Total	31-Aug-92		0.005	ND	mg/l
SW-6	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-6	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-6	Magnesium, Dissolved	19-Apr-96	2.7			mg/l
SW-6	Magnesium, Total	31-Aug-92	7			mg/l
SW-6	Magnesium, Total	01-Dec-92	7.6			mg/l
SW-6	Magnesium, Total	01-Dec-92	7			mg/l
SW-6	Manganese, Dissolved	19-Apr-96	0.3			mg/l
SW-6	Manganese, Total	31-Aug-92	0.91			mg/l
SW-6	Manganese, Total	01-Dec-92	1.1			mg/l
SW-6	Manganese, Total	01-Dec-92	1.4			mg/l
SW-6	Mercury, Dissolved	19-Apr-96		0.0002	ND	mg/l
SW-6	Mercury, Total	31-Aug-92		0.0002	ND	mg/l
SW-6	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-6	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-6	Methylene Chloride	31-Aug-92		0.01	ND	mg/l
SW-6	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-6	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-6	Nickel, Dissolved	19-Apr-96		0.04	ND	mg/l
SW-6	Nickel, Total	31-Aug-92		0.04	ND	mg/l
SW-6	Nickel, Total	01-Dec-92		0.04	ND	mg/l
SW-6	Nickel, Total	01-Dec-92		0.04	ND	mg/l
SW-6	Nitrate as N	01-Dec-92	5.9		J	mg/l
SW-6	Nitrate as N	01-Dec-92	5.8		J	mg/l
SW-6	Nitrite as N	01-Dec-92	0.61			mg/l
SW-6	Nitrite as N	01-Dec-92	0.052			mg/l
SW-6	Nitrogen, Ammonia	31-Aug-92	8.3			mg/l
SW-6	Nitrogen, Ammonia	01-Dec-92	60			mg/l
SW-6	Nitrogen, Ammonia	01-Dec-92	58			mg/l
SW-6	N-Nitrosodiphenylamine	31-Aug-92		0.01	ND	mg/l
SW-6	N-Nitrosodiphenylamine	01-Dec-92	0.002		J	mg/l
SW-6	N-Nitrosodiphenylamine	01-Dec-92	0.003		J	mg/l
SW-6	Phenol	31-Aug-92		0.01	ND	mg/l
SW-6	Phenol	01-Dec-92		0.01	ND	mg/l
SW-6	Phenol	01-Dec-92		0.01	ND	mg/l
SW-6	Potassium, Dissolved	19-Apr-96	2			mg/l
SW-6	Potassium, Total	31-Aug-92	3.1			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-6	Potassium, Total	01-Dec-92	2.5			mg/l
SW-6	Potassium, Total	01-Dec-92	2.5			mg/l
SW-6	Sodium, Dissolved	19-Apr-96	55			mg/l
SW-6	Sodium, Total	31-Aug-92	77			mg/l
SW-6	Sodium, Total	01-Dec-92	160			mg/l
SW-6	Sodium, Total	01-Dec-92	160			mg/l
SW-6	Sulfate as SO4	31-Aug-92	130		J	mg/l
SW-6	Sulfate as SO4	01-Dec-92	390			mg/l
SW-6	Sulfate as SO4	01-Dec-92	410			mg/l
SW-6	Sulfate as SO4	19-Apr-96	130			mg/l
SW-6	Toluene	31-Aug-92		0.005	ND	mg/l
SW-6	Toluene	01-Dec-92		0.005	ND	mg/l
SW-6	Toluene	01-Dec-92		0.005	ND	mg/l
SW-6	Trichloroethene (TCE)	31-Aug-92		0.005	ND	mg/l
SW-6	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-6	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-6	Vanadium, Dissolved	19-Apr-96		0.025	ND	mg/l
SW-6	Vanadium, Total	31-Aug-92		0.025	ND	mg/l
SW-6	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-6	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-6	Vinyl Chloride	31-Aug-92		0.01	ND	mg/l
SW-6	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l
SW-6	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l
SW-6	Xylenes, Total	31-Aug-92		0.005	ND	mg/l
SW-6	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-6	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-6	Zinc, Dissolved	19-Apr-96	0.037			mg/l
SW-6	Zinc, Total	31-Aug-92	0.044			mg/l
SW-6	Zinc, Total	01-Dec-92	0.062			mg/l
SW-6	Zinc, Total	01-Dec-92	0.077			mg/l
SW-7	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-7	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l
SW-7	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l
SW-7	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-7	2,4,4-Trimethyl-1-pentene	01-Sep-92		0.01	ND	mg/l
SW-7	2,4,4-Trimethyl-1-pentene	01-Dec-92	0.005		J	mg/l
SW-7	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-7	2,4,4-Trimethyl-2-Pentene	01-Dec-92	0.002		J	mg/l
SW-7	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-7	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-7	Acetone	01-Sep-92	0.001			mg/l
SW-7	Acetone	01-Dec-92		0.015	ND	mg/l
SW-7	Aluminum, Total	01-Sep-92	0.72			mg/l
SW-7	Aluminum, Total	01-Dec-92	12			mg/l
SW-7	Arsenic, Total	01-Sep-92		0.005	ND	mg/l
SW-7	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-7	Barium, Total	01-Sep-92	0.019			mg/l
SW-7	Barium, Total	01-Dec-92	0.019			mg/l
SW-7	bis(2-EthylHexyl)phthalate	01-Sep-92		0.01	ND	mg/l
SW-7	bis(2-EthylHexyl)phthalate	01-Dec-92	0.005		J	mg/l
SW-7	Bromoform	01-Sep-92		0.005	ND	mg/l
SW-7	Bromoform	01-Dec-92		0.005	ND	mg/l
SW-7	Calcium, Total	01-Sep-92	57			mg/l
SW-7	Calcium, Total	01-Dec-92	27			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
SW-7	Chloride	01-Sep-92	150			mg/l
SW-7	Chloride	01-Dec-92	140			mg/l
SW-7	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-7	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-7	Chromium, Total	01-Sep-92	0.12			mg/l
SW-7	Chromium, Total	01-Dec-92	1.7			mg/l
SW-7	Cobalt, Total	01-Sep-92	0.021			mg/l
SW-7	Cobalt, Total	01-Dec-92		0.015	ND	mg/l
SW-7	Copper, Total	01-Sep-92		0.025	ND	mg/l
SW-7	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-7	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-7	Di-n-octylphthalate	01-Dec-92		0.01	ND	mg/l
SW-7	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-7	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-7	Iron, Total	01-Sep-92	0.97			mg/l
SW-7	Iron, Total	01-Dec-92	3.2			mg/l
SW-7	Lead, Total	01-Sep-92		0.005	ND	mg/l
SW-7	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-7	Magnesium, Total	01-Sep-92	11			mg/l
SW-7	Magnesium, Total	01-Dec-92	5.8			mg/l
SW-7	Manganese, Total	01-Sep-92	1.8			mg/l
SW-7	Manganese, Total	01-Dec-92	0.98			mg/l
SW-7	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-7	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-7	Methylene Chloride	01-Sep-92		0.01	ND	mg/l
SW-7	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-7	Nickel, Total	01-Sep-92		0.04	ND	mg/l
SW-7	Nickel, Total	01-Dec-92		0.04	ND	mg/l
SW-7	Nitrogen, Ammonia	01-Sep-92	110			mg/l
SW-7	Nitrogen, Ammonia	01-Dec-92	43			mg/l
SW-7	N-Nitrosodiphenylamine	01-Sep-92	0.001			mg/l
SW-7	N-Nitrosodiphenylamine	01-Dec-92	0.002		J	mg/l
SW-7	Phenol	01-Sep-92		0.01	ND	mg/l
SW-7	Phenol	01-Dec-92		0.01	ND	mg/l
SW-7	Potassium, Total	01-Sep-92	9.4			mg/l
SW-7	Potassium, Total	01-Dec-92	2.4			mg/l
SW-7	Sodium, Total	01-Sep-92	150			mg/l
SW-7	Sodium, Total	01-Dec-92	130			mg/l
SW-7	Sulfate as SO4	01-Sep-92	590		J	mg/l
SW-7	Sulfate as SO4	01-Dec-92	290			mg/l
SW-7	Toluene	01-Sep-92		0.005	ND	mg/l
SW-7	Toluene	01-Dec-92		0.005	ND	mg/l
SW-7	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-7	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-7	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-7	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-7	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-7	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l
SW-7	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-7	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-7	Zinc, Total	01-Sep-92	0.063			mg/l
SW-7	Zinc, Total	01-Dec-92	0.076			mg/l
SW-8	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-8	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-8	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l
SW-8	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-8	2,4,4-Trimethyl-1-pentene	01-Sep-92		0.01	ND	mg/l
SW-8	2,4,4-Trimethyl-1-pentene	01-Dec-92		0.01	ND	mg/l
SW-8	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-8	2,4,4-Trimethyl-2-Pentene	01-Dec-92		0.01	ND	mg/l
SW-8	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-8	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-8	Acetone	01-Sep-92		0.015	ND	mg/l
SW-8	Acetone	01-Dec-92		0.015	ND	mg/l
SW-8	Aluminum, Total	01-Sep-92	0.64			mg/l
SW-8	Aluminum, Total	01-Dec-92	1.1			mg/l
SW-8	Arsenic, Total	01-Sep-92		0.005	ND	mg/l
SW-8	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-8	Barium, Total	01-Sep-92	0.01			mg/l
SW-8	Barium, Total	01-Dec-92	0.017			mg/l
SW-8	bis(2-EthylHexyl)phthalate	01-Sep-92	0.048			mg/l
SW-8	bis(2-EthylHexyl)phthalate	01-Dec-92		0.17	ND	mg/l
SW-8	Bromoform	01-Sep-92		0.005	ND	mg/l
SW-8	Bromoform	01-Dec-92		0.005	ND	mg/l
SW-8	Calcium, Total	01-Sep-92	52			mg/l
SW-8	Calcium, Total	01-Dec-92	80			mg/l
SW-8	Chloride	01-Sep-92	160			mg/l
SW-8	Chloride	01-Dec-92	140			mg/l
SW-8	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-8	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-8	Chromium, Total	01-Sep-92	0.18			mg/l
SW-8	Chromium, Total	01-Dec-92	0.057			mg/l
SW-8	Cobalt, Total	01-Sep-92		0.015	ND	mg/l
SW-8	Cobalt, Total	01-Dec-92		0.015	ND	mg/l
SW-8	Copper, Total	01-Sep-92		0.025	ND	mg/l
SW-8	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-8	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-8	Di-n-octylphthalate	01-Dec-92	0.001		J	mg/l
SW-8	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-8	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-8	Hexavalent Chromium, Total	01-Dec-92	0.074		J	mg/l
SW-8	Iron, Total	01-Sep-92	0.56			mg/l
SW-8	Iron, Total	01-Dec-92	0.35			mg/l
SW-8	Lead, Total	01-Sep-92		0.005	ND	mg/l
SW-8	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-8	Magnesium, Total	01-Sep-92	6.6			mg/l
SW-8	Magnesium, Total	01-Dec-92	5.6			mg/l
SW-8	Manganese, Total	01-Sep-92	0.28			mg/l
SW-8	Manganese, Total	01-Dec-92	0.48			mg/l
SW-8	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-8	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-8	Methylene Chloride	01-Sep-92		0.01	ND	mg/l
SW-8	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-8	Nickel, Total	01-Sep-92		0.04	ND	mg/l
SW-8	Nickel, Total	01-Dec-92		0.04	ND	mg/l
SW-8	Nitrate as N	01-Dec-92	6.6		J	mg/l
SW-8	Nitrite as N	01-Dec-92	0.085			mg/l
SW-8	Nitrogen, Ammonia	01-Sep-92	63			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	Parameter Name	Date Sampled	Result	Detection Limit	Flag	Units
SW-8	Nitrogen, Ammonia	01-Dec-92	55			mg/l
SW-8	N-Nitrosodiphenylamine	01-Sep-92		0.01	ND	mg/l
SW-8	N-Nitrosodiphenylamine	01-Dec-92		0.01	ND	mg/l
SW-8	Phenol	01-Sep-92		0.01	ND	mg/l
SW-8	Phenol	01-Dec-92		0.01	ND	mg/l
SW-8	Potassium, Total	01-Sep-92	2.2			mg/l
SW-8	Potassium, Total	01-Dec-92	2.8			mg/l
SW-8	Sodium, Total	01-Sep-92	170			mg/l
SW-8	Sodium, Total	01-Dec-92	120			mg/l
SW-8	Sulfate as SO4	01-Sep-92	450		J	mg/l
SW-8	Sulfate as SO4	01-Dec-92	530			mg/l
SW-8	Toluene	01-Sep-92		0.005	ND	mg/l
SW-8	Toluene	01-Dec-92		0.005	ND	mg/l
SW-8	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-8	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-8	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-8	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-8	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-8	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l
SW-8	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-8	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-8	Zinc, Total	01-Sep-92		0.025	ND	mg/l
SW-8	Zinc, Total	01-Dec-92	0.04			mg/l
SW-9	1,1,1-Trichloroethane (TCA)	01-Sep-92		0.005	ND	mg/l
SW-9	1,1,1-Trichloroethane (TCA)	01-Dec-92		0.005	ND	mg/l
SW-9	1,2-Dichloroethene (total)	01-Sep-92		0.005	ND	mg/l
SW-9	1,2-Dichloroethene (total)	01-Dec-92		0.005	ND	mg/l
SW-9	2,4,4-Trimethyl-1-pentene	01-Sep-92		0.01	ND	mg/l
SW-9	2,4,4-Trimethyl-1-pentene	01-Dec-92	0.006		J	mg/l
SW-9	2,4,4-Trimethyl-2-Pentene	01-Sep-92		0.01	ND	mg/l
SW-9	2,4,4-Trimethyl-2-Pentene	01-Dec-92	0.002		J	mg/l
SW-9	4-Methyl-2-Pentanone (MIBK)	01-Sep-92		0.015	ND	mg/l
SW-9	4-Methyl-2-Pentanone (MIBK)	01-Dec-92		0.015	ND	mg/l
SW-9	Acetone	01-Sep-92		0.015	ND	mg/l
SW-9	Acetone	01-Dec-92		0.015	ND	mg/l
SW-9	Aluminum, Dissolved	18-Oct-95		0.1	ND	mg/l
SW-9	Aluminum, Total	01-Sep-92	0.15			mg/l
SW-9	Aluminum, Total	01-Dec-92	4.7			mg/l
SW-9	Aluminum, Total	18-Oct-95	0.13			mg/l
SW-9	Arsenic, Dissolved	18-Oct-95		0.005	ND	mg/l
SW-9	Arsenic, Total	01-Sep-92		0.005	ND	mg/l
SW-9	Arsenic, Total	01-Dec-92		0.005	ND	mg/l
SW-9	Arsenic, Total	18-Oct-95		0.005	ND	mg/l
SW-9	Barium, Dissolved	18-Oct-95	0.021			mg/l
SW-9	Barium, Total	01-Sep-92	0.009			mg/l
SW-9	Barium, Total	01-Dec-92	0.016			mg/l
SW-9	Barium, Total	18-Oct-95	0.019			mg/l
SW-9	bis(2-EthylHexyl)phthalate	01-Sep-92		0.01	ND	mg/l
SW-9	bis(2-EthylHexyl)phthalate	01-Dec-92	0.009		J	mg/l
SW-9	Bromoform	01-Sep-92		0.005	ND	mg/l
SW-9	Bromoform	01-Dec-92		0.005	ND	mg/l
SW-9	Calcium, Dissolved	18-Oct-95	290		J	mg/l
SW-9	Calcium, Total	01-Sep-92	32			mg/l
SW-9	Calcium, Total	01-Dec-92	23			mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-9	Calcium, Total	18-Oct-95	280		J	mg/l
SW-9	Chloride	01-Sep-92	180			mg/l
SW-9	Chloride	01-Dec-92	190			mg/l
SW-9	Chloride	18-Oct-95	78			mg/l
SW-9	Chloride	18-Oct-95	78			mg/l
SW-9	Chloroethane	01-Sep-92		0.01	ND	mg/l
SW-9	Chloroethane	01-Dec-92		0.01	ND	mg/l
SW-9	Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
SW-9	Chromium, Total	01-Sep-92	0.027			mg/l
SW-9	Chromium, Total	01-Dec-92	0.72			mg/l
SW-9	Chromium, Total	18-Oct-95		0.015	ND	mg/l
SW-9	Cobalt, Total	01-Sep-92		0.015	ND	mg/l
SW-9	Cobalt, Total	01-Dec-92		0.015	ND	mg/l
SW-9	Copper, Total	01-Sep-92		0.025	ND	mg/l
SW-9	Copper, Total	01-Dec-92		0.025	ND	mg/l
SW-9	Di-n-octylphthalate	01-Sep-92		0.01	ND	mg/l
SW-9	Di-n-octylphthalate	01-Dec-92		0.01	ND	mg/l
SW-9	Ethylbenzene	01-Sep-92		0.005	ND	mg/l
SW-9	Ethylbenzene	01-Dec-92		0.005	ND	mg/l
SW-9	Hexavalent Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
SW-9	Hexavalent Chromium, Total	18-Oct-95		0.015	ND	mg/l
SW-9	Iron, Dissolved	18-Oct-95		0.025	ND	mg/l
SW-9	Iron, Total	01-Sep-92	0.4			mg/l
SW-9	Iron, Total	01-Dec-92	2.7			mg/l
SW-9	Iron, Total	18-Oct-95		0.53	ND	mg/l
SW-9	Lead, Dissolved	18-Oct-95		0.005	ND	mg/l
SW-9	Lead, Total	01-Sep-92		0.005	ND	mg/l
SW-9	Lead, Total	01-Dec-92		0.005	ND	mg/l
SW-9	Lead, Total	18-Oct-95		0.005	ND	mg/l
SW-9	Magnesium, Dissolved	18-Oct-95	5.9			mg/l
SW-9	Magnesium, Total	01-Sep-92	6			mg/l
SW-9	Magnesium, Total	01-Dec-92	6.1			mg/l
SW-9	Magnesium, Total	18-Oct-95	5.9			mg/l
SW-9	Manganese, Dissolved	18-Oct-95	0.42		J	mg/l
SW-9	Manganese, Total	01-Sep-92	0.44			mg/l
SW-9	Manganese, Total	01-Dec-92	0.82			mg/l
SW-9	Manganese, Total	18-Oct-95	0.46			mg/l
SW-9	Mercury, Total	01-Sep-92		0.0002	ND	mg/l
SW-9	Mercury, Total	01-Dec-92		0.0002	ND	mg/l
SW-9	Methylene Chloride	01-Sep-92		0.01	ND	mg/l
SW-9	Methylene Chloride	01-Dec-92		0.01	ND	mg/l
SW-9	Nickel, Total	01-Sep-92		0.04	ND	mg/l
SW-9	Nickel, Total	01-Dec-92		0.04	ND	mg/l
SW-9	Nitrate as N	18-Oct-95	4.2		J	mg/l
SW-9	Nitrate as N	18-Oct-95	4.2		J	mg/l
SW-9	Nitrite as N	18-Oct-95		0.05	ND	mg/l
SW-9	Nitrite as N	18-Oct-95		0.05	ND	mg/l
SW-9	Nitrogen, Ammonia	01-Sep-92	40			mg/l
SW-9	Nitrogen, Ammonia	01-Dec-92	38			mg/l
SW-9	Nitrogen, Ammonia	18-Oct-95	62		J	mg/l
SW-9	Nitrogen, Ammonia	18-Oct-95	97		J	mg/l
SW-9	N-Nitrosodiphenylamine	01-Sep-92		0.01	ND	mg/l
SW-9	N-Nitrosodiphenylamine	01-Dec-92	0.002		J	mg/l
SW-9	Phenol	01-Sep-92		0.01	ND	mg/l

Appendix A - South Ditch Surface Water Quality Data

Location	ParameterName	DateSampled	Result	DetectionLimit	Flag	Units
SW-9	Phenol	01-Dec-92		0.01	ND	mg/l
SW-9	Potassium, Dissolved	18-Oct-95	3.8			mg/l
SW-9	Potassium, Total	01-Sep-92	2.5			mg/l
SW-9	Potassium, Total	01-Dec-92	2.7			mg/l
SW-9	Potassium, Total	18-Oct-95	3.5			mg/l
SW-9	Sodium, Dissolved	18-Oct-95	93		J	mg/l
SW-9	Sodium, Total	01-Sep-92	200			mg/l
SW-9	Sodium, Total	01-Dec-92	190			mg/l
SW-9	Sodium, Total	18-Oct-95	90		J	mg/l
SW-9	Sulfate as SO4	01-Sep-92	310		J	mg/l
SW-9	Sulfate as SO4	01-Dec-92	330			mg/l
SW-9	Sulfate as SO4	18-Oct-95	1000			mg/l
SW-9	Sulfate as SO4	18-Oct-95	1100			mg/l
SW-9	Sulfide	18-Oct-95		1	ND	mg/l
SW-9	Sulfide	18-Oct-95		1	ND	mg/l
SW-9	Toluene	01-Sep-92		0.005	ND	mg/l
SW-9	Toluene	01-Dec-92		0.005	ND	mg/l
SW-9	Trichloroethene (TCE)	01-Sep-92		0.005	ND	mg/l
SW-9	Trichloroethene (TCE)	01-Dec-92		0.005	ND	mg/l
SW-9	Trivalent Chromium, Dissolved	18-Oct-95		0.015	ND	mg/l
SW-9	Trivalent Chromium, Total	18-Oct-95		0.015	ND	mg/l
SW-9	Vanadium, Total	01-Sep-92		0.025	ND	mg/l
SW-9	Vanadium, Total	01-Dec-92		0.025	ND	mg/l
SW-9	Vinyl Chloride	01-Sep-92		0.01	ND	mg/l
SW-9	Vinyl Chloride	01-Dec-92		0.01	ND	mg/l
SW-9	Xylenes, Total	01-Sep-92		0.005	ND	mg/l
SW-9	Xylenes, Total	01-Dec-92		0.005	ND	mg/l
SW-9	Zinc, Total	01-Sep-92	0.027			mg/l
SW-9	Zinc, Total	01-Dec-92	0.052			mg/l

Appendix B

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Result	Units	AnalysisMethod
1,1,1,2-Tetrachloroethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,1,1,2-Tetrachloroethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,1,1,2-Tetrachloroethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,1,1,2-Tetrachloroethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,1,1,2-Tetrachloroethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,1,1-Trichloroethane (TCA)	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,1,1-Trichloroethane (TCA)	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,1,1-Trichloroethane (TCA)	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,1,1-Trichloroethane (TCA)	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,1,1-Trichloroethane (TCA)	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,1,2,2-Tetrachloroethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,1,2,2-Tetrachloroethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,1,2,2-Tetrachloroethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,1,2,2-Tetrachloroethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,1,2,2-Tetrachloroethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,1,2-Trichloroethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,1,2-Trichloroethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,1,2-Trichloroethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,1,2-Trichloroethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,1,2-Trichloroethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloroethene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloropropene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloropropene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloropropene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloropropene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,1-Dichloropropene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichlorobenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichlorobenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichlorobenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichlorobenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichlorobenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichloropropane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichloropropane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichloropropane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichloropropane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,2,3-Trichloropropane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,2,4-Trichlorobenzene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
1,2,4-Trimethylbenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,2,4-Trimethylbenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,2,4-Trimethylbenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,2,4-Trimethylbenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,2,4-Trimethylbenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dibromo-3-Chloropropane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dibromo-3-Chloropropane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dibromo-3-Chloropropane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dibromo-3-Chloropropane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dibromo-3-Chloropropane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichlorobenzene	NP-1C	7/20/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	NP-2C	7/20/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	NP-2T	7/20/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	NP-3C	7/20/2000	<10	ug/L	EPA 8260B

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

Parameter Name	Location	Date	Result	Units	Analysis Method
1,2-Dichlorobenzene	NP-3T	7/20/2000	<10	ug/L	EPA 8260B
1,2-Dichloroethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloroethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloroethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloroethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloroethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloropropane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloropropane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloropropane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloropropane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,2-Dichloropropane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,3,5-Trimethylbenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,3,5-Trimethylbenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,3,5-Trimethylbenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,3,5-Trimethylbenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,3,5-Trimethylbenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,3-Dichlorobenzene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
1,3-Dichloropropane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
1,3-Dichloropropane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
1,3-Dichloropropane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
1,3-Dichloropropane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
1,3-Dichloropropane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
1,4-Dichlorobenzene	NP-1C	7/20/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	NP-2C	7/20/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	NP-2T	7/20/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	NP-3C	7/20/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	NP-3T	7/20/2000	<10	ug/L	EPA 8260B
2,2-Dichloropropane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
2,2-Dichloropropane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
2,2-Dichloropropane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
2,2-Dichloropropane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
2,2-Dichloropropane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-1-pentene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-1-pentene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-1-pentene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-1-pentene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-1-pentene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-2-Pentene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-2-Pentene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-2-Pentene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-2-Pentene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
2,4,4-Trimethyl-2-Pentene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
2,4,5-TP	NP-1C	7/20/2000	<0.2	ug/L	SW-846 8151A
2,4,5-TP	NP-2C	7/20/2000	<0.2	ug/L	SW-846 8151A
2,4,5-TP	NP-2T	7/20/2000	<0.2	ug/L	SW-846 8151A
2,4,5-TP	NP-3C	7/20/2000	<0.2	ug/L	SW-846 8151A
2,4,5-TP	NP-3T	7/20/2000	<0.2	ug/L	SW-846 8151A
2,4,5-Trichlorophenol	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2,4-D	NP-1C	7/20/2000	<1.2	ug/L	SW-846 8151A
2,4-D	NP-2C	7/20/2000	<1.2	ug/L	SW-846 8151A
2,4-D	NP-2T	7/20/2000	<1.2	ug/L	SW-846 8151A

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Results	Units	AnalysisMethod
2,4-D	NP-3C	7/20/2000	<1.2	ug/L	SW-846 8151A
2,4-D	NP-3T	7/20/2000	<1.2	ug/L	SW-846 8151A
2,4-Dichlorophenol	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
2,4-Dinitrophenol	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
2,4-Dinitrophenol	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
2,4-Dinitrophenol	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
2,4-Dinitrophenol	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
2,4-Dinitrotoluene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2-Butanone (MEK)	NP-1C	7/20/2000	<10	ug/L	EPA 8260B
2-Butanone (MEK)	NP-2C	7/20/2000	<10	ug/L	EPA 8260B
2-Butanone (MEK)	NP-2T	7/20/2000	<10	ug/L	EPA 8260B
2-Butanone (MEK)	NP-3C	7/20/2000	<10	ug/L	EPA 8260B
2-Butanone (MEK)	NP-3T	7/20/2000	<10	ug/L	EPA 8260B
2-Chloronaphthalene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2-Chlorotoluene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
2-Chlorotoluene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
2-Chlorotoluene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
2-Chlorotoluene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
2-Chlorotoluene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
2-Hexanone	NP-1C	7/20/2000	<10	ug/L	EPA 8260B
2-Hexanone	NP-2C	7/20/2000	<10	ug/L	EPA 8260B
2-Hexanone	NP-2T	7/20/2000	<10	ug/L	EPA 8260B
2-Hexanone	NP-3C	7/20/2000	<10	ug/L	EPA 8260B
2-Hexanone	NP-3T	7/20/2000	<10	ug/L	EPA 8260B
2-Methylnaphthalene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8270C
2-Methylnaphthalene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
2-Methylnaphthalene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8270C
2-Methylnaphthalene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
2-Methylnaphthalene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8270C
2-Methylnaphthalene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
2-Methylnaphthalene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8270C
2-Methylnaphthalene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
2-Methylnaphthalene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8270C
2-Methylnaphthalene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
2-Methylphenol (o-Cresol)	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	NP-2C	7/20/2000	<10	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
2-Methylphenol (o-Cresol)	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
2-Nitroaniline	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
2-Nitrophenol	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	NP-1C	7/20/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	NP-2C	7/20/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	NP-2T	7/20/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	NP-3C	7/20/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	NP-3T	7/20/2000	<20	ug/L	EPA 8270C
3-Nitroaniline	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
4,4'-DDD	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDD	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDD	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDD	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDD	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDE	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDE	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDE	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDE	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDE	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDT	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDT	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDT	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDT	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,4'-DDT	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
4,6-Dinitro-2-methylphenol	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
4-Bromophenyl-phenylether	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
4-Chloro-3-methylphenol	NP-1C	7/20/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	NP-2C	7/20/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	NP-2T	7/20/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	NP-3C	7/20/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	NP-3T	7/20/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	NP-1C	7/20/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	NP-2C	7/20/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	NP-2T	7/20/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	NP-3C	7/20/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	NP-3T	7/20/2000	<20	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
4-Chlorotoluene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Chlorotoluene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
4-Chlorotoluene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
4-Chlorotoluene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
4-Chlorotoluene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
4-Methyl-2-Pentanone (MIBK)	NP-1C	7/20/2000	<10	ug/L	EPA 8260B
4-Methyl-2-Pentanone (MIBK)	NP-2C	7/20/2000	<10	ug/L	EPA 8260B
4-Methyl-2-Pentanone (MIBK)	NP-2T	7/20/2000	<10	ug/L	EPA 8260B
4-Methyl-2-Pentanone (MIBK)	NP-3C	7/20/2000	<10	ug/L	EPA 8260B
4-Methyl-2-Pentanone (MIBK)	NP-3T	7/20/2000	<10	ug/L	EPA 8260B
4-Methylphenol (p-Cresol)	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
4-Nitroaniline	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
Acenaphthene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8270C
Acenaphthene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8270C
Acenaphthene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8270C
Acenaphthene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8270C
Acenaphthene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8270C
Acenaphthene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthylene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310
Acenaphthylene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthylene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Acenaphthylene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Acenaphthylene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthylene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Acenaphthylene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Acenaphthylene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthylene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Acenaphthylene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Acenaphthylene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthylene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Acenaphthylene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Acenaphthylene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Acenaphthylene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Acetone	NP-1C	7/20/2000	<10	ug/L	EPA 8260B
Acetone	NP-2C	7/20/2000	<10	ug/L	EPA 8260B
Acetone	NP-2T	7/20/2000	<10	ug/L	EPA 8260B
Acetone	NP-3C	7/20/2000	<10	ug/L	EPA 8260B
Acetone	NP-3T	7/20/2000	<10	ug/L	EPA 8260B
Aldrin	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Aldrin	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Aldrin	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Aldrin	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Aldrin	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Alpha-BHC	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Alpha-BHC	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Alpha-BHC	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Alpha-BHC	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Alpha-BHC	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Aluminum, Dissolved	NP-2T	7/20/2000	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	NP-3T	7/20/2000	<0.1	mg/L	200.7/6010
Aluminum, Total	NP-1C	7/20/2000	0.11	mg/L	200.7/6010
Aluminum, Total	NP-2C	7/20/2000	0.33	mg/L	200.7/6010
Aluminum, Total	NP-2T	7/20/2000	60	mg/L	200.7/6010
Aluminum, Total	NP-3C	7/20/2000	0.07	mg/L	200.7/6010
Aluminum, Total	NP-3T	7/20/2000	8.7	mg/L	200.7/6010
Anthracene	NP-1C	7/20/2000	<10 K F	ug/L	MADEP EPH
Anthracene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Anthracene	NP-2C	7/20/2000	<10 K F	ug/L	MADEP EPH
Anthracene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Anthracene	NP-2T	7/20/2000	<10 K F	ug/L	MADEP EPH
Anthracene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Anthracene	NP-3C	7/20/2000	<10 K F	ug/L	MADEP EPH
Anthracene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Anthracene	NP-3T	7/20/2000	<10 K F	ug/L	MADEP EPH
Anthracene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Antimony, Dissolved	NP-2T	7/20/2000	<0.02	mg/L	204.2/7041
Antimony, Dissolved	NP-3T	7/20/2000	<0.02	mg/L	204.2/7041
Antimony, Total	NP-1C	7/20/2000	<0.02	mg/L	204.2/7041
Antimony, Total	NP-2C	7/20/2000	<0.02	mg/L	204.2/7041
Antimony, Total	NP-2T	7/20/2000	0.069	mg/L	204.2/7041
Antimony, Total	NP-3C	7/20/2000	<0.02	mg/L	204.2/7041
Antimony, Total	NP-3T	7/20/2000	<0.02	mg/L	204.2/7041
Arsenic, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	206.2/7060
Arsenic, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	206.2/7060
Arsenic, Total	NP-1C	7/20/2000	<0.01	mg/L	206.2/7060
Arsenic, Total	NP-2C	7/20/2000	<0.01	mg/L	206.2/7060
Arsenic, Total	NP-2T	7/20/2000	0.041	mg/L	206.2/7060
Arsenic, Total	NP-3C	7/20/2000	<0.01	mg/L	206.2/7060
Arsenic, Total	NP-3T	7/20/2000	0.021	mg/L	206.2/7060
Azinphos Methyl	NP-1C	7/20/2000	<0.2	ug/l	SW8468141A
Azinphos Methyl	NP-2C	7/20/2000	<0.2	ug/l	SW8468141A
Azinphos Methyl	NP-2T	7/20/2000	<0.2	ug/l	SW8468141A
Azinphos Methyl	NP-3C	7/20/2000	<0.2	ug/l	SW8468141A
Azinphos Methyl	NP-3T	7/20/2000	<0.2	ug/l	SW8468141A
Barium, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	200.7/6010
Barium, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Barium, Total	NP-1C	7/20/2000	0.018	mg/L	200.7/6010
Barium, Total	NP-2C	7/20/2000	<0.01	mg/L	200.7/6010
Barium, Total	NP-2T	7/20/2000	0.045	mg/L	200.7/6010
Barium, Total	NP-3C	7/20/2000	<0.01	mg/L	200.7/6010
Barium, Total	NP-3T	7/20/2000	0.056	mg/L	200.7/6010
Benzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Benzene	NP-1C	7/20/2000	<5	ug/L	MADEP VPH
Benzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Benzene	NP-2C	7/20/2000	<5	ug/L	MADEP VPH
Benzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Benzene	NP-2T	7/20/2000	<5	ug/L	MADEP VPH
Benzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Benzene	NP-3C	7/20/2000	<5	ug/L	MADEP VPH
Benzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Benzene	NP-3T	7/20/2000	<5	ug/L	MADEP VPH
Benzo(a)anthracene	NP-1C	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(a)anthracene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)anthracene	NP-2C	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(a)anthracene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)anthracene	NP-2T	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(a)anthracene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)anthracene	NP-3C	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(a)anthracene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)anthracene	NP-3T	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(a)anthracene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)pyrene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(a)pyrene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(a)pyrene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)pyrene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(a)pyrene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(a)pyrene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)pyrene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(a)pyrene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Benzo(a)pyrene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)pyrene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(a)pyrene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(a)pyrene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Benzo(a)pyrene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(a)pyrene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Benzo(a)pyrene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Benzo(b)fluoranthene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8270C
Benzo(b)fluoranthene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(b)fluoranthene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8270C
Benzo(b)fluoranthene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(b)fluoranthene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8270C
Benzo(b)fluoranthene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Benzo(b)fluoranthene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8270C
Benzo(b)fluoranthene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(b)fluoranthene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8270C
Benzo(b)fluoranthene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Benzo(g,h,i)perylene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(g,h,i)perylene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(g,h,i)perylene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Benzo(g,h,i)perylene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(g,h,i)perylene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(g,h,i)perylene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Benzo(g,h,i)perylene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(g,h,i)perylene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Benzo(g,h,i)perylene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Benzo(g,h,i)perylene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(g,h,i)perylene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Benzo(g,h,i)perylene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Benzo(g,h,i)perylene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Benzo(g,h,i)perylene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Benzo(g,h,i)perylene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Benzo(k)fluoranthene	NP-1C	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(k)fluoranthene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Benzo(k)fluoranthene	NP-2C	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(k)fluoranthene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Benzo(k)fluoranthene	NP-2T	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(k)fluoranthene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Benzo(k)fluoranthene	NP-3C	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(k)fluoranthene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Benzo(k)fluoranthene	NP-3T	7/20/2000	<10 K F	ug/L	MADEP EPH
Benzo(k)fluoranthene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Benzoic Acid	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
Benzoic Acid	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
Benzoic Acid	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
Benzoic Acid	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
Benzoic Acid	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
Benzyl Alcohol	NP-1C	7/20/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	NP-2C	7/20/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	NP-2T	7/20/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	NP-3C	7/20/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	NP-3T	7/20/2000	<20	ug/L	EPA 8270C
Beryllium, Dissolved	NP-2T	7/20/2000	<0.002	mg/L	200.7/6010
Beryllium, Dissolved	NP-3T	7/20/2000	<0.002	mg/L	200.7/6010
Beryllium, Total	NP-1C	7/20/2000	<0.002	mg/L	200.7/6010
Beryllium, Total	NP-2C	7/20/2000	<0.002	mg/L	200.7/6010
Beryllium, Total	NP-2T	7/20/2000	0.0097	mg/L	200.7/6010

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Result	Units	AnalysisMethod
Beryllium, Total	NP-3C	7/20/2000	<0.002	mg/L	200.7/6010
Beryllium, Total	NP-3T	7/20/2000	<0.002	mg/L	200.7/6010
Beta-BHC	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Beta-BHC	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Beta-BHC	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Beta-BHC	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Beta-BHC	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Bicarbonate alkalinity as CaCO3	NP-1C	7/20/2000	70	mg/L	SM2320B
Bicarbonate alkalinity as CaCO3	NP-2C	7/20/2000	150	mg/L	SM2320B
Bicarbonate alkalinity as CaCO3	NP-2T	7/20/2000	130	mg/L	SM2320B
Bicarbonate alkalinity as CaCO3	NP-3C	7/20/2000	150	mg/L	SM2320B
Bicarbonate alkalinity as CaCO3	NP-3T	7/20/2000	150	mg/L	SM2320B
bis(2-Chloroethoxy)methane	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	NP-3T	7/20/2000	74	ug/L	EPA 8270C
Boron, Dissolved	NP-2T	7/20/2000	<0.05	mg/L	EPA 200.7
Boron, Dissolved	NP-3T	7/20/2000	<0.05	mg/L	EPA 200.7
Boron, Total	NP-1C	7/20/2000	<0.05	mg/L	EPA 200.7
Boron, Total	NP-2C	7/20/2000	<0.05	mg/L	EPA 200.7
Boron, Total	NP-2T	7/20/2000	<0.05	mg/L	EPA 200.7
Boron, Total	NP-3C	7/20/2000	<0.05	mg/L	EPA 200.7
Boron, Total	NP-3T	7/20/2000	<0.05	mg/L	EPA 200.7
Bromobenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Bromobenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Bromobenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Bromobenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Bromobenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Bromochloromethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Bromochloromethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Bromochloromethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Bromochloromethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Bromochloromethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Bromodichloromethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Bromodichloromethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Bromodichloromethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Bromodichloromethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Bromodichloromethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Bromoform	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Bromoform	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Bromoform	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Bromoform	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Bromoform	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Bromomethane (Methyl Bromide)	NP-1C	7/20/2000	<2	ug/L	EPA 8260B
Bromomethane (Methyl Bromide)	NP-2C	7/20/2000	<2	ug/L	EPA 8260B
Bromomethane (Methyl Bromide)	NP-2T	7/20/2000	<2	ug/L	EPA 8260B
Bromomethane (Methyl Bromide)	NP-3C	7/20/2000	<2	ug/L	EPA 8260B
Bromomethane (Methyl Bromide)	NP-3T	7/20/2000	<2	ug/L	EPA 8260B

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Butylbenzylphthalate	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
C11-C22 Aromatics (FID)	NP-1C	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics (FID)	NP-2C	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics (FID)	NP-2T	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics (FID)	NP-3C	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics (FID)	NP-3T	7/20/2000	350 K F	ug/L	MADEP EPH
C11-C22 Aromatics, Unadjusted	NP-1C	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics, Unadjusted	NP-2C	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics, Unadjusted	NP-2T	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics, Unadjusted	NP-3C	7/20/2000	<100 K F	ug/L	MADEP EPH
C11-C22 Aromatics, Unadjusted	NP-3T	7/20/2000	350 K F	ug/L	MADEP EPH
C19-C36 Aliphatics (PID)	NP-1C	7/20/2000	<100 K F	ug/L	MADEP EPH
C19-C36 Aliphatics (PID)	NP-2C	7/20/2000	<100 K F	ug/L	MADEP EPH
C19-C36 Aliphatics (PID)	NP-2T	7/20/2000	<100 K F	ug/L	MADEP EPH
C19-C36 Aliphatics (PID)	NP-3C	7/20/2000	<100 K F	ug/L	MADEP EPH
C19-C36 Aliphatics (PID)	NP-3T	7/20/2000	230 K F	ug/L	MADEP EPH
C5-C8 Aliphatics (FID)	NP-1C	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics (FID)	NP-2C	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics (FID)	NP-2T	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics (FID)	NP-3C	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics (FID)	NP-3T	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics, Unadjusted	NP-1C	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics, Unadjusted	NP-2C	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics, Unadjusted	NP-2T	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics, Unadjusted	NP-3C	7/20/2000	<50	ug/L	MADEP VPH
C5-C8 Aliphatics, Unadjusted	NP-3T	7/20/2000	<50	ug/L	MADEP VPH
C9-C10 Aromatics (PID)	NP-1C	7/20/2000	<50	ug/L	MADEP VPH
C9-C10 Aromatics (PID)	NP-2C	7/20/2000	<50	ug/L	MADEP VPH
C9-C10 Aromatics (PID)	NP-2T	7/20/2000	<50	ug/L	MADEP VPH
C9-C10 Aromatics (PID)	NP-3C	7/20/2000	<50	ug/L	MADEP VPH
C9-C10 Aromatics (PID)	NP-3T	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics (FID)	NP-1C	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics (FID)	NP-2C	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics (FID)	NP-2T	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics (FID)	NP-3C	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics (FID)	NP-3T	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics, Unadjusted	NP-1C	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics, Unadjusted	NP-2C	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics, Unadjusted	NP-2T	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics, Unadjusted	NP-3C	7/20/2000	<50	ug/L	MADEP VPH
C9-C12 Aliphatics, Unadjusted	NP-3T	7/20/2000	<50	ug/L	MADEP VPH
C9-C18 Aliphatic Hydrocarbons	NP-1C	7/20/2000	<100 K F	ug/L	MADEP EPH
C9-C18 Aliphatic Hydrocarbons	NP-2C	7/20/2000	<100 K F	ug/L	MADEP EPH
C9-C18 Aliphatic Hydrocarbons	NP-2T	7/20/2000	<100 K F	ug/L	MADEP EPH
C9-C18 Aliphatic Hydrocarbons	NP-3C	7/20/2000	<100 K F	ug/L	MADEP EPH
C9-C18 Aliphatic Hydrocarbons	NP-3T	7/20/2000	<100 K F	ug/L	MADEP EPH
C9-C18 Aliphatics (FID)	NP-1C	7/20/2000	<100 J	ug/l	MADEP EPH
C9-C18 Aliphatics (FID)	NP-2C	7/20/2000	<100 J	ug/l	MADEP EPH
C9-C18 Aliphatics (FID)	NP-2T	7/20/2000	<100 J	ug/l	MADEP EPH
C9-C18 Aliphatics (FID)	NP-3C	7/20/2000	<100 J	ug/l	MADEP EPH
C9-C18 Aliphatics (FID)	NP-3T	7/20/2000	<100 J	ug/l	MADEP EPH
Cadmium, Dissolved	NP-2T	7/20/2000	<0.001	mg/L	200.7/6010
Cadmium, Dissolved	NP-3T	7/20/2000	<0.001	mg/L	200.7/6010
Cadmium, Total	NP-1C	7/20/2000	<0.001	mg/L	200.7/6010
Cadmium, Total	NP-2C	7/20/2000	<0.001	mg/L	200.7/6010
Cadmium, Total	NP-2T	7/20/2000	0.0014	mg/L	200.7/6010
Cadmium, Total	NP-3C	7/20/2000	<0.001	mg/L	200.7/6010
Cadmium, Total	NP-3T	7/20/2000	0.0014	mg/L	200.7/6010
Calcium, Dissolved	NP-2T	7/20/2000	31	mg/L	200.7/6010
Calcium, Dissolved	NP-3T	7/20/2000	36	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Calcium, Total	NP-1C	7/20/2000	64	mg/L	200.7/6010
Calcium, Total	NP-2C	7/20/2000	33	mg/L	200.7/6010
Calcium, Total	NP-2T	7/20/2000	50	mg/L	200.7/6010
Calcium, Total	NP-3C	7/20/2000	37	mg/L	200.7/6010
Calcium, Total	NP-3T	7/20/2000	56	mg/L	200.7/6010
Carbon Tetrachloride	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Carbon Tetrachloride	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Carbon Tetrachloride	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Carbon Tetrachloride	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Carbon Tetrachloride	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Carbonate Alkalinity as CaCO3	NP-1C	7/20/2000	<1	mg/L	SM2320B
Carbonate Alkalinity as CaCO3	NP-2C	7/20/2000	<1	mg/L	SM2320B
Carbonate Alkalinity as CaCO3	NP-2T	7/20/2000	<1	mg/L	SM2320B
Carbonate Alkalinity as CaCO3	NP-3C	7/20/2000	<1	mg/L	SM2320B
Carbonate Alkalinity as CaCO3	NP-3T	7/20/2000	<1	mg/L	SM2320B
Chemical Oxygen Demand (COD)	NP-1C	7/20/2000	<20	mg/L	EPA 410.2
Chemical Oxygen Demand (COD)	NP-2C	7/20/2000	<20	mg/L	EPA 410.2
Chemical Oxygen Demand (COD)	NP-2T	7/20/2000	28	mg/L	EPA 410.2
Chemical Oxygen Demand (COD)	NP-3C	7/20/2000	<20	mg/L	EPA 410.2
Chemical Oxygen Demand (COD)	NP-3T	7/20/2000	78	mg/L	EPA 410.2
Chlordane	NP-1C	7/20/2000	<0.5	ug/L	EPA 8081A
Chlordane	NP-2C	7/20/2000	<0.5	ug/L	EPA 8081A
Chlordane	NP-2T	7/20/2000	<0.5	ug/L	EPA 8081A
Chlordane	NP-3C	7/20/2000	<0.5	ug/L	EPA 8081A
Chlordane	NP-3T	7/20/2000	<0.5	ug/L	EPA 8081A
Chloride	NP-1C	7/20/2000	120	mg/L	SM18 4500CL
Chloride	NP-2C	7/20/2000	84	mg/L	SM18 4500CL
Chloride	NP-2T	7/20/2000	83	mg/L	SM18 4500CL
Chloride	NP-3C	7/20/2000	85	mg/L	SM18 4500CL
Chloride	NP-3T	7/20/2000	84	mg/L	SM18 4500CL
Chlorobenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Chlorobenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Chlorobenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Chlorobenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Chlorobenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Chloroethane	NP-1C	7/20/2000	<2	ug/L	EPA 8260B
Chloroethane	NP-2C	7/20/2000	<2	ug/L	EPA 8260B
Chloroethane	NP-2T	7/20/2000	<2	ug/L	EPA 8260B
Chloroethane	NP-3C	7/20/2000	<2	ug/L	EPA 8260B
Chloroethane	NP-3T	7/20/2000	<2	ug/L	EPA 8260B
Chloroform	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Chloroform	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Chloroform	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Chloroform	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Chloroform	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Chloromethane (Methyl Chloride)	NP-1C	7/20/2000	<2	ug/L	EPA 8260B
Chloromethane (Methyl Chloride)	NP-2C	7/20/2000	<2	ug/L	EPA 8260B
Chloromethane (Methyl Chloride)	NP-2T	7/20/2000	<2	ug/L	EPA 8260B
Chloromethane (Methyl Chloride)	NP-3C	7/20/2000	<2	ug/L	EPA 8260B
Chloromethane (Methyl Chloride)	NP-3T	7/20/2000	<2	ug/L	EPA 8260B
Chlorpyrifos (Dursban)	NP-1C	7/20/2000	<0.2	ug/l	SW8468141A
Chlorpyrifos (Dursban)	NP-2C	7/20/2000	<0.2	ug/l	SW8468141A
Chlorpyrifos (Dursban)	NP-2T	7/20/2000	<0.2	ug/l	SW8468141A
Chlorpyrifos (Dursban)	NP-3C	7/20/2000	<0.2	ug/l	SW8468141A
Chlorpyrifos (Dursban)	NP-3T	7/20/2000	<0.2	ug/l	SW8468141A
Chromium, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Chromium, Total	NP-1C	7/20/2000	0.015	mg/L	200.7/6010
Chromium, Total	NP-2C	7/20/2000	0.037	mg/L	200.7/6010
Chromium, Total	NP-2T	7/20/2000	8.5	mg/L	200.7/6010
Chromium, Total	NP-3C	7/20/2000	<0.01	mg/L	200.7/6010
Chromium, Total	NP-3T	7/20/2000	0.1	mg/L	200.7/6010
Chrysene	NP-1C	7/20/2000	<10 K F	ug/L	MADEP EPH
Chrysene	NP-1C	7/20/2000	<10	ug/l	SW8468270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chrysene	NP-2C	7/20/2000	<10 K F	ug/L	MADEP EPH
Chrysene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Chrysene	NP-2T	7/20/2000	<10 K F	ug/L	MADEP EPH
Chrysene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Chrysene	NP-3C	7/20/2000	<10 K F	ug/L	MADEP EPH
Chrysene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Chrysene	NP-3T	7/20/2000	<10 K F	ug/L	MADEP EPH
Chrysene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
cis-1,2-Dichloroethene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
cis-1,2-Dichloroethene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
cis-1,2-Dichloroethene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
cis-1,2-Dichloroethene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
cis-1,2-Dichloroethene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
cis-1,3-Dichloropropene	NP-1C	7/20/2000	<0.5	ug/L	EPA 8260B
cis-1,3-Dichloropropene	NP-2C	7/20/2000	<0.5	ug/L	EPA 8260B
cis-1,3-Dichloropropene	NP-2T	7/20/2000	<0.5	ug/L	EPA 8260B
cis-1,3-Dichloropropene	NP-3C	7/20/2000	<0.5	ug/L	EPA 8260B
cis-1,3-Dichloropropene	NP-3T	7/20/2000	<0.5	ug/L	EPA 8260B
Cobalt, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	200.7/6010
Cobalt, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Cobalt, Total	NP-1C	7/20/2000	<0.01	mg/L	200.7/6010
Cobalt, Total	NP-2C	7/20/2000	<0.01	mg/L	200.7/6010
Cobalt, Total	NP-2T	7/20/2000	0.014	mg/L	200.7/6010
Cobalt, Total	NP-3C	7/20/2000	<0.01	mg/L	200.7/6010
Cobalt, Total	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Color, Apparent	NP-1C	7/20/2000	<5	Color unit	SM18 2120B
Color, Apparent	NP-2C	7/20/2000	<5	Color unit	SM18 2120B
Color, Apparent	NP-2T	7/20/2000	<5	Color unit	SM18 2120B
Color, Apparent	NP-3C	7/20/2000	<5	Color unit	SM18 2120B
Color, Apparent	NP-3T	7/20/2000	<5	Color unit	SM18 2120B
Color, True	NP-1C	7/20/2000	<5.0	Color unit	SM18 2120B
Color, True	NP-2C	7/20/2000	<5.0	Color unit	SM18 2120B
Color, True	NP-2T	7/20/2000	<5.0	Color unit	SM18 2120B
Color, True	NP-3C	7/20/2000	<5.0	Color unit	SM18 2120B
Color, True	NP-3T	7/20/2000	<5.0	Color unit	SM18 2120B
Copper, Dissolved	NP-2T	7/20/2000	<0.02	mg/L	200.7/6010
Copper, Dissolved	NP-3T	7/20/2000	<0.02	mg/L	200.7/6010
Copper, Total	NP-1C	7/20/2000	<0.02	mg/L	200.7/6010
Copper, Total	NP-2C	7/20/2000	<0.02	mg/L	200.7/6010
Copper, Total	NP-2T	7/20/2000	0.25	mg/L	200.7/6010
Copper, Total	NP-3C	7/20/2000	0.023	mg/L	200.7/6010
Copper, Total	NP-3T	7/20/2000	0.031	mg/L	200.7/6010
Cyanide	NP-1C	7/20/2000	<0.01	mg/L	LAC204001A
Cyanide	NP-2C	7/20/2000	<0.01	mg/L	LAC204001A
Cyanide	NP-2T	7/20/2000	<0.01	mg/L	LAC204001A
Cyanide	NP-3C	7/20/2000	<0.01	mg/L	LAC204001A
Cyanide	NP-3T	7/20/2000	<0.01	mg/L	LAC204001A
Dalapon	NP-1C	7/20/2000	<5.8	ug/L	SW-846 8151A
Dalapon	NP-2C	7/20/2000	<5.8	ug/L	SW-846 8151A
Dalapon	NP-2T	7/20/2000	<5.8	ug/L	SW-846 8151A
Dalapon	NP-3C	7/20/2000	<5.8	ug/L	SW-846 8151A
Dalapon	NP-3T	7/20/2000	<5.8	ug/L	SW-846 8151A
Delta-BHC	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Delta-BHC	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Delta-BHC	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Delta-BHC	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Delta-BHC	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Demeton	NP-1C	7/20/2000	<0.1	ug/l	SW8468141A
Demeton	NP-2C	7/20/2000	<0.1	ug/l	SW8468141A
Demeton	NP-2T	7/20/2000	<0.1	ug/l	SW8468141A
Demeton	NP-3C	7/20/2000	<0.1	ug/l	SW8468141A
Demeton	NP-3T	7/20/2000	<0.1	ug/l	SW8468141A
Diazinon	NP-1C	7/20/2000	<0.2	ug/l	SW8468141A
Diazinon	NP-2C	7/20/2000	<0.2	ug/l	SW8468141A

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Diazinon	NP-2T	7/20/2000	<0.2	ug/l	SW8468141A
Diazinon	NP-3C	7/20/2000	<0.2	ug/l	SW8468141A
Diazinon	NP-3T	7/20/2000	<0.2	ug/l	SW8468141A
Dibenzo(a,h)anthracene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310
Dibenzo(a,h)anthracene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Dibenzo(a,h)anthracene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Dibenzo(a,h)anthracene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Dibenzo(a,h)anthracene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Dibenzo(a,h)anthracene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Dibenzo(a,h)anthracene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Dibenzo(a,h)anthracene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Dibenzo(a,h)anthracene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Dibenzo(a,h)anthracene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Dibenzo(a,h)anthracene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Dibenzo(a,h)anthracene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Dibenzo(a,h)anthracene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Dibenzo(a,h)anthracene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Dibenzo(a,h)anthracene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Dibenzofuran	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Dibenzofuran	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Dibenzofuran	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Dibenzofuran	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Dibenzofuran	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Dibromochloromethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Dibromochloromethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Dibromochloromethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Dibromochloromethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Dibromochloromethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Dibromomethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Dibromomethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Dibromomethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Dibromomethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Dibromomethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Dicamba	NP-1C	7/20/2000	<0.2	ug/L	SW-846 8151A
Dicamba	NP-2C	7/20/2000	<0.2	ug/L	SW-846 8151A
Dicamba	NP-2T	7/20/2000	<0.2	ug/L	SW-846 8151A
Dicamba	NP-3C	7/20/2000	<0.2	ug/L	SW-846 8151A
Dicamba	NP-3T	7/20/2000	<0.2	ug/L	SW-846 8151A
Dichlorodifluoromethane	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Dichlorodifluoromethane	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Dichlorodifluoromethane	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Dichlorodifluoromethane	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Dichlorodifluoromethane	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Dieldrin	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Dieldrin	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Dieldrin	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Dieldrin	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Dieldrin	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Diethylphthalate	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Diethylphthalate	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Diethylphthalate	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Diethylphthalate	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Diethylphthalate	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	NP-1C	7/20/2000	<10	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Result	Units	AnalysisMethod
Di-n-octylphthalate	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Dinoseb	NP-1C	7/20/2000	<0.2	ug/L	SW-846 8151A
Dinoseb	NP-2C	7/20/2000	<0.2	ug/L	SW-846 8151A
Dinoseb	NP-2T	7/20/2000	<0.2	ug/L	SW-846 8151A
Dinoseb	NP-3C	7/20/2000	<0.2	ug/L	SW-846 8151A
Dinoseb	NP-3T	7/20/2000	<0.2	ug/L	SW-846 8151A
Disulfoton	NP-1C	7/20/2000	<0.2	ug/l	SW8468141A
Disulfoton	NP-2C	7/20/2000	<0.2	ug/l	SW8468141A
Disulfoton	NP-2T	7/20/2000	<0.2	ug/l	SW8468141A
Disulfoton	NP-3C	7/20/2000	<0.2	ug/l	SW8468141A
Disulfoton	NP-3T	7/20/2000	<0.2	ug/l	SW8468141A
Endosulfan I	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan I	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan I	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan I	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan I	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan II	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan II	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan II	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan II	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan II	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan Sulfate	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan Sulfate	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan Sulfate	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan Sulfate	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endosulfan Sulfate	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endrin	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A
Endrin	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A
Endrin	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A
Endrin	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A
Endrin	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A
Endrin Aldehyde	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endrin Aldehyde	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endrin Aldehyde	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endrin Aldehyde	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Endrin Aldehyde	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
EPH Concentration (Total)	NP-1C	7/20/2000	<100	ug/l	MADEP EPH
EPH Concentration (Total)	NP-2C	7/20/2000	<100	ug/l	MADEP EPH
EPH Concentration (Total)	NP-2T	7/20/2000	<100	ug/l	MADEP EPH
EPH Concentration (Total)	NP-3C	7/20/2000	<100	ug/l	MADEP EPH
EPH Concentration (Total)	NP-3T	7/20/2000	570	ug/l	MADEP EPH
Ethion	NP-1C	7/20/2000	<0.2	ug/l	SW8468141A
Ethion	NP-2C	7/20/2000	<0.2	ug/l	SW8468141A
Ethion	NP-2T	7/20/2000	<0.2	ug/l	SW8468141A
Ethion	NP-3C	7/20/2000	<0.2	ug/l	SW8468141A
Ethion	NP-3T	7/20/2000	<0.2	ug/l	SW8468141A
Ethylbenzene	NP-1C	7/20/2000	<5	ug/L	MADEP VPH
Ethylbenzene	NP-1C	7/20/2000	<1.0	ug/l	SW8468260B
Ethylbenzene	NP-2C	7/20/2000	<5	ug/L	MADEP VPH
Ethylbenzene	NP-2C	7/20/2000	<1.0	ug/l	SW8468260B
Ethylbenzene	NP-2T	7/20/2000	<5	ug/L	MADEP VPH
Ethylbenzene	NP-2T	7/20/2000	<1.0	ug/l	SW8468260B
Ethylbenzene	NP-3C	7/20/2000	<5	ug/L	MADEP VPH
Ethylbenzene	NP-3C	7/20/2000	<1.0	ug/l	SW8468260B
Ethylbenzene	NP-3T	7/20/2000	<5	ug/L	MADEP VPH
Ethylbenzene	NP-3T	7/20/2000	<1.0	ug/l	SW8468260B
Ethylenedibromide	NP-1C	7/20/2000	<1	ug/L	SW8468260B
Ethylenedibromide	NP-2C	7/20/2000	<1	ug/L	SW8468260B
Ethylenedibromide	NP-2T	7/20/2000	<1	ug/L	SW8468260B
Ethylenedibromide	NP-3C	7/20/2000	<1	ug/L	SW8468260B
Ethylenedibromide	NP-3T	7/20/2000	<1	ug/L	SW8468260B

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Fenthion	NP-1C	7/20/2000	<0.2	ug/l	SW8468141A
Fenthion	NP-2C	7/20/2000	<0.2	ug/l	SW8468141A
Fenthion	NP-2T	7/20/2000	<0.2	ug/l	SW8468141A
Fenthion	NP-3C	7/20/2000	<0.2	ug/l	SW8468141A
Fenthion	NP-3T	7/20/2000	<0.2	ug/l	SW8468141A
Fluoranthene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310
Fluoranthene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Fluoranthene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Fluoranthene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Fluoranthene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Fluoranthene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Fluoranthene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Fluoranthene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Fluoranthene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Fluoranthene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Fluoranthene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Fluoranthene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Fluoranthene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Fluoranthene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Fluoranthene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Fluorene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310
Fluorene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Fluorene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Fluorene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Fluorene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Fluorene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Fluorene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Fluorene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Fluorene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Fluorene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Fluorene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Fluorene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Fluorene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Fluorene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Fluorene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Fluoride	NP-1C	7/20/2000	<0.5	mg/L	SM184500E
Fluoride	NP-2C	7/20/2000	<0.5	mg/L	SM184500E
Fluoride	NP-2T	7/20/2000	<0.5	mg/L	SM184500E
Fluoride	NP-3C	7/20/2000	<0.5	mg/L	SM184500E
Fluoride	NP-3T	7/20/2000	<0.5	mg/L	SM184500E
Fluorotrichloromethane	NP-1C	7/20/2000	<1	ug/L	SW8468260B
Fluorotrichloromethane	NP-2C	7/20/2000	<1	ug/L	SW8468260B
Fluorotrichloromethane	NP-2T	7/20/2000	<1	ug/L	SW8468260B
Fluorotrichloromethane	NP-3C	7/20/2000	<1	ug/L	SW8468260B
Fluorotrichloromethane	NP-3T	7/20/2000	<1	ug/L	SW8468260B
Fuel Oil #2 (C9-C25)	NP-1C	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #2 (C9-C25)	NP-2C	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #2 (C9-C25)	NP-2T	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #2 (C9-C25)	NP-3C	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #2 (C9-C25)	NP-3T	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	NP-1C	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	NP-2C	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	NP-2T	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	NP-3C	7/20/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	NP-3T	7/20/2000	0.7	mg/L	EPA 8100 M
Gamma-BHC (Lindane)	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Gamma-BHC (Lindane)	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Gamma-BHC (Lindane)	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Gamma-BHC (Lindane)	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Gamma-BHC (Lindane)	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Gasoline (C5-C12)	NP-1C	7/20/2000	<0.5	mg/L	EPA 8100 M
Gasoline (C5-C12)	NP-2C	7/20/2000	<0.5	mg/L	EPA 8100 M
Gasoline (C5-C12)	NP-2T	7/20/2000	<0.5	mg/L	EPA 8100 M
Gasoline (C5-C12)	NP-3C	7/20/2000	<0.5	mg/L	EPA 8100 M

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Gasoline (C5-C12)	NP-3T	7/20/2000	<0.5	mg/L	EPA 8100 M
Heptachlor	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A
Heptachlor	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A
Heptachlor	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A
Heptachlor	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A
Heptachlor	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A
Heptachlor Epoxide	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Heptachlor Epoxide	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Heptachlor Epoxide	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Heptachlor Epoxide	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Heptachlor Epoxide	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Hexachlorobenzene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorobutadiene	NP-1C	7/20/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	NP-2C	7/20/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	NP-2T	7/20/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	NP-3C	7/20/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	NP-3T	7/20/2000	<10	ug/L	EPA 8260B
Hexachlorocyclopentadiene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Hexachloroethane	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Hexachloroethane	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Hexachloroethane	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Hexachloroethane	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Hexachloroethane	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Hexavalent Chromium	NP-1C	7/20/2000	<0.005	mg/l	SM18 3500D
Hexavalent Chromium	NP-2C	7/20/2000	<0.005	mg/l	SM18 3500D
Hexavalent Chromium	NP-2T	7/20/2000	<0.005	mg/l	SM18 3500D
Hexavalent Chromium	NP-3C	7/20/2000	<0.005	mg/l	SM18 3500D
Hexavalent Chromium	NP-3T	7/20/2000	<0.005	mg/l	SM18 3500D
Hexavalent Chromium, Total	NP-1C	7/20/2000	<0.005	mg/L	307B/7196
Hexavalent Chromium, Total	NP-2C	7/20/2000	<0.005	mg/L	307B/7196
Hexavalent Chromium, Total	NP-2T	7/20/2000	<0.005	mg/L	307B/7196
Hexavalent Chromium, Total	NP-3C	7/20/2000	<0.005	mg/L	307B/7196
Hexavalent Chromium, Total	NP-3T	7/20/2000	<0.005	mg/L	307B/7196
Indeno (1,2,3-cd) pyrene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Indeno (1,2,3-cd) pyrene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Indeno (1,2,3-cd) pyrene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Indeno (1,2,3-cd) pyrene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Indeno (1,2,3-cd) pyrene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Indeno (1,2,3-cd) pyrene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Indeno (1,2,3-cd) pyrene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Indeno (1,2,3-cd) pyrene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Indeno (1,2,3-cd) pyrene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Indeno (1,2,3-cd) pyrene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Iron, Dissolved	NP-2T	7/20/2000	<0.05	mg/L	200.7/6010
Iron, Dissolved	NP-3T	7/20/2000	<0.05	mg/L	200.7/6010
Iron, Total	NP-1C	7/20/2000	0.39	mg/L	200.7/6010
Iron, Total	NP-2C	7/20/2000	0.37	mg/L	200.7/6010
Iron, Total	NP-2T	7/20/2000	81	mg/L	200.7/6010
Iron, Total	NP-3C	7/20/2000	0.082	mg/L	200.7/6010
Iron, Total	NP-3T	7/20/2000	13	mg/L	200.7/6010
Isophorone	NP-1C	7/20/2000	<10	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Isophorone	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Isophorone	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Isophorone	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Isophorone	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Isopropyl Benzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Isopropyl Benzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Isopropyl Benzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Isopropyl Benzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Isopropyl Benzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Kerosene (C9-C22)	NP-1C	7/20/2000	<0.1	mg/L	EPA 8100 M
Kerosene (C9-C22)	NP-2C	7/20/2000	<0.1	mg/L	EPA 8100 M
Kerosene (C9-C22)	NP-2T	7/20/2000	<0.1	mg/L	EPA 8100 M
Kerosene (C9-C22)	NP-3C	7/20/2000	<0.1	mg/L	EPA 8100 M
Kerosene (C9-C22)	NP-3T	7/20/2000	<0.1	mg/L	EPA 8100 M
Lead, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	239.2/7421
Lead, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	239.2/7421
Lead, Total	NP-1C	7/20/2000	<0.01	mg/L	239.2/7421
Lead, Total	NP-2C	7/20/2000	<0.01	mg/L	239.2/7421
Lead, Total	NP-2T	7/20/2000	0.028	mg/L	239.2/7421
Lead, Total	NP-3C	7/20/2000	<0.01	mg/L	239.2/7421
Lead, Total	NP-3T	7/20/2000	0.068	mg/L	239.2/7421
m,p-Xylene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
m,p-Xylene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
m,p-Xylene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
m,p-Xylene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
m,p-Xylene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Magnesium, Dissolved	NP-2T	7/20/2000	2.4	mg/L	200.7/6010
Magnesium, Dissolved	NP-3T	7/20/2000	2.9	mg/L	200.7/6010
Magnesium, Total	NP-1C	7/20/2000	7.7	mg/L	200.7/6010
Magnesium, Total	NP-2C	7/20/2000	3	mg/L	200.7/6010
Magnesium, Total	NP-2T	7/20/2000	4	mg/L	200.7/6010
Magnesium, Total	NP-3C	7/20/2000	3.5	mg/L	200.7/6010
Magnesium, Total	NP-3T	7/20/2000	5.2	mg/L	200.7/6010
Malathion	NP-1C	7/20/2000	<0.1	ug/l	SW8468141A
Malathion	NP-2C	7/20/2000	<0.1	ug/l	SW8468141A
Malathion	NP-2T	7/20/2000	<0.1	ug/l	SW8468141A
Malathion	NP-3C	7/20/2000	<0.1	ug/l	SW8468141A
Malathion	NP-3T	7/20/2000	<0.1	ug/l	SW8468141A
Manganese, Dissolved	NP-2T	7/20/2000	0.026	mg/L	200.7/6010
Manganese, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Manganese, Total	NP-1C	7/20/2000	0.39	mg/L	200.7/6010
Manganese, Total	NP-2C	7/20/2000	0.02	mg/L	200.7/6010
Manganese, Total	NP-2T	7/20/2000	0.17	mg/L	200.7/6010
Manganese, Total	NP-3C	7/20/2000	<0.01	mg/L	200.7/6010
Manganese, Total	NP-3T	7/20/2000	0.16	mg/L	200.7/6010
Mercury, Dissolved	NP-2T	7/20/2000	<0.0002	mg/L	245.1/7471
Mercury, Dissolved	NP-3T	7/20/2000	<0.0002	mg/L	245.1/7471
Mercury, Total	NP-1C	7/20/2000	<0.0002	mg/L	245.1/7471
Mercury, Total	NP-2C	7/20/2000	<0.0002	mg/L	245.1/7471
Mercury, Total	NP-2T	7/20/2000	<0.0002	mg/L	245.1/7471
Mercury, Total	NP-3C	7/20/2000	<0.0002	mg/L	245.1/7471
Mercury, Total	NP-3T	7/20/2000	0.0007	mg/L	245.1/7471
Methoxychlor	NP-1C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Methoxychlor	NP-2C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Methoxychlor	NP-2T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Methoxychlor	NP-3C	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Methoxychlor	NP-3T	7/20/2000	<0.1	ug/L	EPA 8081A/8082
Methylene Chloride	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Methylene Chloride	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Methylene Chloride	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Methylene Chloride	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Methylene Chloride	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Methyl-t-butyl ether (MTBE)	NP-1C	7/20/2000	<5	ug/L	EPA 8260B
Methyl-t-butyl ether (MTBE)	NP-1C	7/20/2000	<5.0	ug/l	MADEP VPH

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Methyl-t-butyl ether (MTBE)	NP-2C	7/20/2000	<5	ug/L	EPA 8260B
Methyl-t-butyl ether (MTBE)	NP-2C	7/20/2000	<5.0	ug/l	MADEP VPH
Methyl-t-butyl ether (MTBE)	NP-2T	7/20/2000	<5	ug/L	EPA 8260B
Methyl-t-butyl ether (MTBE)	NP-2T	7/20/2000	<5.0	ug/l	MADEP VPH
Methyl-t-butyl ether (MTBE)	NP-3C	7/20/2000	<5	ug/L	EPA 8260B
Methyl-t-butyl ether (MTBE)	NP-3C	7/20/2000	<5.0	ug/l	MADEP VPH
Methyl-t-butyl ether (MTBE)	NP-3T	7/20/2000	<5	ug/L	EPA 8260B
Methyl-t-butyl ether (MTBE)	NP-3T	7/20/2000	<5.0	ug/l	MADEP VPH
Mirex	NP-1C	7/20/2000	<0.001	ug/l	SW8468141A
Mirex	NP-2C	7/20/2000	<0.001	ug/l	SW8468141A
Mirex	NP-2T	7/20/2000	<0.001	ug/l	SW8468141A
Mirex	NP-3C	7/20/2000	<0.001	ug/l	SW8468141A
Mirex	NP-3T	7/20/2000	<0.001	ug/l	SW8468141A
MODF (C14-C28)	NP-1C	7/20/2000	<0.1	mg/L	SW8468015M
MODF (C14-C28)	NP-2C	7/20/2000	<0.1	mg/L	SW8468015M
MODF (C14-C28)	NP-2T	7/20/2000	<0.1	mg/L	SW8468015M
MODF (C14-C28)	NP-3C	7/20/2000	<0.1	mg/L	SW8468015M
MODF (C14-C28)	NP-3T	7/20/2000	<0.1	mg/L	SW8468015M
Molybdenum, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	EPA 200.7
Molybdenum, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	EPA 200.7
Molybdenum, Total	NP-1C	7/20/2000	<0.01	mg/L	EPA 200.7
Molybdenum, Total	NP-2C	7/20/2000	<0.01	mg/L	EPA 200.7
Molybdenum, Total	NP-2T	7/20/2000	<0.01	mg/L	EPA 200.7
Molybdenum, Total	NP-3C	7/20/2000	<0.01	mg/L	EPA 200.7
Molybdenum, Total	NP-3T	7/20/2000	<0.01	mg/L	EPA 200.7
Motor Oil (C14-C36)	NP-1C	7/20/2000	<0.1	mg/L	GAS
Motor Oil (C14-C36)	NP-2C	7/20/2000	<0.1	mg/L	GAS
Motor Oil (C14-C36)	NP-2T	7/20/2000	<0.1	mg/L	GAS
Motor Oil (C14-C36)	NP-3C	7/20/2000	<0.1	mg/L	GAS
Motor Oil (C14-C36)	NP-3T	7/20/2000	<0.1	mg/L	GAS
Naphthalene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8310
Naphthalene	NP-1C	7/20/2000	<10	ug/l	MADEP VPH
Naphthalene	NP-1C	7/20/2000	<5.0	ug/l	SW8468260B
Naphthalene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8310
Naphthalene	NP-2C	7/20/2000	<10	ug/l	MADEP VPH
Naphthalene	NP-2C	7/20/2000	<5.0	ug/l	SW8468260B
Naphthalene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8310
Naphthalene	NP-2T	7/20/2000	<10	ug/l	MADEP VPH
Naphthalene	NP-2T	7/20/2000	<5.0	ug/l	SW8468260B
Naphthalene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8310
Naphthalene	NP-3C	7/20/2000	<10	ug/l	MADEP VPH
Naphthalene	NP-3C	7/20/2000	<5.0	ug/l	SW8468260B
Naphthalene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8310
Naphthalene	NP-3T	7/20/2000	<10	ug/l	MADEP VPH
Naphthalene	NP-3T	7/20/2000	<5.0	ug/l	SW8468260B
n-Butylbenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
n-Butylbenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
n-Butylbenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
n-Butylbenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
n-Butylbenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Nickel, Dissolved	NP-2T	7/20/2000	<0.02	mg/L	200.7/6010
Nickel, Dissolved	NP-3T	7/20/2000	<0.02	mg/L	200.7/6010
Nickel, Total	NP-1C	7/20/2000	<0.02	mg/L	200.7/6010
Nickel, Total	NP-2C	7/20/2000	<0.02	mg/L	200.7/6010
Nickel, Total	NP-2T	7/20/2000	0.034	mg/L	200.7/6010
Nickel, Total	NP-3C	7/20/2000	<0.02	mg/L	200.7/6010
Nickel, Total	NP-3T	7/20/2000	0.026	mg/L	200.7/6010
Nitrate as N	NP-1C	7/20/2000	2.6	mg/L	SM4500-NH3/Lachat
Nitrate as N	NP-2C	7/20/2000	8.6	mg/L	SM4500-NH3/Lachat
Nitrate as N	NP-2T	7/20/2000	8.5	mg/L	SM4500-NH3/Lachat
Nitrate as N	NP-3C	7/20/2000	8.9	mg/L	SM4500-NH3/Lachat
Nitrate as N	NP-3T	7/20/2000	9	mg/L	SM4500-NH3/Lachat
Nitrite as N	NP-1C	7/20/2000	0.011	mg/L	SM4500-NH2
Nitrite as N	NP-2C	7/20/2000	0.024	mg/L	SM4500-NH2

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Nitrite as N	NP-2T	7/20/2000	0.038	mg/L	SM4500-NH2
Nitrite as N	NP-3C	7/20/2000	0.017	mg/L	SM4500-NH2
Nitrite as N	NP-3T	7/20/2000	0.019	mg/L	SM4500-NH2
Nitrobenzene	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Nitrobenzene	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Nitrobenzene	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Nitrobenzene	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Nitrobenzene	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Nitrogen, Ammonia	NP-1C	7/20/2000	97	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	NP-2C	7/20/2000	1.5	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	NP-2T	7/20/2000	2	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	NP-3C	7/20/2000	<0.1	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	NP-3T	7/20/2000	0.36	MG/L	SM4500F/Lachat
Nitrogen, Total Kjeldahl as N	NP-1C	7/20/2000	79	mg/L	LAC107062D
Nitrogen, Total Kjeldahl as N	NP-2C	7/20/2000	<1	mg/L	LAC107062D
Nitrogen, Total Kjeldahl as N	NP-2T	7/20/2000	1.1	mg/L	LAC107062D
Nitrogen, Total Kjeldahl as N	NP-3C	7/20/2000	<1	mg/L	LAC107062D
Nitrogen, Total Kjeldahl as N	NP-3T	7/20/2000	1.2	mg/L	LAC107062D
N-Nitroso-di-n-propylamine	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
n-Propyl Benzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
n-Propyl Benzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
n-Propyl Benzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
n-Propyl Benzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
n-Propyl Benzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Odor	NP-1C	7/20/2000	1	TON	EPA 140.1
Odor	NP-2C	7/20/2000	1	TON	EPA 140.1
Odor	NP-2T	7/20/2000	1	TON	EPA 140.1
Odor	NP-3C	7/20/2000	1	TON	EPA 140.1
Odor	NP-3T	7/20/2000	1	TON	EPA 140.1
Orthophosphate as P	NP-1C	7/20/2000	<0.1	mg/L	SM184500PE
Orthophosphate as P	NP-2C	7/20/2000	<0.1	mg/L	SM184500PE
Orthophosphate as P	NP-2T	7/20/2000	<0.1	mg/L	SM184500PE
Orthophosphate as P	NP-3C	7/20/2000	<0.1	mg/L	SM184500PE
Orthophosphate as P	NP-3T	7/20/2000	<0.1	mg/L	SM184500PE
o-Xylene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
o-Xylene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
o-Xylene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
o-Xylene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
o-Xylene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Parathion, Ethyl	NP-1C	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Ethyl	NP-2C	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Ethyl	NP-2T	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Ethyl	NP-3C	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Ethyl	NP-3T	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Methyl	NP-1C	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Methyl	NP-2C	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Methyl	NP-2T	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Methyl	NP-3C	7/20/2000	<0.04	ug/l	SW8468141A
Parathion, Methyl	NP-3T	7/20/2000	<0.04	ug/l	SW8468141A
PCB-1016	NP-1C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1016	NP-2C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1016	NP-2T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1016	NP-3C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1016	NP-3T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1221	NP-1C	7/20/2000	<0.6	ug/L	EPA 8082A

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ParameterName	Location	Date	Result	Units	AnalysisMethod
PCB-1221	NP-2C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1221	NP-2T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1221	NP-3C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1221	NP-3T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1232	NP-1C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1232	NP-2C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1232	NP-2T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1232	NP-3C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1232	NP-3T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1242	NP-1C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1242	NP-2C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1242	NP-2T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1242	NP-3C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1242	NP-3T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1248	NP-1C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1248	NP-2C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1248	NP-2T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1248	NP-3C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1248	NP-3T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1254	NP-1C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1254	NP-2C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1254	NP-2T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1254	NP-3C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1254	NP-3T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1260	NP-1C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1260	NP-2C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1260	NP-2T	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1260	NP-3C	7/20/2000	<0.6	ug/L	EPA 8082A
PCB-1260	NP-3T	7/20/2000	<0.6	ug/L	EPA 8082A
Pentachlorophenol	NP-1C	7/20/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	NP-1C	7/20/2000	<0.2	ug/L	SW-846 8151A
Pentachlorophenol	NP-2C	7/20/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	NP-2C	7/20/2000	<0.2	ug/L	SW-846 8151A
Pentachlorophenol	NP-2T	7/20/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	NP-2T	7/20/2000	<0.2	ug/L	SW-846 8151A
Pentachlorophenol	NP-3C	7/20/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	NP-3C	7/20/2000	<0.2	ug/L	SW-846 8151A
Pentachlorophenol	NP-3T	7/20/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	NP-3T	7/20/2000	<0.2	ug/L	SW-846 8151A
pH	NP-1C	7/20/2000	7.3	pH units	150.1
pH	NP-2C	7/20/2000	7.92	pH units	150.1
pH	NP-2T	7/20/2000	7.04	pH units	150.1
pH	NP-3C	7/20/2000	7.67	pH units	150.1
pH	NP-3T	7/20/2000	7.51	pH units	150.1
Phenanthrene	NP-1C	7/20/2000	<10 K F	ug/L	EPA 8270C
Phenanthrene	NP-1C	7/20/2000	<10	ug/l	MADEP EPH
Phenanthrene	NP-2C	7/20/2000	<10 K F	ug/L	EPA 8270C
Phenanthrene	NP-2C	7/20/2000	<10	ug/l	MADEP EPH
Phenanthrene	NP-2T	7/20/2000	<10 K F	ug/L	EPA 8270C
Phenanthrene	NP-2T	7/20/2000	<10	ug/l	MADEP EPH
Phenanthrene	NP-3C	7/20/2000	<10 K F	ug/L	EPA 8270C
Phenanthrene	NP-3C	7/20/2000	<10	ug/l	MADEP EPH
Phenanthrene	NP-3T	7/20/2000	<10 K F	ug/L	EPA 8270C
Phenanthrene	NP-3T	7/20/2000	<10	ug/l	MADEP EPH
Phenol	NP-1C	7/20/2000	<10	ug/L	EPA 8270C
Phenol	NP-2C	7/20/2000	<10	ug/L	EPA 8270C
Phenol	NP-2T	7/20/2000	<10	ug/L	EPA 8270C
Phenol	NP-3C	7/20/2000	<10	ug/L	EPA 8270C
Phenol	NP-3T	7/20/2000	<10	ug/L	EPA 8270C
Phosphate, Total as P	NP-1C	7/20/2000	0.89 F	mg/L	SM184500PE
Phosphate, Total as P	NP-2C	7/20/2000	0.95 F	mg/L	SM184500PE
Phosphate, Total as P	NP-2T	7/20/2000	0.68 F	mg/L	SM184500PE
Phosphate, Total as P	NP-3C	7/20/2000	1.1 F	mg/L	SM184500PE
Phosphate, Total as P	NP-3T	7/20/2000	0.95 F	mg/L	SM184500PE

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Result	Units	AnalysisMethod
Picloram	NP-1C	7/20/2000	<0.2	ug/L	SW-846 8151A
Picloram	NP-2C	7/20/2000	<0.2	ug/L	SW-846 8151A
Picloram	NP-2T	7/20/2000	<0.2	ug/L	SW-846 8151A
Picloram	NP-3C	7/20/2000	<0.2	ug/L	SW-846 8151A
Picloram	NP-3T	7/20/2000	<0.2	ug/L	SW-846 8151A
p-Isopropyl Toluene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
p-Isopropyl Toluene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
p-Isopropyl Toluene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
p-Isopropyl Toluene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
p-Isopropyl Toluene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Potassium, Dissolved	NP-2T	7/20/2000	1.7	mg/L	200.7/6010
Potassium, Dissolved	NP-3T	7/20/2000	2.1	mg/L	200.7/6010
Potassium, Total	NP-1C	7/20/2000	1.7	mg/L	200.7/6010
Potassium, Total	NP-2C	7/20/2000	1.8	mg/L	200.7/6010
Potassium, Total	NP-2T	7/20/2000	2	mg/L	200.7/6010
Potassium, Total	NP-3C	7/20/2000	2.1	mg/L	200.7/6010
Potassium, Total	NP-3T	7/20/2000	2.5	mg/L	200.7/6010
Pyrene	NP-1C	7/20/2000	<10 K F	ug/L	MADEP EPH
Pyrene	NP-1C	7/20/2000	<10	ug/l	SW8468270C
Pyrene	NP-2C	7/20/2000	<10 K F	ug/L	MADEP EPH
Pyrene	NP-2C	7/20/2000	<10	ug/l	SW8468270C
Pyrene	NP-2T	7/20/2000	<10 K F	ug/L	MADEP EPH
Pyrene	NP-2T	7/20/2000	<10	ug/l	SW8468270C
Pyrene	NP-3C	7/20/2000	<10 K F	ug/L	MADEP EPH
Pyrene	NP-3C	7/20/2000	<10	ug/l	SW8468270C
Pyrene	NP-3T	7/20/2000	<10 K F	ug/L	MADEP EPH
Pyrene	NP-3T	7/20/2000	<10	ug/l	SW8468270C
Residual Chlorine	NP-1C	7/20/2000	<0.02	mg/L	SM1845CLF
Residual Chlorine	NP-2C	7/20/2000	<0.02	mg/L	SM1845CLF
Residual Chlorine	NP-2T	7/20/2000	<0.02	mg/L	SM1845CLF
Residual Chlorine	NP-3C	7/20/2000	<0.02	mg/L	SM1845CLF
Residual Chlorine	NP-3T	7/20/2000	<0.02	mg/L	SM1845CLF
s-Butylbenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
s-Butylbenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
s-Butylbenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
s-Butylbenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
s-Butylbenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Selenium, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	200.7/6010
Selenium, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Selenium, Total	NP-1C	7/20/2000	<0.01	mg/L	200.7/6010
Selenium, Total	NP-2C	7/20/2000	<0.01	mg/L	200.7/6010
Selenium, Total	NP-2T	7/20/2000	<0.01	mg/L	200.7/6010
Selenium, Total	NP-3C	7/20/2000	<0.01	mg/L	200.7/6010
Selenium, Total	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Sodium, Dissolved	NP-2T	7/20/2000	92	mg/L	200.7/6010
Sodium, Dissolved	NP-3T	7/20/2000	110	mg/L	200.7/6010
Sodium, Total	NP-1C	7/20/2000	92	mg/L	200.7/6010
Sodium, Total	NP-2C	7/20/2000	100	mg/L	200.7/6010
Sodium, Total	NP-2T	7/20/2000	8.7	mg/L	200.7/6010
Sodium, Total	NP-3C	7/20/2000	92	mg/L	200.7/6010
Sodium, Total	NP-3T	7/20/2000	9.5	mg/L	200.7/6010
Specific Conductance	NP-1C	7/20/2000	1508	umhos/cm	SM2510B
Specific Conductance	NP-2C	7/20/2000	714	umhos/cm	SM2510B
Specific Conductance	NP-2T	7/20/2000	727	umhos/cm	SM2510B
Specific Conductance	NP-3C	7/20/2000	724	umhos/cm	SM2510B
Specific Conductance	NP-3T	7/20/2000	729	umhos/cm	SM2510B
Strontium, Dissolved	NP-2T	7/20/2000	0.09	mg/L	EPA 200.7
Strontium, Dissolved	NP-3T	7/20/2000	0.11	mg/L	EPA 200.7
Strontium, Total	NP-1C	7/20/2000	0.13	mg/L	200.7/6010
Strontium, Total	NP-2C	7/20/2000	0.096	mg/L	200.7/6010
Strontium, Total	NP-2T	7/20/2000	0.12	mg/L	200.7/6010
Strontium, Total	NP-3C	7/20/2000	0.11	mg/L	200.7/6010
Strontium, Total	NP-3T	7/20/2000	0.16	mg/L	200.7/6010
Styrene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Result	Units	AnalysisMethod
Styrene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Styrene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Styrene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Styrene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Sulfate as SO4	NP-1C	7/20/2000	410	mg/L	EPA 300.0/375.4
Sulfate as SO4	NP-2C	7/20/2000	59	mg/L	EPA 300.0/375.4
Sulfate as SO4	NP-2T	7/20/2000	72	mg/L	EPA 300.0/375.4
Sulfate as SO4	NP-3C	7/20/2000	52	mg/L	EPA 300.0/375.4
Sulfate as SO4	NP-3T	7/20/2000	54	mg/L	EPA 300.0/375.4
t-Butylbenzene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
t-Butylbenzene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
t-Butylbenzene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
t-Butylbenzene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
t-Butylbenzene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Tetrachloroethene (PCE)	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Tetrachloroethene (PCE)	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Tetrachloroethene (PCE)	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Tetrachloroethene (PCE)	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Tetrachloroethene (PCE)	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Thallium, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	279.2/7841
Thallium, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	279.2/7841
Thallium, Total	NP-1C	7/20/2000	<0.01	mg/L	279.2/7841
Thallium, Total	NP-2C	7/20/2000	<0.01	mg/L	279.2/7841
Thallium, Total	NP-2T	7/20/2000	<0.01	mg/L	279.2/7841
Thallium, Total	NP-3C	7/20/2000	<0.01	mg/L	279.2/7841
Thallium, Total	NP-3T	7/20/2000	<0.01	mg/L	279.2/7841
Toluene	NP-1C	7/20/2000	<5	ug/L	MADEP VPH
Toluene	NP-1C	7/20/2000	<1.0	ug/l	SW8468260B
Toluene	NP-2C	7/20/2000	<5	ug/L	MADEP VPH
Toluene	NP-2C	7/20/2000	<1.0	ug/l	SW8468260B
Toluene	NP-2T	7/20/2000	<5	ug/L	MADEP VPH
Toluene	NP-2T	7/20/2000	<1.0	ug/l	SW8468260B
Toluene	NP-3C	7/20/2000	<5	ug/L	MADEP VPH
Toluene	NP-3C	7/20/2000	<1.0	ug/l	SW8468260B
Toluene	NP-3T	7/20/2000	<5	ug/L	MADEP VPH
Toluene	NP-3T	7/20/2000	<1.0	ug/l	SW8468260B
Total Dissolved Solids (TDS)	NP-1C	7/20/2000	750	mg/L	EPA 160.1
Total Dissolved Solids (TDS)	NP-2C	7/20/2000	430	mg/L	EPA 160.1
Total Dissolved Solids (TDS)	NP-2T	7/20/2000	440	mg/L	EPA 160.1
Total Dissolved Solids (TDS)	NP-3C	7/20/2000	450	mg/L	EPA 160.1
Total Dissolved Solids (TDS)	NP-3T	7/20/2000	450	mg/L	EPA 160.1
Total Organic Carbon (TOC)	NP-1C	7/20/2000	5.8	mg/L	EPA 415.1
Total Organic Carbon (TOC)	NP-2C	7/20/2000	1.3	mg/L	EPA 415.1
Total Organic Carbon (TOC)	NP-2T	7/20/2000	35	mg/L	EPA 415.1
Total Organic Carbon (TOC)	NP-3C	7/20/2000	1.9	mg/L	EPA 415.1
Total Organic Carbon (TOC)	NP-3T	7/20/2000	19	mg/L	EPA 415.1
Total Suspended Solids	NP-1C	7/20/2000	<5	mg/L	EPA 160.2
Total Suspended Solids	NP-2C	7/20/2000	7.5	mg/L	EPA 160.2
Total Suspended Solids	NP-2T	7/20/2000	320	mg/L	EPA 160.2
Total Suspended Solids	NP-3C	7/20/2000	<5	mg/L	EPA 160.2
Total Suspended Solids	NP-3T	7/20/2000	1200	mg/L	EPA 160.2
Toxaphene	NP-1C	7/20/2000	<1	ug/L	EPA 8081A
Toxaphene	NP-2C	7/20/2000	<1	ug/L	EPA 8081A
Toxaphene	NP-2T	7/20/2000	<1	ug/L	EPA 8081A
Toxaphene	NP-3C	7/20/2000	<1	ug/L	EPA 8081A
Toxaphene	NP-3T	7/20/2000	<1	ug/L	EPA 8081A
trans-1,2-Dichloroethene	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
trans-1,2-Dichloroethene	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
trans-1,2-Dichloroethene	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
trans-1,2-Dichloroethene	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
trans-1,2-Dichloroethene	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
trans-1,3-Dichloropropene	NP-1C	7/20/2000	<0.5	ug/L	EPA 8260B
trans-1,3-Dichloropropene	NP-2C	7/20/2000	<0.5	ug/L	EPA 8260B
trans-1,3-Dichloropropene	NP-2T	7/20/2000	<0.5	ug/L	EPA 8260B

South Ditch Surface Water Chemistry Data Collected Prior to Remediation (July 20, 2000)

ParameterName	Location	Date	Result	Units	AnalysisMethod
trans-1,3-Dichloropropene	NP-3C	7/20/2000	<0.5	ug/L	EPA 8260B
trans-1,3-Dichloropropene	NP-3T	7/20/2000	<0.5	ug/L	EPA 8260B
Trichloroethene (TCE)	NP-1C	7/20/2000	<1	ug/L	EPA 8260B
Trichloroethene (TCE)	NP-2C	7/20/2000	<1	ug/L	EPA 8260B
Trichloroethene (TCE)	NP-2T	7/20/2000	<1	ug/L	EPA 8260B
Trichloroethene (TCE)	NP-3C	7/20/2000	<1	ug/L	EPA 8260B
Trichloroethene (TCE)	NP-3T	7/20/2000	<1	ug/L	EPA 8260B
Turbidity	NP-1C	7/20/2000	1.9	NTU	EPA 180.1
Turbidity	NP-2C	7/20/2000	0.63	NTU	EPA 180.1
Turbidity	NP-2T	7/20/2000	12	NTU	EPA 180.1
Turbidity	NP-3C	7/20/2000	0.23	NTU	EPA 180.1
Turbidity	NP-3T	7/20/2000	4.7	NTU	EPA 180.1
Vanadium, Dissolved	NP-2T	7/20/2000	<0.01	mg/L	200.7/6010
Vanadium, Dissolved	NP-3T	7/20/2000	<0.01	mg/L	200.7/6010
Vanadium, Total	NP-1C	7/20/2000	<0.01	mg/L	200.7/6010
Vanadium, Total	NP-2C	7/20/2000	<0.01	mg/L	200.7/6010
Vanadium, Total	NP-2T	7/20/2000	0.038	mg/L	200.7/6010
Vanadium, Total	NP-3C	7/20/2000	<0.01	mg/L	200.7/6010
Vanadium, Total	NP-3T	7/20/2000	0.034	mg/L	200.7/6010
Vinyl Chloride	NP-1C	7/20/2000	<2	ug/L	EPA 8260B
Vinyl Chloride	NP-2C	7/20/2000	<2	ug/L	EPA 8260B
Vinyl Chloride	NP-2T	7/20/2000	<2	ug/L	EPA 8260B
Vinyl Chloride	NP-3C	7/20/2000	<2	ug/L	EPA 8260B
Vinyl Chloride	NP-3T	7/20/2000	<2	ug/L	EPA 8260B
VPH Concentration (Total)	NP-1C	7/20/2000	<50	ug/l	MADEP VPH
VPH Concentration (Total)	NP-2C	7/20/2000	<50	ug/l	MADEP VPH
VPH Concentration (Total)	NP-2T	7/20/2000	<50	ug/l	MADEP VPH
VPH Concentration (Total)	NP-3C	7/20/2000	<50	ug/l	MADEP VPH
VPH Concentration (Total)	NP-3T	7/20/2000	<50	ug/l	MADEP VPH
Xylenes, Total	NP-1C	7/20/2000	<5	ug/L	MADEP VPH
Xylenes, Total	NP-2C	7/20/2000	<5	ug/L	MADEP VPH
Xylenes, Total	NP-2T	7/20/2000	<5	ug/L	MADEP VPH
Xylenes, Total	NP-3C	7/20/2000	<5	ug/L	MADEP VPH
Xylenes, Total	NP-3T	7/20/2000	<5	ug/L	MADEP VPH
Zinc, Dissolved	NP-2T	7/20/2000	<0.05	mg/L	200.7/6010
Zinc, Dissolved	NP-3T	7/20/2000	<0.05	mg/L	200.7/6010
Zinc, Total	NP-1C	7/20/2000	<0.05	mg/L	200.7/6010
Zinc, Total	NP-2C	7/20/2000	<0.05	mg/L	200.7/6010
Zinc, Total	NP-2T	7/20/2000	0.17	mg/L	200.7/6010
Zinc, Total	NP-3C	7/20/2000	<0.05	mg/L	200.7/6010
Zinc, Total	NP-3T	7/20/2000	0.21	mg/L	200.7/6010

Appendix C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
1,2,4-Trichlorobenzene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
1,2,4-Trichlorobenzene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
1,2-Dichlorobenzene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8260B

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
1,2-Dichlorobenzene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8260B
1,2-Dichlorobenzene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8260B
1,2-Diphenylhydrazine	1150-SD-SWC7	11/3/2000	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1150-SD-SWC8	11/4/2000	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1150-SD-SWC9	11/6/2000	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1150-SD-SWC12	11/9/2000	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1150-SD-SWC13	11/10/2000	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
1,2-Diphenylhydrazine	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
1,2-Diphenylhydrazine	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
1,3-Dichlorobenzene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
1,4-Dichlorobenzene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8260B

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
1,4-Dichlorobenzene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8260B
1,4-Dichlorobenzene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8260B
2,4,5-Trichlorophenol	1140-SD-SW1	9/20/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW2	9/21/2000	<14	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW3	9/22/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW4	9/23/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW5	9/25/2000	<14	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW6	9/26/2000	<20	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW8	9/28/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW9	9/29/2000	<14	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1140-SD-SW10	10/2/2000	<12	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2,4,5-Trichlorophenol	1140-SD-SW11	10/4/2000	<25	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SW11A	10/5/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SW11B	10/5/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SW11C	10/5/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SW11D	10/5/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SW11E	10/5/2000	<20	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA1	10/7/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA2	10/9/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA3	10/10/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA4	10/11/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA5	10/12/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA6	10/18/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA7	10/19/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA8	10/20/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA9	10/20/2000	<14	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWA10	10/23/2000	<25	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWB1	10/24/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWB2	10/25/2000	<14	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC1	10/26/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC2	10/27/2000	<20	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC3	10/30/2000	<25	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC4	10/31/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC5	11/1/2000	<14	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC6	11/2/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC7	11/3/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC8	11/4/2000	<20	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC9	11/6/2000	<50	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC10	11/7/2000	<25	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC11	11/8/2000	<20	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC12	11/9/2000	<12	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC13	11/10/2000	<17	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC29	12/1/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2,4,5-Trichlorophenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW1	9/20/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW2	9/21/2000	<14	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW3	9/22/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW4	9/23/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW5	9/25/2000	<14	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW6	9/26/2000	<20	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW8	9/28/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW9	9/29/2000	<14	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW10	10/2/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1140-SD-SW11	10/4/2000	<25	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SW11A	10/5/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SW11B	10/5/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SW11C	10/5/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SW11D	10/5/2000	<17	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2,4,6-Trichlorophenol	1150-SD-SW11E	10/5/2000	<20	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA1	10/7/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA2	10/9/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA3	10/10/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA4	10/11/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA5	10/12/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA6	10/18/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA7	10/19/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA8	10/20/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA9	10/20/2000	<14	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWA10	10/23/2000	<25	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWB1	10/24/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWB2	10/25/2000	<14	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC1	10/26/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC2	10/27/2000	<20	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC3	10/30/2000	<25	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC4	10/31/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC5	11/1/2000	<14	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC6	11/2/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC7	11/3/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC8	11/4/2000	<20	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC9	11/6/2000	<50	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC10	11/7/2000	<25	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC11	11/8/2000	<20	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC12	11/9/2000	<12	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC13	11/10/2000	<17	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC29	12/1/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2,4,6-Trichlorophenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2,4-Dichlorophenol	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2,4-Dichlorophenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2,4-Dimethylphenol	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2,4-Dimethylphenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2,4-Dinitrophenol	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2,4-Dinitrophenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW1	9/20/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW2	9/21/2000	<14	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW3	9/22/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW4	9/23/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW5	9/25/2000	<14	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW6	9/26/2000	<20	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW8	9/28/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW9	9/29/2000	<14	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW10	10/2/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1140-SD-SW11	10/4/2000	<25	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SW11A	10/5/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SW11B	10/5/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SW11C	10/5/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SW11D	10/5/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SW11E	10/5/2000	<20	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA1	10/7/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA2	10/9/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA3	10/10/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA4	10/11/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA5	10/12/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA6	10/18/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA7	10/19/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA8	10/20/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA9	10/20/2000	<14	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWA10	10/23/2000	<25	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWB1	10/24/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWB2	10/25/2000	<14	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC1	10/26/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC2	10/27/2000	<20	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC3	10/30/2000	<25	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC4	10/31/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC5	11/1/2000	<14	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC6	11/2/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC7	11/3/2000	<17	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2,4-Dinitrotoluene	1150-SD-SWC8	11/4/2000	<20	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC9	11/6/2000	<50	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC10	11/7/2000	<25	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC11	11/8/2000	<20	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC12	11/9/2000	<12	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC13	11/10/2000	<17	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC29	12/1/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2,4-Dinitrotoluene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2,6-Dinitrotoluene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2,6-Dinitrotoluene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2-Chloronaphthalene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2-Chloronaphthalene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2-Chlorophenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2-Chlorophenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2-Chlorophenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2-Chlorophenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2-Chlorophenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2-Chlorophenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2-Chlorophenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2-Chlorophenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW1	9/20/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW2	9/21/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW3	9/22/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW4	9/23/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW5	9/25/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW6	9/26/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW7	9/27/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW8	9/28/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW9	9/29/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW10	10/2/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1140-SD-SW11	10/4/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA1	10/7/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA2	10/9/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA3	10/10/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA4	10/11/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA5	10/12/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA6	10/18/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA7	10/19/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA8	10/20/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA9	10/20/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWA10	10/23/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWB1	10/24/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWB2	10/25/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC1	10/26/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC14	11/12/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC15	11/13/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC16	11/14/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC17	11/15/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC18	11/16/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC19	11/17/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC20	11/18/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC21	11/19/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC22	11/20/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC23	11/21/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC24	11/22/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2-Methylnaphthalene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
2-Methylnaphthalene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2-Methylnaphthalene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2-Methylphenol (o-Cresol)	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2-Methylphenol (o-Cresol)	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW1	9/20/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW2	9/21/2000	<71 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW3	9/22/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW4	9/23/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW5	9/25/2000	<71 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW6	9/26/2000	<100 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW8	9/28/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW9	9/29/2000	<71 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW10	10/2/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1140-SD-SW11	10/4/2000	<120 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SW11A	10/5/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SW11B	10/5/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SW11C	10/5/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SW11D	10/5/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SW11E	10/5/2000	<100 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA1	10/7/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA2	10/9/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA3	10/10/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA4	10/11/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA5	10/12/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA6	10/18/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA7	10/19/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA8	10/20/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA9	10/20/2000	<71 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWA10	10/23/2000	<120 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWB1	10/24/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWB2	10/25/2000	<71 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC1	10/26/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC2	10/27/2000	<100 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC3	10/30/2000	<120 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC4	10/31/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC5	11/1/2000	<71 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC6	11/2/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC7	11/3/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC8	11/4/2000	<100 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC9	11/6/2000	<250 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC10	11/7/2000	<120 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC11	11/8/2000	<100 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC12	11/9/2000	<62 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC13	11/10/2000	<83 A	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC29	12/1/2000	<50 C	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC30	12/3/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC31	12/4/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC32	12/5/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC33	12/6/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC34	12/7/2000	<50	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
2-Nitroaniline	1150-SD-SWC35	12/8/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC36	12/9/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC37	12/11/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC38	12/12/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1150-SD-SWC39	12/13/2000	<50	ug/L	EPA 8270C
2-Nitroaniline	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
2-Nitroaniline	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
2-Nitroaniline	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
2-Nitroaniline	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
2-Nitroaniline	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
2-Nitroaniline	1170-ISCO2-21	5/23/2001	<50	ug/L	EPA 8270C
2-Nitroaniline	1170-ISCO2-22	5/24/2001	<50	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
2-Nitrophenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
2-Nitrophenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
2-Nitrophenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
2-Nitrophenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
2-Nitrophenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
2-Nitrophenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
2-Nitrophenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
2-Nitrophenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW1	9/20/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW2	9/21/2000	<29 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW3	9/22/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW4	9/23/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW5	9/25/2000	<29 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW6	9/26/2000	<40 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW8	9/28/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW9	9/29/2000	<29 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW10	10/2/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1140-SD-SW11	10/4/2000	<50 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SW11A	10/5/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SW11B	10/5/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SW11C	10/5/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SW11D	10/5/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SW11E	10/5/2000	<40 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA1	10/7/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA2	10/9/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA3	10/10/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA4	10/11/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA5	10/12/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA6	10/18/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA7	10/19/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA8	10/20/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA9	10/20/2000	<29 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWA10	10/23/2000	<50 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWB1	10/24/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWB2	10/25/2000	<29 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC1	10/26/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC2	10/27/2000	<40 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC3	10/30/2000	<50 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC4	10/31/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC5	11/1/2000	<29 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC6	11/2/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC7	11/3/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC8	11/4/2000	<40 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC9	11/6/2000	<100 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC10	11/7/2000	<50 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC11	11/8/2000	<40 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC12	11/9/2000	<25 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC13	11/10/2000	<33 A	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC25	11/27/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC29	12/1/2000	<20 C	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC30	12/3/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC31	12/4/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC32	12/5/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC33	12/6/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC34	12/7/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC35	12/8/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC36	12/9/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC37	12/11/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC38	12/12/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1150-SD-SWC39	12/13/2000	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1170-ISCO2-15	5/14/2001	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1170-ISCO2-16	5/15/2001	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1170-ISCO2-17	5/16/2001	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1170-ISCO2-18	5/17/2001	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1170-ISCO2-19	5/18/2001	<20	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
3,3'-Dichlorobenzidine	1170-ISCO2-21	5/23/2001	<20	ug/L	EPA 8270C
3,3'-Dichlorobenzidine	1170-ISCO2-22	5/24/2001	<20	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW1	9/20/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW2	9/21/2000	<71 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW3	9/22/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW4	9/23/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW5	9/25/2000	<71 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW6	9/26/2000	<100 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW8	9/28/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW9	9/29/2000	<71 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW10	10/2/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1140-SD-SW11	10/4/2000	<120 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SW11A	10/5/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SW11B	10/5/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SW11C	10/5/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SW11D	10/5/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SW11E	10/5/2000	<100 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA1	10/7/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA2	10/9/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA3	10/10/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA4	10/11/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA5	10/12/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA6	10/18/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA7	10/19/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA8	10/20/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA9	10/20/2000	<71 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWA10	10/23/2000	<120 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWB1	10/24/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWB2	10/25/2000	<71 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC1	10/26/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC2	10/27/2000	<100 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC3	10/30/2000	<120 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC4	10/31/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC5	11/1/2000	<71 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC6	11/2/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC7	11/3/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC8	11/4/2000	<100 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC9	11/6/2000	<250 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC10	11/7/2000	<120 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC11	11/8/2000	<100 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC12	11/9/2000	<62 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC13	11/10/2000	<83 A	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC29	12/1/2000	<50 C	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC30	12/3/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC31	12/4/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC32	12/5/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC33	12/6/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC34	12/7/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC35	12/8/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC36	12/9/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC37	12/11/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC38	12/12/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1150-SD-SWC39	12/13/2000	<50	ug/L	EPA 8270C
3-Nitroaniline	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
3-Nitroaniline	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
3-Nitroaniline	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
3-Nitroaniline	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
3-Nitroaniline	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
3-Nitroaniline	1170-ISCO2-21	5/23/2001	<50	ug/L	EPA 8270C
3-Nitroaniline	1170-ISCO2-22	5/24/2001	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW1	9/20/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW2	9/21/2000	<71 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW3	9/22/2000	<62 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
4,6-Dinitro-2-methylphenol	1140-SD-SW4	9/23/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW5	9/25/2000	<71 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW6	9/26/2000	<100 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW8	9/28/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW9	9/29/2000	<71 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW10	10/2/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1140-SD-SW11	10/4/2000	<120 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SW11A	10/5/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SW11B	10/5/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SW11C	10/5/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SW11D	10/5/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SW11E	10/5/2000	<100 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA1	10/7/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA2	10/9/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA3	10/10/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA4	10/11/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA5	10/12/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA6	10/18/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA7	10/19/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA8	10/20/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA9	10/20/2000	<71 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWA10	10/23/2000	<120 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWB1	10/24/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWB2	10/25/2000	<71 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC1	10/26/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC2	10/27/2000	<100 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC3	10/30/2000	<120 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC4	10/31/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC5	11/1/2000	<71 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC6	11/2/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC7	11/3/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC8	11/4/2000	<100 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC9	11/6/2000	<250 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC10	11/7/2000	<120 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC11	11/8/2000	<100 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC12	11/9/2000	<62 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC13	11/10/2000	<83 A	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC29	12/1/2000	<50 C	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC30	12/3/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC31	12/4/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC32	12/5/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC33	12/6/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC34	12/7/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC35	12/8/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC36	12/9/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC37	12/11/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC38	12/12/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1150-SD-SWC39	12/13/2000	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1170-ISCO2-21	5/23/2001	<50	ug/L	EPA 8270C
4,6-Dinitro-2-methylphenol	1170-ISCO2-22	5/24/2001	<50	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Bromophenyl-phenylether	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
4-Bromophenyl-phenylether	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW1	9/20/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW2	9/21/2000	<29 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW3	9/22/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW4	9/23/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW5	9/25/2000	<29 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW6	9/26/2000	<40 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW8	9/28/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW9	9/29/2000	<29 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW10	10/2/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1140-SD-SW11	10/4/2000	<50 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SW11A	10/5/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SW11B	10/5/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SW11C	10/5/2000	<33 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Chloro-3-methylphenol	1150-SD-SW11D	10/5/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SW11E	10/5/2000	<40 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA1	10/7/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA2	10/9/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA3	10/10/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA4	10/11/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA5	10/12/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA6	10/18/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA7	10/19/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA8	10/20/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA9	10/20/2000	<29 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWA10	10/23/2000	<50 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWB1	10/24/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWB2	10/25/2000	<29 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC1	10/26/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC2	10/27/2000	<40 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC3	10/30/2000	<50 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC4	10/31/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC5	11/1/2000	<29 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC6	11/2/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC7	11/3/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC8	11/4/2000	<40 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC9	11/6/2000	<100 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC10	11/7/2000	<50 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC11	11/8/2000	<40 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC12	11/9/2000	<25 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC13	11/10/2000	<33 A	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC25	11/27/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC29	12/1/2000	<20 C	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC30	12/3/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC31	12/4/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC32	12/5/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC33	12/6/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC34	12/7/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC35	12/8/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC36	12/9/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC37	12/11/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC38	12/12/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1150-SD-SWC39	12/13/2000	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1170-ISCO2-15	5/14/2001	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1170-ISCO2-16	5/15/2001	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1170-ISCO2-17	5/16/2001	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1170-ISCO2-18	5/17/2001	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1170-ISCO2-19	5/18/2001	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1170-ISCO2-21	5/23/2001	<20	ug/L	EPA 8270C
4-Chloro-3-methylphenol	1170-ISCO2-22	5/24/2001	<20	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW1	9/20/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW2	9/21/2000	<29 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW3	9/22/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW4	9/23/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW5	9/25/2000	<29 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW6	9/26/2000	<40 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW8	9/28/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW9	9/29/2000	<29 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW10	10/2/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1140-SD-SW11	10/4/2000	<50 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SW11A	10/5/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SW11B	10/5/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SW11C	10/5/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SW11D	10/5/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SW11E	10/5/2000	<40 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA1	10/7/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA2	10/9/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA3	10/10/2000	<33 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Chloroaniline	1150-SD-SWA4	10/11/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA5	10/12/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA6	10/18/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA7	10/19/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA8	10/20/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA9	10/20/2000	<29 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWA10	10/23/2000	<50 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWB1	10/24/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWB2	10/25/2000	<29 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC1	10/26/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC2	10/27/2000	<40 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC3	10/30/2000	<50 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC4	10/31/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC5	11/1/2000	<29 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC6	11/2/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC7	11/3/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC8	11/4/2000	<40 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC9	11/6/2000	<100 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC10	11/7/2000	<50 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC11	11/8/2000	<40 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC12	11/9/2000	<25 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC13	11/10/2000	<33 A	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC25	11/27/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC29	12/1/2000	<20 C	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC30	12/3/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC31	12/4/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC32	12/5/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC33	12/6/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC34	12/7/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC35	12/8/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC36	12/9/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC37	12/11/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC38	12/12/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1150-SD-SWC39	12/13/2000	<20	ug/L	EPA 8270C
4-Chloroaniline	1170-ISCO2-15	5/14/2001	<20	ug/L	EPA 8270C
4-Chloroaniline	1170-ISCO2-16	5/15/2001	<20	ug/L	EPA 8270C
4-Chloroaniline	1170-ISCO2-17	5/16/2001	<20	ug/L	EPA 8270C
4-Chloroaniline	1170-ISCO2-18	5/17/2001	<20	ug/L	EPA 8270C
4-Chloroaniline	1170-ISCO2-19	5/18/2001	<20	ug/L	EPA 8270C
4-Chloroaniline	1170-ISCO2-21	5/23/2001	<20	ug/L	EPA 8270C
4-Chloroaniline	1170-ISCO2-22	5/24/2001	<20	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Chlorophenyl-phenylether	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
4-Chlorophenyl-phenylether	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Methylphenol (p-Cresol)	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
4-Methylphenol (p-Cresol)	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW1	9/20/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW2	9/21/2000	<71 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW3	9/22/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW4	9/23/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW5	9/25/2000	<71 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW6	9/26/2000	<100 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW8	9/28/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW9	9/29/2000	<71 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW10	10/2/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1140-SD-SW11	10/4/2000	<120 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SW11A	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SW11B	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SW11C	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SW11D	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SW11E	10/5/2000	<100 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA1	10/7/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA2	10/9/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA3	10/10/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA4	10/11/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA5	10/12/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA6	10/18/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA7	10/19/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA8	10/20/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA9	10/20/2000	<71 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWA10	10/23/2000	<120 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWB1	10/24/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWB2	10/25/2000	<71 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC1	10/26/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC2	10/27/2000	<100 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC3	10/30/2000	<120 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC4	10/31/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC5	11/1/2000	<71 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC6	11/2/2000	<83 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Nitroaniline	1150-SD-SWC7	11/3/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC8	11/4/2000	<100 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC9	11/6/2000	<250 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC10	11/7/2000	<120 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC11	11/8/2000	<100 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC12	11/9/2000	<62 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC13	11/10/2000	<83 A	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC29	12/1/2000	<50 C	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC30	12/3/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC31	12/4/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC32	12/5/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC33	12/6/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC34	12/7/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC35	12/8/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC36	12/9/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC37	12/11/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC38	12/12/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1150-SD-SWC39	12/13/2000	<50	ug/L	EPA 8270C
4-Nitroaniline	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
4-Nitroaniline	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
4-Nitroaniline	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
4-Nitroaniline	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
4-Nitroaniline	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
4-Nitroaniline	1170-ISCO2-21	5/23/2001	<50	ug/L	EPA 8270C
4-Nitroaniline	1170-ISCO2-22	5/24/2001	<50	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW1	9/20/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW2	9/21/2000	<71 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW3	9/22/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW4	9/23/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW5	9/25/2000	<71 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW6	9/26/2000	<100 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW8	9/28/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW9	9/29/2000	<71 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW10	10/2/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1140-SD-SW11	10/4/2000	<120 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SW11A	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SW11B	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SW11C	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SW11D	10/5/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SW11E	10/5/2000	<100 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA1	10/7/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA2	10/9/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA3	10/10/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA4	10/11/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA5	10/12/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA6	10/18/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA7	10/19/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA8	10/20/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA9	10/20/2000	<71 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWA10	10/23/2000	<120 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWB1	10/24/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWB2	10/25/2000	<71 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC1	10/26/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC2	10/27/2000	<100 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC3	10/30/2000	<120 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC4	10/31/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC5	11/1/2000	<71 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC6	11/2/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC7	11/3/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC8	11/4/2000	<100 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC9	11/6/2000	<250 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC10	11/7/2000	<120 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC11	11/8/2000	<100 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
4-Nitrophenol	1150-SD-SWC12	11/9/2000	<62 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC13	11/10/2000	<83 A	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC29	12/1/2000	<50 C	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC30	12/3/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC31	12/4/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC32	12/5/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC33	12/6/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC34	12/7/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC35	12/8/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC36	12/9/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC37	12/11/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC38	12/12/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1150-SD-SWC39	12/13/2000	<50	ug/L	EPA 8270C
4-Nitrophenol	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
4-Nitrophenol	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
4-Nitrophenol	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
4-Nitrophenol	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
4-Nitrophenol	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
4-Nitrophenol	1170-ISCO2-21	5/23/2001	<50	ug/L	EPA 8270C
4-Nitrophenol	1170-ISCO2-22	5/24/2001	<50	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW1	9/20/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW2	9/21/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW3	9/22/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW4	9/23/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW5	9/25/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW6	9/26/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW7	9/27/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW8	9/28/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW9	9/29/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW10	10/2/2000	<1	ug/L	EPA 8270C
Acenaphthene	1140-SD-SW11	10/4/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Acenaphthene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Acenaphthene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Acenaphthene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Acenaphthene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA1	10/7/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA2	10/9/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA3	10/10/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA4	10/11/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA5	10/12/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA6	10/18/2000	<1 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA7	10/19/2000	<1 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA8	10/20/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA9	10/20/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWB1	10/24/2000	<1 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWB2	10/25/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC1	10/26/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC14	11/12/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC15	11/13/2000	<1	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Acenaphthene	1150-SD-SWC16	11/14/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC17	11/15/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC18	11/16/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC19	11/17/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC20	11/18/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC21	11/19/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC22	11/20/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC23	11/21/2000	<1 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC24	11/22/2000	<1 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Acenaphthene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Acenaphthene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Acenaphthene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Acenaphthene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Acenaphthene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Acenaphthene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Acenaphthene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Acenaphthene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Acenaphthene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Acenaphthene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Acenaphthylene	1140-SD-SW1	9/20/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW2	9/21/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW3	9/22/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW4	9/23/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW5	9/25/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW6	9/26/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW7	9/27/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW8	9/28/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW9	9/29/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW10	10/2/2000	<1	ug/L	EPA 8310
Acenaphthylene	1140-SD-SW11	10/4/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Acenaphthylene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310
Acenaphthylene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310
Acenaphthylene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Acenaphthylene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA1	10/7/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA2	10/9/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA3	10/10/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA4	10/11/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA5	10/12/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA6	10/18/2000	<1 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA7	10/19/2000	<1 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA8	10/20/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA9	10/20/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWB1	10/24/2000	<1 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWB2	10/25/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC1	10/26/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Acenaphthylene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC14	11/12/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC15	11/13/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC16	11/14/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC17	11/15/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC18	11/16/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC19	11/17/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC20	11/18/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC21	11/19/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC22	11/20/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC23	11/21/2000	<1 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC24	11/22/2000	<1 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Acenaphthylene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Acenaphthylene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Acenaphthylene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Acenaphthylene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Acenaphthylene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Acenaphthylene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Acenaphthylene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Acenaphthylene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Aluminum, Dissolved	1150-OPWD-SWC28	11/30/2000	0.46	mg/L	200.7/6010
Aluminum, Dissolved	1150-SD-SWC28	11/30/2000	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-6	3/16/2001	0.35	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-6	3/16/2001	0.18	mg/L	200.7/6010
Aluminum, Dissolved	1170 ISCO1-7	3/23/2001	0.29	mg/L	200.7/6010
Aluminum, Dissolved	1170 ISCO1-8	3/23/2001	0.48	mg/L	200.7/6010
Aluminum, Dissolved	1170 ISCO2-7	3/23/2001	0.23	mg/L	200.7/6010
Aluminum, Dissolved	1170 ISCO2-8	3/23/2001	0.22	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-9	4/2/2001	0.57	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-9	4/2/2001	0.32	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO3-9	4/2/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-10	4/9/2001	0.18	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-10	4/9/2001	0.15	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-11	4/16/2001	0.38	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-11	4/16/2001	0.15	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-12	4/23/2001	0.16	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-12	4/23/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-13	4/30/2001	0.23	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-13	4/30/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO3-13	4/30/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-14	5/7/2001	0.11	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Aluminum, Dissolved	1170-ISCO2-14	5/7/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-15	5/14/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-15	5/14/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-25	6/4/2001	0.11	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-25	6/4/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO3-25	6/4/2001	0.11	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-30	6/11/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-31	6/18/2001	0.21	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-31	6/18/2001	0.21	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-32	6/25/2001	0.12	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-32	6/25/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-33 DISSOLVED MS/MSD	7/2/2001	0.24	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO2-33 DISSOLVED	7/2/2001	0.19	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO3-33 DISSOLVED	7/2/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO1-34	7/9/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-34	7/9/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-36 DISOLVED MS/MSD	7/23/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO1-37 MS/MSD DISSOLVED	7/30/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-TD1-37 DISSOLVED	7/30/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-TD2-37 DISSOLVED	7/30/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-TD3-37 DISSOLVED	7/30/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO1-38 DISSOLVED	8/6/2001	0.12	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO2-38 DISSOLVED MS/MSD	8/6/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO3-38 DISSOLVED	8/6/2001	<0.1	mg/L	EPA 200.7
Aluminum, Dissolved	1170-ISCO1-39	8/13/2001	0.21	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-39	8/13/2001	0.21	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-40	8/20/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-40	8/20/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-41	8/27/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO2-41	8/27/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO1-42	9/4/2001	<0.1	mg/L	200.7/6010
Aluminum, Dissolved	1170-ISCO3-42	9/4/2001	<0.1	mg/L	200.7/6010
Aluminum, Total	1150-OPWD-SWC28	11/30/2000	1.8	mg/L	200.7/6010
Aluminum, Total	1150-SD-SWC28	11/30/2000	0.69	mg/L	200.7/6010
Aniline	1150-SD-SWC7	11/3/2000	<50	ug/L	EPA 8270C
Aniline	1150-SD-SWC8	11/4/2000	<50	ug/L	EPA 8270C
Aniline	1150-SD-SWC9	11/6/2000	<50	ug/L	EPA 8270C
Aniline	1150-SD-SWC12	11/9/2000	<50	ug/L	EPA 8270C
Aniline	1150-SD-SWC13	11/10/2000	<50	ug/L	EPA 8270C
Aniline	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
Aniline	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
Aniline	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
Aniline	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
Aniline	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
Aniline	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
Anthracene	1140-SD-SW1	9/20/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW2	9/21/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW3	9/22/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW4	9/23/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW5	9/25/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW6	9/26/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW7	9/27/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW8	9/28/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW9	9/29/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW10	10/2/2000	<0.2	ug/L	MADEP EPH
Anthracene	1140-SD-SW11	10/4/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	MADEP EPH
Anthracene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	MADEP EPH
Anthracene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	MADEP EPH
Anthracene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	MADEP EPH
Anthracene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	MADEP EPH
Anthracene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	MADEP EPH

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Anthracene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC2	10/27/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC3	10/30/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC4	10/31/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC5	11/1/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC6	11/2/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC7	11/3/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC8	11/4/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC9	11/6/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC10	11/7/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC11	11/8/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC12	11/9/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC13	11/10/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	MADEP EPH
Anthracene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWC25	11/27/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC26	11/28/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	MADEP EPH
Anthracene	1150-SD-SWC29	12/1/2000	<1	ug/L	MADEP EPH
Anthracene	1150-SD-SWC30	12/3/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC31	12/4/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC32	12/5/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC33	12/6/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC34	12/7/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC35	12/8/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC36	12/9/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC37	12/11/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC38	12/12/2000	<10	ug/L	MADEP EPH
Anthracene	1150-SD-SWC39	12/13/2000	<10	ug/L	MADEP EPH
Anthracene	1170-ISCO2-15	5/14/2001	<10	ug/L	MADEP EPH
Anthracene	1170-ISCO2-16	5/15/2001	<10	ug/L	MADEP EPH
Anthracene	1170-ISCO2-17	5/16/2001	<10	ug/L	MADEP EPH
Anthracene	1170-ISCO2-18	5/17/2001	<10	ug/L	MADEP EPH
Anthracene	1170-ISCO2-19	5/18/2001	<10	ug/L	MADEP EPH
Anthracene	1170-ISCO2-21	5/23/2001	<10	ug/L	MADEP EPH
Anthracene	1170-ISCO2-22	5/24/2001	<10	ug/L	MADEP EPH
Barium, Dissolved	1150-SD-SW11A	10/5/2000	0.03	mg/L	200.7/6010
Barium, Dissolved	1150-SD-SW11B	10/5/2000	0.065	mg/L	200.7/6010
Barium, Dissolved	1150-SD-SW11C	10/5/2000	0.072	mg/L	200.7/6010
Barium, Dissolved	1150-SD-SW11D	10/5/2000	0.062	mg/L	200.7/6010
Barium, Dissolved	1150-SD-SW11E	10/5/2000	0.063	mg/L	200.7/6010
Benzo(a)anthracene	1140-SD-SW1	9/20/2000	<0.2	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW2	9/21/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW3	9/22/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW4	9/23/2000	<1	ug/L	MADEP EPH

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(a)anthracene	1140-SD-SW5	9/25/2000	<0.2	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW6	9/26/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW7	9/27/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW8	9/28/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW9	9/29/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW10	10/2/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1140-SD-SW11	10/4/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA1	10/7/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA2	10/9/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA3	10/10/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA4	10/11/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA5	10/12/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA6	10/18/2000	<1 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA7	10/19/2000	<1 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA8	10/20/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA9	10/20/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWB1	10/24/2000	<1 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWB2	10/25/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC1	10/26/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC2	10/27/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC3	10/30/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC4	10/31/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC5	11/1/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC6	11/2/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC7	11/3/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC8	11/4/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC9	11/6/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC10	11/7/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC11	11/8/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC12	11/9/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC13	11/10/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC14	11/12/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC15	11/13/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC16	11/14/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC17	11/15/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC18	11/16/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC19	11/17/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC20	11/18/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC21	11/19/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC22	11/20/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC23	11/21/2000	<1 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC24	11/22/2000	<1 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC25	11/27/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC26	11/28/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC29	12/1/2000	<1	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC30	12/3/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC31	12/4/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC32	12/5/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC33	12/6/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC34	12/7/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC35	12/8/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC36	12/9/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC37	12/11/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC38	12/12/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1150-SD-SWC39	12/13/2000	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1170-ISCO2-15	5/14/2001	<10	ug/L	MADEP EPH

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(a)anthracene	1170-ISCO2-16	5/15/2001	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1170-ISCO2-17	5/16/2001	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1170-ISCO2-18	5/17/2001	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1170-ISCO2-19	5/18/2001	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1170-ISCO2-21	5/23/2001	<10	ug/L	MADEP EPH
Benzo(a)anthracene	1170-ISCO2-22	5/24/2001	<10	ug/L	MADEP EPH
Benzo(a)pyrene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC2	10/27/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC3	10/30/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC4	10/31/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC5	11/1/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC6	11/2/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC7	11/3/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC8	11/4/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC9	11/6/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC10	11/7/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC11	11/8/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC12	11/9/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC13	11/10/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC25	11/27/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC26	11/28/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC27	11/29/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC28	11/30/2000	<0.2 C	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC29	12/1/2000	<0.2	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(a)pyrene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Benzo(a)pyrene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Benzo(a)pyrene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Benzo(a)pyrene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Benzo(a)pyrene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Benzo(a)pyrene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Benzo(a)pyrene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Benzo(a)pyrene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(b)fluoranthene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC7	11/3/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC8	11/4/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Benzo(b)fluoranthene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Benzo(b)fluoranthene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Benzo(g,h,i)perylene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(g,h,i)perylene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(g,h,i)perylene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Benzo(g,h,i)perylene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Benzo(k)fluoranthene	1140-SD-SW1	9/20/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW2	9/21/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW3	9/22/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW4	9/23/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW5	9/25/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW6	9/26/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW7	9/27/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW8	9/28/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW9	9/29/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW10	10/2/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1140-SD-SW11	10/4/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC2	10/27/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC3	10/30/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC4	10/31/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC5	11/1/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC6	11/2/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC7	11/3/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC8	11/4/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC9	11/6/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC10	11/7/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC11	11/8/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC12	11/9/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC13	11/10/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC25	11/27/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC26	11/28/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	MADEP EPH

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzo(k)fluoranthene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC29	12/1/2000	<1	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC30	12/3/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC31	12/4/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC32	12/5/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC33	12/6/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC34	12/7/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC35	12/8/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC36	12/9/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC37	12/11/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC38	12/12/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1150-SD-SWC39	12/13/2000	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1170-ISCO2-15	5/14/2001	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1170-ISCO2-16	5/15/2001	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1170-ISCO2-17	5/16/2001	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1170-ISCO2-18	5/17/2001	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1170-ISCO2-19	5/18/2001	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1170-ISCO2-21	5/23/2001	<10	ug/L	MADEP EPH
Benzo(k)fluoranthene	1170-ISCO2-22	5/24/2001	<10	ug/L	MADEP EPH
Benzoic Acid	1140-SD-SW1	9/20/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW2	9/21/2000	<71 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW3	9/22/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW4	9/23/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW5	9/25/2000	<71 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW6	9/26/2000	<100 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW8	9/28/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW9	9/29/2000	<71 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW10	10/2/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1140-SD-SW11	10/4/2000	<120 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SW11A	10/5/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SW11B	10/5/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SW11C	10/5/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SW11D	10/5/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SW11E	10/5/2000	<100 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA1	10/7/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA2	10/9/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA3	10/10/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA4	10/11/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA5	10/12/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA6	10/18/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA7	10/19/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA8	10/20/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA9	10/20/2000	<71 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWA10	10/23/2000	<120 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWB1	10/24/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWB2	10/25/2000	<71 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC1	10/26/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC2	10/27/2000	<100 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC3	10/30/2000	<120 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC4	10/31/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC5	11/1/2000	<71 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC6	11/2/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC7	11/3/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC8	11/4/2000	<100 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC9	11/6/2000	<250 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC10	11/7/2000	<120 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC11	11/8/2000	<100 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC12	11/9/2000	<62 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC13	11/10/2000	<83 A	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC29	12/1/2000	<50 C	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC30	12/3/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC31	12/4/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC32	12/5/2000	<50	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzoic Acid	1150-SD-SWC33	12/6/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC34	12/7/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC35	12/8/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC36	12/9/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC37	12/11/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC38	12/12/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1150-SD-SWC39	12/13/2000	<50	ug/L	EPA 8270C
Benzoic Acid	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
Benzoic Acid	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
Benzoic Acid	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
Benzoic Acid	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
Benzoic Acid	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
Benzoic Acid	1170-ISCO2-21	5/23/2001	<50	ug/L	EPA 8270C
Benzoic Acid	1170-ISCO2-22	5/24/2001	<50	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW1	9/20/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW2	9/21/2000	<29 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW3	9/22/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW4	9/23/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW5	9/25/2000	<29 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW6	9/26/2000	<40 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW8	9/28/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW9	9/29/2000	<29 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW10	10/2/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1140-SD-SW11	10/4/2000	<50 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SW11A	10/5/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SW11B	10/5/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SW11C	10/5/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SW11D	10/5/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SW11E	10/5/2000	<40 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA1	10/7/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA2	10/9/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA3	10/10/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA4	10/11/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA5	10/12/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA6	10/18/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA7	10/19/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA8	10/20/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA9	10/20/2000	<29 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWA10	10/23/2000	<50 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWB1	10/24/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWB2	10/25/2000	<29 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC1	10/26/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC2	10/27/2000	<40 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC3	10/30/2000	<50 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC4	10/31/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC5	11/1/2000	<29 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC6	11/2/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC7	11/3/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC8	11/4/2000	<40 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC9	11/6/2000	<100 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC10	11/7/2000	<50 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC11	11/8/2000	<40 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC12	11/9/2000	<25 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC13	11/10/2000	<33 A	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC25	11/27/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC29	12/1/2000	<20 C	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC30	12/3/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC31	12/4/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC32	12/5/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC33	12/6/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC34	12/7/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC35	12/8/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC36	12/9/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC37	12/11/2000	<20	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Benzyl Alcohol	1150-SD-SWC38	12/12/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1150-SD-SWC39	12/13/2000	<20	ug/L	EPA 8270C
Benzyl Alcohol	1170-ISCO2-15	5/14/2001	<20	ug/L	EPA 8270C
Benzyl Alcohol	1170-ISCO2-16	5/15/2001	<20	ug/L	EPA 8270C
Benzyl Alcohol	1170-ISCO2-17	5/16/2001	<20	ug/L	EPA 8270C
Benzyl Alcohol	1170-ISCO2-18	5/17/2001	<20	ug/L	EPA 8270C
Benzyl Alcohol	1170-ISCO2-19	5/18/2001	<20	ug/L	EPA 8270C
Benzyl Alcohol	1170-ISCO2-21	5/23/2001	<20	ug/L	EPA 8270C
Benzyl Alcohol	1170-ISCO2-22	5/24/2001	<20	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
bis(2-Chloroethoxy)methane	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethoxy)methane	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
bis(2-Chloroethyl)ether	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
bis(2-Chloroisopropyl)ether	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
bis(2-Chloroisopropyl)ether	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW1	9/20/2000	3 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW2	9/21/2000	3.2 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW3	9/22/2000	14 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW4	9/23/2000	9.5 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW5	9/25/2000	220 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW6	9/26/2000	180 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
bis(2-EthylHexyl)phthalate	1140-SD-SW8	9/28/2000	2.4 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW9	9/29/2000	3.1 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW10	10/2/2000	2.8 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1140-SD-SW11	10/4/2000	4.4 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SW11A	10/5/2000	3.4 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SW11B	10/5/2000	2.6 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SW11C	10/5/2000	2.5 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SW11D	10/5/2000	3.9 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SW11E	10/5/2000	3.9 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA1	10/7/2000	1.8 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA2	10/9/2000	9.7 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA3	10/10/2000	4.5 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA4	10/11/2000	25 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA5	10/12/2000	24 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA6	10/18/2000	20 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA9	10/20/2000	23 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC2	10/27/2000	6 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC3	10/30/2000	2.7 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC8	11/4/2000	7.6 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC9	11/6/2000	15 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC11	11/8/2000	2.3 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC12	11/9/2000	4.1 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC13	11/10/2000	5.5 JA	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1170-ISCO2-21	5/23/2001	21	ug/L	EPA 8270C
bis(2-EthylHexyl)phthalate	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Butylbenzylphthalate	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Butylbenzylphthalate	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Chloride	1170-ISCO1-6	3/16/2001	72	mg/L	SM18 4500CL
Chloride	1170-ISCO2-6	3/16/2001	50	mg/L	SM18 4500CL
Chloride	1170 ISCO1-7	3/23/2001	47	mg/L	SM18 4500CL
Chloride	1170 ISCO1-8	3/23/2001	114	mg/L	SM18 4500CL
Chloride	1170 ISCO2-7	3/23/2001	37	mg/L	SM18 4500CL
Chloride	1170 ISCO2-8	3/23/2001	78	mg/L	SM18 4500CL
Chloride	1170-ISCO1-9	4/2/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO2-9	4/2/2001	83	mg/L	SM18 4500CL
Chloride	1170-ISCO3-9	4/2/2001	110	mg/L	SM18 4500CL
Chloride	1170-ISCO1-10	4/9/2001	110	mg/L	SM18 4500CL
Chloride	1170-ISCO2-10	4/9/2001	88	mg/L	SM18 4500CL
Chloride	1170-ISCO1-11	4/16/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO2-11	4/16/2001	110	mg/L	SM18 4500CL
Chloride	1170-ISCO1-12	4/23/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO2-12	4/23/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO1-13	4/30/2001	140	mg/L	SM18 4500CL

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chloride	1170-ISCO2-13	4/30/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO3-13	4/30/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO1-14	5/7/2001	130	mg/L	SM18 4500CL
Chloride	1170-ISCO2-14	5/7/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO1-15	5/14/2001	137	mg/L	SM18 4500CL
Chloride	1170-ISCO2-15	5/14/2001	147	mg/L	SM18 4500CL
Chloride	1170-ISCO1-20	5/21/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO2-20	5/21/2001	260	mg/L	SM18 4500CL
Chloride	1170-ISCO1-25	6/4/2001	100	mg/L	SM18 4500CL
Chloride	1170-ISCO2-25	6/4/2001	510	mg/L	SM18 4500CL
Chloride	1170-ISCO3-25	6/4/2001	98	mg/L	SM18 4500CL
Chloride	1170-ISCO2-30	6/11/2001	540	mg/L	SM18 4500CL
Chloride	1170-ISCO1-31	6/18/2001	19	mg/L	SM18 4500CL
Chloride	1170-ISCO2-31	6/18/2001	48	mg/L	SM18 4500CL
Chloride	1170-ISCO1-32	6/25/2001	29	mg/L	SM18 4500CL
Chloride	1170-ISCO2-32	6/25/2001	54	mg/L	SM18 4500CL
Chloride	1170-ISCO1-33 MS/MSD	7/2/2001	18	mg/L	LAC117071A
Chloride	1170-ISCO2-33	7/2/2001	<1.0	mg/L	LAC117071A
Chloride	1170-ISCO3-33	7/2/2001	68	mg/L	LAC117071A
Chloride	1170-ISCO1-34	7/9/2001	66	mg/L	SM18 4500CL
Chloride	1170-ISCO2-34	7/9/2001	150	mg/L	SM18 4500CL
Chloride	1170-ISCO2-35	7/16/2001	220 F	mg/L	SM18 4500CL
Chloride	1170-ISCO1-36 MS/MSD	7/23/2001	96	mg/L	LAC117071A
Chloride	1170-ISCO1-37 MS/MSD	7/30/2001	77	mg/L	LAC117071A
Chloride	1170-ISCO1-38	8/6/2001	29	mg/L	LAC117071A
Chloride	1170-ISCO2-38 MS/MSD	8/6/2001	58	mg/L	LAC117071A
Chloride	1170-ISCO3-38	8/6/2001	70	mg/L	LAC117071A
Chloride	1170-ISCO1-39	8/13/2001	19	mg/L	SM18 4500CL
Chloride	1170-ISCO2-39	8/13/2001	26	mg/L	SM18 4500CL
Chloride	1170-ISCO1-40	8/20/2001	76	mg/L	SM18 4500CL
Chloride	1170-ISCO2-40	8/20/2001	250	mg/L	SM18 4500CL
Chloride	1170-ISCO1-41	8/27/2001	100	mg/L	SM18 4500CL
Chloride	1170-ISCO2-41	8/27/2001	160	mg/L	SM18 4500CL
Chloride	1170-ISCO1-42	9/4/2001	120	mg/L	SM18 4500CL
Chloride	1170-ISCO3-42	9/4/2001	67	mg/L	SM18 4500CL
Chromium, Dissolved	1150-SD-SWA1	10/7/2000	0.019	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA2	10/9/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA3	10/10/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA4	10/11/2000	0.012	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA5	10/12/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA6	10/18/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA7	10/19/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA8	10/20/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA9	10/20/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWA10	10/23/2000	0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWB1	10/24/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWB2	10/25/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC1	10/26/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC2	10/27/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC3	10/30/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC4	10/31/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC5	11/1/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC6	11/2/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC7	11/3/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC8	11/4/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC9	11/6/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC10	11/7/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC11	11/8/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC12	11/9/2000	0.052	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC13	11/10/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC14	11/12/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC15	11/13/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC16	11/14/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC17	11/15/2000	0.016	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chromium, Dissolved	1150-SD-SWC18	11/16/2000	0.017	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC19	11/17/2000	0.011	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC20	11/18/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC21	11/19/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC22	11/20/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC23	11/21/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC24	11/22/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC25	11/27/2000	0.018	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC26	11/28/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC27	11/29/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWC28	11/30/2000	0.082	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC28	11/30/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC29	12/1/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC30	12/3/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC31	12/4/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC32	12/5/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC33	12/6/2000	0.016	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC34	12/7/2000	0.015	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC35	12/8/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC36	12/9/2000	0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC37	12/11/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC38	12/12/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWC39	12/13/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWD1	12/21/2000	0.068	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWD1	12/21/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWD2	12/29/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWD2	12/29/2000	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWD3	1/4/2001	0.024	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWD3	1/4/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWD4	1/11/2001	0.037	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWD4	1/11/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWD5	1/18/2001	0.087	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWD5	1/18/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWD6	1/25/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWD6	1/25/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1150-OPWD-SWD7	2/2/2001	0.012	mg/L	200.7/6010
Chromium, Dissolved	1150-SD-SWD7	2/2/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-1	2/9/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-1	2/9/2001	0.013	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO3-1	2/9/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-NP1-1	2/9/2001	0.013	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-2	2/15/2001	0.036	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-2	2/15/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-NP1-2	2/15/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-3	2/23/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-3	2/23/2001	0.02	mg/L	200.7/6010
Chromium, Dissolved	1170-NP1-3	2/23/2001	0.027	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-4	3/1/2001	0.08	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-4	3/1/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-5	3/9/2001	0.12	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-5	3/9/2001	0.023	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO3-5	3/9/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-6	3/16/2001	0.075	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-6	3/16/2001	0.013	mg/L	200.7/6010
Chromium, Dissolved	1170 ISCO1-7	3/23/2001	0.021	mg/L	200.7/6010
Chromium, Dissolved	1170 ISCO1-8	3/23/2001	0.07	mg/L	200.7/6010
Chromium, Dissolved	1170 ISCO2-7	3/23/2001	0.011	mg/L	200.7/6010
Chromium, Dissolved	1170 ISCO2-8	3/23/2001	0.014	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-9	4/2/2001	0.12	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-9	4/2/2001	0.032	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO3-9	4/2/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-10	4/9/2001	0.054	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-10	4/9/2001	0.015	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-11	4/16/2001	0.11	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chromium, Dissolved	1170-ISCO2-11	4/16/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-12	4/23/2001	0.062	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-12	4/23/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-13	4/30/2001	0.054	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-13	4/30/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO3-13	4/30/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-14	5/7/2001	0.031	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-14	5/7/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-15	5/14/2001	0.013	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-15	5/14/2001	0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-16	5/15/2001	0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-17	5/16/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-18	5/17/2001	0.012	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-19	5/18/2001	0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-20	5/21/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-20	5/21/2001	0.013	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-21	5/23/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-22	5/24/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-23	5/29/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-24	5/30/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-25	6/4/2001	0.039	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-25	6/4/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO3-25	6/4/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-SD26-1	6/5/2001	0.021	mg/L	200.7/6010
Chromium, Dissolved	1170-SD26-2	6/5/2001	1.7	mg/L	200.7/6010
Chromium, Dissolved	1170-SD26-3	6/5/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-SD26-4	6/5/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-27	6/6/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-28	6/7/2001	0.0039	mg/L	200.7/6010
Chromium, Dissolved	1170-SD-29	6/9/2001	0.0064	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-30	6/11/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-31	6/18/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-31	6/18/2001	0.017	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-32	6/25/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-32	6/25/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-33 DISSOLVED MS/MSD	7/2/2001	<0.01	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO2-33 DISSOLVED	7/2/2001	0.016	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO3-33 DISSOLVED	7/2/2001	<0.01	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO1-34	7/9/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-34	7/9/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-35	7/16/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-36 DISOLVED MS/MSD	7/23/2001	<0.005	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO1-37 MS/MSD DISSOLVED	7/30/2001	<0.005	mg/L	EPA 200.7
Chromium, Dissolved	1170-TD1-37 DISSOLVED	7/30/2001	<0.005	mg/L	EPA 200.7
Chromium, Dissolved	1170-TD2-37 DISSOLVED	7/30/2001	<0.005	mg/L	EPA 200.7
Chromium, Dissolved	1170-TD3-37 DISSOLVED	7/30/2001	<0.005	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO1-38 DISSOLVED	8/6/2001	<0.01	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO2-38 DISSOLVED MS/MSD	8/6/2001	<0.01	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO3-38 DISSOLVED	8/6/2001	<0.01	mg/L	EPA 200.7
Chromium, Dissolved	1170-ISCO1-39	8/13/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-39	8/13/2001	0.02	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-40	8/20/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-40	8/20/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-41	8/27/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO2-41	8/27/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO1-42	9/4/2001	<0.01	mg/L	200.7/6010
Chromium, Dissolved	1170-ISCO3-42	9/4/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1140-SD-SW1	9/20/2000	0.049	mg/L	200.7/6010
Chromium, Total	1140-SD-SW2	9/21/2000	0.018	mg/L	200.7/6010
Chromium, Total	1140-SD-SW3	9/22/2000	0.013	mg/L	200.7/6010
Chromium, Total	1140-SD-SW4	9/23/2000	0.025	mg/L	200.7/6010
Chromium, Total	1140-SD-SW5	9/25/2000	1.2	mg/L	200.7/6010
Chromium, Total	1140-SD-SW6	9/26/2000	0.54	mg/L	200.7/6010
Chromium, Total	1140-SD-SW7	9/27/2000	0.035	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chromium, Total	1140-SD-SW8	9/28/2000	0.041	mg/L	200.7/6010
Chromium, Total	1140-SD-SW9	9/29/2000	<0.01	mg/L	200.7/6010
Chromium, Total	1140-SD-SW10	10/2/2000	<0.01 G	mg/L	200.7/6010
Chromium, Total	1140-SD-SW11	10/4/2000	0.032	mg/L	200.7/6010
Chromium, Total	1150-SD-SW11A	10/5/2000	0.063	mg/L	200.7/6010
Chromium, Total	1150-SD-SW11B	10/5/2000	0.68	mg/L	200.7/6010
Chromium, Total	1150-SD-SW11C	10/5/2000	1.4	mg/L	200.7/6010
Chromium, Total	1150-SD-SW11D	10/5/2000	0.13	mg/L	200.7/6010
Chromium, Total	1150-SD-SW11E	10/5/2000	0.13	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA1	10/7/2000	<0.01	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA2	10/9/2000	<0.01	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA3	10/10/2000	0.023	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA4	10/11/2000	0.22	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA5	10/12/2000	0.16	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA6	10/18/2000	0.048	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA7	10/19/2000	0.02	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA8	10/20/2000	0.033	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA9	10/20/2000	0.024	mg/L	200.7/6010
Chromium, Total	1150-SD-SWA10	10/23/2000	0.013	mg/L	200.7/6010
Chromium, Total	1150-SD-SWB1	10/24/2000	0.016	mg/L	200.7/6010
Chromium, Total	1150-SD-SWB2	10/25/2000	0.011	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC1	10/26/2000	0.01	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC2	10/27/2000	<0.01	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC3	10/30/2000	<0.01	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC4	10/31/2000	0.016	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC5	11/1/2000	0.036	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC6	11/2/2000	0.014	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC7	11/3/2000	0.017	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC8	11/4/2000	0.022	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC9	11/6/2000	0.012	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC10	11/7/2000	<0.01	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC11	11/8/2000	0.017	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC12	11/9/2000	0.014	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC13	11/10/2000	0.012	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC14	11/12/2000	0.025	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC15	11/13/2000	0.038	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC16	11/14/2000	0.044	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC17	11/15/2000	0.11	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC18	11/16/2000	0.1	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC19	11/17/2000	0.084	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC20	11/18/2000	0.063	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC21	11/19/2000	0.051	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC22	11/20/2000	0.03	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC23	11/21/2000	0.078	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC24	11/22/2000	0.04	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC25	11/27/2000	0.062	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC26	11/28/2000	0.08	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC27	11/29/2000	0.081	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWC28	11/30/2000	0.22	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC28	11/30/2000	0.054	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC29	12/1/2000	0.048	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC30	12/3/2000	0.028	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC31	12/4/2000	0.043	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC32	12/5/2000	0.022	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC33	12/6/2000	0.13	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC34	12/7/2000	0.25	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC35	12/8/2000	0.083	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC36	12/9/2000	0.094	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC37	12/11/2000	0.074	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC38	12/12/2000	0.051	mg/L	200.7/6010
Chromium, Total	1150-SD-SWC39	12/13/2000	0.047	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWD1	12/21/2000	0.22	mg/L	200.7/6010
Chromium, Total	1150-SD-SWD1	12/21/2000	0.1	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWD2	12/29/2000	0.5	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chromium, Total	1150-SD-SWD2	12/29/2000	0.16	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWD3	1/4/2001	0.48	mg/L	200.7/6010
Chromium, Total	1150-SD-SWD3	1/4/2001	0.12	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWD4	1/11/2001	0.42	mg/L	200.7/6010
Chromium, Total	1150-SD-SWD4	1/11/2001	0.098	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWD5	1/18/2001	0.26	mg/L	200.7/6010
Chromium, Total	1150-SD-SWD5	1/18/2001	0.064	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWD6	1/25/2001	0.33	mg/L	200.7/6010
Chromium, Total	1150-SD-SWD6	1/25/2001	0.072	mg/L	200.7/6010
Chromium, Total	1150-OPWD-SWD7	2/2/2001	0.19	mg/L	200.7/6010
Chromium, Total	1150-SD-SWD7	2/2/2001	0.076	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-1	2/9/2001	0.2	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-1	2/9/2001	0.1	mg/L	200.7/6010
Chromium, Total	1170-ISCO3-1	2/9/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-NP1-1	2/9/2001	0.09	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-2	2/15/2001	0.17	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-2	2/15/2001	0.092	mg/L	200.7/6010
Chromium, Total	1170-NP1-2	2/15/2001	0.11	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-3	2/23/2001	0.42	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-3	2/23/2001	0.12	mg/L	200.7/6010
Chromium, Total	1170-NP1-3	2/23/2001	0.12	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-4	3/1/2001	0.34	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-4	3/1/2001	0.071	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-5	3/9/2001	0.3	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-5	3/9/2001	0.11	mg/L	200.7/6010
Chromium, Total	1170-ISCO3-5	3/9/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-6	3/16/2001	0.21	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-6	3/16/2001	0.083	mg/L	200.7/6010
Chromium, Total	1170 ISCO1-7	3/23/2001	0.03	mg/L	200.7/6010
Chromium, Total	1170 ISCO1-8	3/23/2001	0.18	mg/L	200.7/6010
Chromium, Total	1170 ISCO2-7	3/23/2001	0.036	mg/L	200.7/6010
Chromium, Total	1170 ISCO2-8	3/23/2001	0.09	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-9	4/2/2001	0.26	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-9	4/2/2001	0.11	mg/L	200.7/6010
Chromium, Total	1170-ISCO3-9	4/2/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-10	4/9/2001	0.19	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-10	4/9/2001	0.13	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-11	4/16/2001	0.2	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-11	4/16/2001	0.036	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-12	4/23/2001	0.17	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-12	4/23/2001	0.027	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-13	4/30/2001	0.091	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-13	4/30/2001	0.04	mg/L	200.7/6010
Chromium, Total	1170-ISCO3-13	4/30/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-14	5/7/2001	0.078	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-14	5/7/2001	0.083	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-15	5/14/2001	0.054	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-15	5/14/2001	0.062	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-16	5/15/2001	0.044	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-17	5/16/2001	0.011	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-18	5/17/2001	0.033	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-19	5/18/2001	0.013	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-20	5/21/2001	0.025	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-20	5/21/2001	0.054	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-21	5/23/2001	0.19	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-22	5/24/2001	0.039	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-23	5/29/2001	0.038	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-24	5/30/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-25	6/4/2001	0.14	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-25	6/4/2001	0.029	mg/L	200.7/6010
Chromium, Total	1170-ISCO3-25	6/4/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-SD26-1	6/5/2001	0.2	mg/L	200.7/6010
Chromium, Total	1170-SD26-2	6/5/2001	3.2	mg/L	200.7/6010
Chromium, Total	1170-SD26-3	6/5/2001	0.16	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chromium, Total	1170-SD26-4	6/5/2001	0.035	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-27	6/6/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-28	6/7/2001	0.011	mg/L	200.7/6010
Chromium, Total	1170-SD-29	6/9/2001	0.11	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-30	6/11/2001	0.077	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-31	6/18/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-31	6/18/2001	0.069	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-32	6/25/2001	0.014	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-32	6/25/2001	0.058	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-33 MS/MSD	7/2/2001	<0.01	mg/L	EPA 200.7
Chromium, Total	1170-ISCO2-33	7/2/2001	0.078	mg/L	EPA 200.7
Chromium, Total	1170-ISCO3-33	7/2/2001	<0.01	mg/L	EPA 200.7
Chromium, Total	1170-ISCO1-34	7/9/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-34	7/9/2001	0.025	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-35	7/16/2001	0.059	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-36 MS/MSD	7/23/2001	0.008	mg/L	EPA 200.7
Chromium, Total	1170-ISCO1-37 MS/MSD	7/30/2001	0.011	mg/L	EPA 200.7
Chromium, Total	1170-TD1-37	7/30/2001	0.015	mg/L	EPA 200.7
Chromium, Total	1170-TD2-37	7/30/2001	0.008	mg/L	EPA 200.7
Chromium, Total	1170-TD3-37	7/30/2001	0.06	mg/L	EPA 200.7
Chromium, Total	1170-ISCO1-38	8/6/2001	<0.01	mg/L	EPA 200.7
Chromium, Total	1170-ISCO2-38 MS/MSD	8/6/2001	0.037	mg/L	EPA 200.7
Chromium, Total	1170-ISCO3-38	8/6/2001	<0.01	mg/L	EPA 200.7
Chromium, Total	1170-ISCO1-39	8/13/2001	<0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-39	8/13/2001	0.092	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-40	8/20/2001	0.01	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-40	8/20/2001	0.02	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-41	8/27/2001	0.012	mg/L	200.7/6010
Chromium, Total	1170-ISCO2-41	8/27/2001	0.06	mg/L	200.7/6010
Chromium, Total	1170-ISCO1-42	9/4/2001	0.019	mg/L	200.7/6010
Chromium, Total	1170-ISCO3-42	9/4/2001	0.066	mg/L	200.7/6010
Chrysene	1140-SD-SW1	9/20/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW2	9/21/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW3	9/22/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW4	9/23/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW5	9/25/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW6	9/26/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW7	9/27/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW8	9/28/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW9	9/29/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW10	10/2/2000	<0.2	ug/L	MADEP EPH
Chrysene	1140-SD-SW11	10/4/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	MADEP EPH
Chrysene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	MADEP EPH
Chrysene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	MADEP EPH
Chrysene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	MADEP EPH
Chrysene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	MADEP EPH
Chrysene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC2	10/27/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC3	10/30/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC4	10/31/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC5	11/1/2000	<1	ug/L	MADEP EPH

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Chrysene	1150-SD-SWC6	11/2/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC7	11/3/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC8	11/4/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC9	11/6/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC10	11/7/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC11	11/8/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC12	11/9/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC13	11/10/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	MADEP EPH
Chrysene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWC25	11/27/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC26	11/28/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	MADEP EPH
Chrysene	1150-SD-SWC29	12/1/2000	<1	ug/L	MADEP EPH
Chrysene	1150-SD-SWC30	12/3/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC31	12/4/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC32	12/5/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC33	12/6/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC34	12/7/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC35	12/8/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC36	12/9/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC37	12/11/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC38	12/12/2000	<10	ug/L	MADEP EPH
Chrysene	1150-SD-SWC39	12/13/2000	<10	ug/L	MADEP EPH
Chrysene	1170-ISCO2-15	5/14/2001	<10	ug/L	MADEP EPH
Chrysene	1170-ISCO2-16	5/15/2001	<10	ug/L	MADEP EPH
Chrysene	1170-ISCO2-17	5/16/2001	<10	ug/L	MADEP EPH
Chrysene	1170-ISCO2-18	5/17/2001	<10	ug/L	MADEP EPH
Chrysene	1170-ISCO2-19	5/18/2001	<10	ug/L	MADEP EPH
Chrysene	1170-ISCO2-21	5/23/2001	<10	ug/L	MADEP EPH
Chrysene	1170-ISCO2-22	5/24/2001	<10	ug/L	MADEP EPH
Cobalt, Dissolved	1150-SD-SW11A	10/5/2000	<0.01	mg/L	200.7/6010
Cobalt, Dissolved	1150-SD-SW11B	10/5/2000	0.17	mg/L	200.7/6010
Cobalt, Dissolved	1150-SD-SW11C	10/5/2000	0.56	mg/L	200.7/6010
Cobalt, Dissolved	1150-SD-SW11D	10/5/2000	<0.026	mg/L	200.7/6010
Cobalt, Dissolved	1150-SD-SW11E	10/5/2000	<0.018	mg/L	200.7/6010
Cobalt, Total	1150-SD-SW11A	10/5/2000	<0.02	mg/L	200.7/6010
Cobalt, Total	1150-SD-SW11B	10/5/2000	0.035	mg/L	200.7/6010
Cobalt, Total	1150-SD-SW11C	10/5/2000	<0.02	mg/L	200.7/6010
Cobalt, Total	1150-SD-SW11D	10/5/2000	<0.01	mg/L	200.7/6010
Cobalt, Total	1150-SD-SW11E	10/5/2000	<0.01	mg/L	200.7/6010
Dibenzo(a,h)anthracene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310

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Parameter Name	Location	Date	Result	Units	Analysis Method
Dibenzo(a,h)anthracene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC2	10/27/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC3	10/30/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC4	10/31/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC5	11/1/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC6	11/2/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC7	11/3/2000	<0.3	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC8	11/4/2000	<0.3	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC9	11/6/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC10	11/7/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC11	11/8/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC12	11/9/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC13	11/10/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC25	11/27/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC26	11/28/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC27	11/29/2000	<0.5 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC28	11/30/2000	<0.5 C	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC29	12/1/2000	<0.5	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Dibenzo(a,h)anthracene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Dibenzofuran	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Dibenzofuran	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Dibenzofuran	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Dibenzofuran	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Dibenzofuran	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Dibenzofuran	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Dibenzofuran	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Dibenzofuran	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Dibenzofuran	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Diethylphthalate	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Diethylphthalate	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Diethylphthalate	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Diethylphthalate	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Diethylphthalate	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Diethylphthalate	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Diethylphthalate	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Diethylphthalate	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Dimethylphthalate	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Dimethylphthalate	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Dimethylphthalate	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Dimethylphthalate	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Dimethylphthalate	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Dimethylphthalate	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Dimethylphthalate	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Dimethylphthalate	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Di-n-butylphthalate	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Di-n-butylphthalate	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C

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Parameter Name	Location	Date	Result	Units	Analysis Method
Di-n-octylphthalate	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Di-n-octylphthalate	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Fluoranthene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Fluoranthene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310
Fluoranthene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310
Fluoranthene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Fluoranthene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Fluoranthene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8310
Fluoranthene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Fluoranthene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC22	11/20/2000	0.25	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC23	11/21/2000	<0.2 C F	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Fluoranthene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Fluoranthene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Fluoranthene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Fluoranthene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Fluoranthene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Fluoranthene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Fluoranthene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Fluoranthene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Fluorene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8310
Fluorene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Fluorene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310
Fluorene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310
Fluorene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Fluorene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Fluorene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Fluorene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8310
Fluorene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8310
Fluorene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Fluorene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8310
Fluorene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	EPA 8310
Fluorene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	EPA 8310
Fluorene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8310
Fluorene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8310
Fluorene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8310
Fluorene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Fluorene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Fluorene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Fluorene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Fluorene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Fluorene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Fluorene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Fluorene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Fluorene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Fluorene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Fuel Oil #6 (C9-C36)	1150-SD-SW11B	10/5/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	1150-SD-SW11C	10/5/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	1150-SD-SW11D	10/5/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	1150-SD-SW11E	10/5/2000	<0.1	mg/L	EPA 8100 M
Fuel Oil #6 (C9-C36)	1150-SD-SWA1	10/7/2000	<0.1	mg/L	EPA 8100 M
Hexachlorobenzene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Hexachlorobenzene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Hexachlorobenzene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Hexachlorobenzene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Hexachlorobenzene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Hexachlorobenzene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Hexachlorobenzene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Hexachlorobenzene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Hexachlorobenzene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Hexachlorobutadiene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8260B

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Hexachlorobutadiene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8260B
Hexachlorobutadiene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8260B
Hexachlorocyclopentadiene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Hexachlorocyclopentadiene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Hexachlorocyclopentadiene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW1	9/20/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW2	9/21/2000	<14	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW3	9/22/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW4	9/23/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW5	9/25/2000	<14	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW6	9/26/2000	<20	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW8	9/28/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW9	9/29/2000	<14	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW10	10/2/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1140-SD-SW11	10/4/2000	<25	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SW11A	10/5/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SW11B	10/5/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SW11C	10/5/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SW11D	10/5/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SW11E	10/5/2000	<20	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA1	10/7/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA2	10/9/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA3	10/10/2000	<17	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Hexachloroethane	1150-SD-SWA4	10/11/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA5	10/12/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA6	10/18/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA7	10/19/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA8	10/20/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA9	10/20/2000	<14	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWA10	10/23/2000	<25	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWB1	10/24/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWB2	10/25/2000	<14	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC1	10/26/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC2	10/27/2000	<20	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC3	10/30/2000	<25	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC4	10/31/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC5	11/1/2000	<14	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC6	11/2/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC7	11/3/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC8	11/4/2000	<20	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC9	11/6/2000	<50	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC10	11/7/2000	<25	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC11	11/8/2000	<20	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC12	11/9/2000	<12	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC13	11/10/2000	<17	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC29	12/1/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Hexachloroethane	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Hexachloroethane	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Hexachloroethane	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Hexachloroethane	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Hexachloroethane	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Hexachloroethane	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Hexachloroethane	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Indeno (1,2,3-cd) pyrene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Indeno (1,2,3-cd) pyrene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC2	10/27/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC3	10/30/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC4	10/31/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC5	11/1/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC6	11/2/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC7	11/3/2000	<0.4	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC8	11/4/2000	<0.4	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC9	11/6/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC10	11/7/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC11	11/8/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC12	11/9/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC13	11/10/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC25	11/27/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC26	11/28/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC27	11/29/2000	<0.5 C	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC28	11/30/2000	<0.5 C	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC29	12/1/2000	<0.5	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Indeno (1,2,3-cd) pyrene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Iron, Dissolved	1150-OPWD-SWC28	11/30/2000	1.6	mg/L	200.7/6010
Iron, Dissolved	1150-SD-SWC28	11/30/2000	1.4	mg/L	200.7/6010
Iron, Total	1150-OPWD-SWC28	11/30/2000	2.2	mg/L	200.7/6010
Iron, Total	1150-SD-SWC28	11/30/2000	2.3	mg/L	200.7/6010
Isophorone	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Isophorone	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Isophorone	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Isophorone	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Isophorone	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Isophorone	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Isophorone	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Isophorone	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Isophorone	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Isophorone	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Isophorone	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Isophorone	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Isophorone	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Isophorone	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Naphthalene	1140-SD-SW1	9/20/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW2	9/21/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW3	9/22/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW4	9/23/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW5	9/25/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW6	9/26/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW7	9/27/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW8	9/28/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW9	9/29/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW10	10/2/2000	<1	ug/L	EPA 8310
Naphthalene	1140-SD-SW11	10/4/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8310
Naphthalene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8310
Naphthalene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8310

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Naphthalene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8310
Naphthalene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8310
Naphthalene	1150-SD-SWA1	10/7/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWA2	10/9/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWA3	10/10/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWA4	10/11/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWA5	10/12/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWA6	10/18/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWA7	10/19/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWA8	10/20/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWA9	10/20/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWA10	10/23/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWB1	10/24/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWB2	10/25/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC1	10/26/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC14	11/12/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC15	11/13/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC16	11/14/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC17	11/15/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC18	11/16/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC19	11/17/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC20	11/18/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC21	11/19/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC22	11/20/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC23	11/21/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWC24	11/22/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8310
Naphthalene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Naphthalene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8310
Naphthalene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8310
Naphthalene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8310
Naphthalene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8310
Naphthalene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8310
Naphthalene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8310
Naphthalene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8310
Naphthalene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8310
Naphthalene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8310
Nickel, Total	1150-SD-SW11A	10/5/2000	<0.02	mg/L	200.7/6010
Nickel, Total	1150-SD-SW11B	10/5/2000	0.12	mg/L	200.7/6010
Nickel, Total	1150-SD-SW11C	10/5/2000	0.16	mg/L	200.7/6010
Nickel, Total	1150-SD-SW11D	10/5/2000	<0.061	mg/L	200.7/6010

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Nickel, Total	1150-SD-SW11E	10/5/2000	<0.073	mg/L	200.7/6010
Nitrate & Nitrite as N	1170-ISCO1-3	2/23/2001	0.77	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-3	2/23/2001	2	mg/L	SM4500
Nitrate & Nitrite as N	1170-NP1-3	2/23/2001	1.8	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-4	3/1/2001	1	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-4	3/1/2001	2.4	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-5	3/9/2001	0.46	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-5	3/9/2001	2	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO3-5	3/9/2001	1.7	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-6	3/16/2001	0.48	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-6	3/16/2001	1.2	mg/L	SM4500
Nitrate & Nitrite as N	1170 ISCO1-7	3/23/2001	0.73	mg/L	SM4500
Nitrate & Nitrite as N	1170 ISCO1-8	3/23/2001	1.2	mg/L	SM4500
Nitrate & Nitrite as N	1170 ISCO2-7	3/23/2001	0.87	mg/L	SM4500
Nitrate & Nitrite as N	1170 ISCO2-8	3/23/2001	1.6	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-9	4/2/2001	1.1	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-9	4/2/2001	1.6	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO3-9	4/2/2001	1.6	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-10	4/9/2001	0.9	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-10	4/9/2001	1.5	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-11	4/16/2001	0.78	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-11	4/16/2001	840	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-12	4/23/2001	0.47	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-12	4/23/2001	0.96	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-13	4/30/2001	0.64	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-13	4/30/2001	1.2	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO3-13	4/30/2001	1.5	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-14	5/7/2001	0.32	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-14	5/7/2001	1.4	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-15	5/14/2001	0.16	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-15	5/14/2001	1.5	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-20	5/21/2001	0.099	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-20	5/21/2001	1.2	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-25	6/4/2001	0.49	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-25	6/4/2001	1.8	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO3-25	6/4/2001	1.3	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-30	6/11/2001	2.4	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-31	6/18/2001	0.24	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-31	6/18/2001	1.7	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-32	6/25/2001	0.14	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-32	6/25/2001	0.92	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-33 MS/MSD	7/2/2001	0.2	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO2-33	7/2/2001	0.79	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO3-33	7/2/2001	0.88	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO1-34	7/9/2001	0.24	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-34	7/9/2001	0.78	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-35	7/16/2001	1.3	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-36 MS/MSD	7/23/2001	0.17	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO1-37 MS/MSD	7/30/2001	0.063	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO1-38	8/6/2001	0.33	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO2-38 MS/MSD	8/6/2001	1.8	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO3-38	8/6/2001	0.63	mg/L	LAC107041A
Nitrate & Nitrite as N	1170-ISCO1-39	8/13/2001	0.21	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-39	8/13/2001	0.79	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-40	8/20/2001	0.24	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-40	8/20/2001	1.5	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-41	8/27/2001	0.2	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO2-41	8/27/2001	3.4	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO1-42	9/4/2001	0.4	mg/L	SM4500
Nitrate & Nitrite as N	1170-ISCO3-42	9/4/2001	1	mg/L	SM4500
Nitrobenzene	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Nitrobenzene	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Nitrobenzene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Nitrobenzene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Nitrobenzene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Nitrobenzene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Nitrobenzene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Nitrobenzene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Nitrobenzene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Nitrogen, Ammonia	1140-SD-SW1	9/20/2000	40	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW2	9/21/2000	40	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW3	9/22/2000	33	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW4	9/23/2000	57	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW5	9/25/2000	100	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW6	9/26/2000	180	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW7	9/27/2000	60	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW8	9/28/2000	66	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW9	9/29/2000	28	MG/L	SM4500F/Lachat

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Nitrogen, Ammonia	1140-SD-SW10	10/2/2000	120	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1140-SD-SW11	10/4/2000	110	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA1	10/7/2000	61	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA2	10/9/2000	71	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA3	10/10/2000	50	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA4	10/11/2000	65	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA5	10/12/2000	110	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA6	10/18/2000	110	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA7	10/19/2000	32	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA8	10/20/2000	70	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA9	10/20/2000	110	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWA10	10/23/2000	120	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWB1	10/24/2000	120	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWB2	10/25/2000	160	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC1	10/26/2000	170	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC2	10/27/2000	100	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC3	10/30/2000	150	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC4	10/31/2000	97 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC5	11/1/2000	50 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC6	11/2/2000	40 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC7	11/3/2000	46 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC8	11/4/2000	60	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC9	11/6/2000	44	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC10	11/7/2000	38	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC11	11/8/2000	62	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC12	11/9/2000	78	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC13	11/10/2000	68	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC14	11/12/2000	18	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC15	11/13/2000	41	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC16	11/14/2000	72 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC17	11/15/2000	15	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC17	11/15/2000	37	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC18	11/16/2000	26	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC18	11/16/2000	50	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC19	11/17/2000	30	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC19	11/17/2000	87	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC20	11/18/2000	36	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC20	11/18/2000	110 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC21	11/19/2000	40	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC21	11/19/2000	94	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC22	11/20/2000	32	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC22	11/20/2000	57	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC23	11/21/2000	59	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC23	11/21/2000	77	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC24	11/22/2000	43	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC24	11/22/2000	76	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC25	11/27/2000	18	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC26	11/27/2000	30	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC25	11/27/2000	24	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC26	11/28/2000	50	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC27	11/29/2000	42	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC27	11/29/2000	84 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC28	11/30/2000	34	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC28	11/30/2000	76	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC29	12/1/2000	14	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC29	12/1/2000	90 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC30	12/3/2000	17	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC30	12/3/2000	70	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC31	12/4/2000	59	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC31	12/4/2000	68 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC32	12/5/2000	38	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC32	12/5/2000	91	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC33	12/6/2000	30	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC33	12/6/2000	84	MG/L	SM4500F/Lachat

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Nitrogen, Ammonia	1150-OPWD-SWC34	12/7/2000	55	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC34	12/7/2000	60	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC35	12/8/2000	21	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC35	12/8/2000	72	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC36	12/9/2000	55	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC37	12/11/2000	10	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC37	12/11/2000	84	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC38	12/12/2000	22	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC38	12/12/2000	72	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWC39	12/13/2000	55	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWC39	12/13/2000	66	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWD1	12/21/2000	27	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWD1	12/21/2000	37 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWD2	12/29/2000	66	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWD2	12/29/2000	96	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWD3	1/4/2001	61	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWD3	1/4/2001	94	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWD4	1/11/2001	45	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWD4	1/11/2001	80	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWD5	1/18/2001	32	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWD5	1/18/2001	81	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWD6	1/25/2001	24	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWD6	1/25/2001	89 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-OPWD-SWD7	2/2/2001	15	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1150-SD-SWD7	2/2/2001	37 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-1	2/9/2001	12	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-1	2/9/2001	76	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO3-1	2/9/2001	4.6	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-NP1-1	2/9/2001	85	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-2	2/15/2001	11	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-2	2/15/2001	27	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-NP1-2	2/15/2001	34	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-3	2/23/2001	29	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-3	2/23/2001	66	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-NP1-3	2/23/2001	74	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-4	3/1/2001	20	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-4	3/1/2001	48	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-5	3/9/2001	19	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-5	3/9/2001	59	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO3-5	3/9/2001	4.9	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-6	3/16/2001	19	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-6	3/16/2001	15	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170 ISCO1-7	3/23/2001	8	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170 ISCO1-8	3/23/2001	41	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170 ISCO2-7	3/23/2001	9.3	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170 ISCO2-8	3/23/2001	33	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-9	4/2/2001	35	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-9	4/2/2001	47	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO3-9	4/2/2001	3.4	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-10	4/9/2001	35	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-10	4/9/2001	33	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-11	4/16/2001	22	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-11	4/16/2001	57	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-12	4/23/2001	36	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-12	4/23/2001	73	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-13	4/30/2001	25	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-13	4/30/2001	84	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO3-13	4/30/2001	5	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-14	5/7/2001	28	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-14	5/7/2001	70	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-15	5/14/2001	52	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-15	5/14/2001	90 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-20	5/21/2001	33	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-20	5/21/2001	140	MG/L	SM4500F/Lachat

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ParameterName	Location	Date	Result	Units	AnalysisMethod
Nitrogen, Ammonia	1170-ISCO1-25	6/4/2001	200	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-25	6/4/2001	38	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO3-25	6/4/2001	4.5 F	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-SD26-1	6/5/2001	57	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-SD26-2	6/5/2001	290	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-SD26-3	6/5/2001	250	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-SD26-4	6/5/2001	220	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-30	6/11/2001	180	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-31	6/18/2001	2	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-31	6/18/2001	16	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-32	6/25/2001	4.1	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-32	6/25/2001	26	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-33 MS/MSD	7/2/2001	3.6	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO2-33	7/2/2001	11	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO3-33	7/2/2001	3.9	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO1-34	7/9/2001	12	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-34	7/9/2001	99	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-35	7/16/2001	100	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-36 MS/MSD	7/23/2001	15	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO1-37 MS/MSD	7/30/2001	20	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO1-38	8/6/2001	3.8	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO2-38 MS/MSD	8/6/2001	33	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO3-38	8/6/2001	5.1	mg/L	LAC107061A
Nitrogen, Ammonia	1170-ISCO1-39	8/13/2001	3.4	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-39	8/13/2001	10	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-40	8/20/2001	19	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-40	8/20/2001	110	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-41	8/27/2001	40	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO2-41	8/27/2001	88	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO1-42	9/4/2001	59	MG/L	SM4500F/Lachat
Nitrogen, Ammonia	1170-ISCO3-42	9/4/2001	2.4 J	MG/L	SM4500F/Lachat
N-Nitroso-di-n-propylamine	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
N-Nitroso-di-n-propylamine	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
N-Nitroso-di-n-propylamine	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C

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ParameterName	Location	Date	Result	Units	AnalysisMethod
N-Nitrosodiphenylamine	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
N-Nitrosodiphenylamine	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW1	9/20/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW2	9/21/2000	<71	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW3	9/22/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW4	9/23/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW5	9/25/2000	<71	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW6	9/26/2000	<100	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW8	9/28/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW9	9/29/2000	<71	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW10	10/2/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1140-SD-SW11	10/4/2000	<120	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SW11A	10/5/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SW11B	10/5/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SW11C	10/5/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SW11D	10/5/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SW11E	10/5/2000	<100	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA1	10/7/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA2	10/9/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA3	10/10/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA4	10/11/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA5	10/12/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA6	10/18/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA7	10/19/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA8	10/20/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA9	10/20/2000	<71	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWA10	10/23/2000	<120	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWB1	10/24/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWB2	10/25/2000	<71	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC1	10/26/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC2	10/27/2000	<100	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC3	10/30/2000	<120	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC4	10/31/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC5	11/1/2000	<71	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC6	11/2/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC7	11/3/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC8	11/4/2000	<100	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC9	11/6/2000	<250	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC10	11/7/2000	<120	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC11	11/8/2000	<100	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC12	11/9/2000	<62	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC13	11/10/2000	<83	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC25	11/27/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC29	12/1/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC30	12/3/2000	<50	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Pentachlorophenol	1150-SD-SWC31	12/4/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC32	12/5/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC33	12/6/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC34	12/7/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC35	12/8/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC36	12/9/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC37	12/11/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC38	12/12/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1150-SD-SWC39	12/13/2000	<50	ug/L	EPA 8270C
Pentachlorophenol	1170-ISCO2-15	5/14/2001	<50	ug/L	EPA 8270C
Pentachlorophenol	1170-ISCO2-16	5/15/2001	<50	ug/L	EPA 8270C
Pentachlorophenol	1170-ISCO2-17	5/16/2001	<50	ug/L	EPA 8270C
Pentachlorophenol	1170-ISCO2-18	5/17/2001	<50	ug/L	EPA 8270C
Pentachlorophenol	1170-ISCO2-19	5/18/2001	<50	ug/L	EPA 8270C
Pentachlorophenol	1170-ISCO2-21	5/23/2001	<50	ug/L	EPA 8270C
Pentachlorophenol	1170-ISCO2-22	5/24/2001	<50	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW1	9/20/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW2	9/21/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW3	9/22/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW4	9/23/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW5	9/25/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW6	9/26/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW7	9/27/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW8	9/28/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW9	9/29/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW10	10/2/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1140-SD-SW11	10/4/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Phenanthrene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Phenanthrene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Phenanthrene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Phenanthrene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC2	10/27/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC3	10/30/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC4	10/31/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC5	11/1/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC6	11/2/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC7	11/3/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC8	11/4/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC9	11/6/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC10	11/7/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC11	11/8/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC12	11/9/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC13	11/10/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Phenanthrene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC25	11/27/2000	<1	ug/L	EPA 8310
Phenanthrene	1150-SD-SWC26	11/28/2000	<1	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC29	12/1/2000	<1	ug/L	EPA 8310
Phenanthrene	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Phenanthrene	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Phenanthrene	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Phenanthrene	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Phenanthrene	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Phenanthrene	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Phenanthrene	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Phenanthrene	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Phenanthrene	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Phenol	1140-SD-SW1	9/20/2000	<12 A	ug/L	EPA 8270C
Phenol	1140-SD-SW2	9/21/2000	<14 A	ug/L	EPA 8270C
Phenol	1140-SD-SW3	9/22/2000	<12 A	ug/L	EPA 8270C
Phenol	1140-SD-SW4	9/23/2000	<12 A	ug/L	EPA 8270C
Phenol	1140-SD-SW5	9/25/2000	<14 A	ug/L	EPA 8270C
Phenol	1140-SD-SW6	9/26/2000	<20 A	ug/L	EPA 8270C
Phenol	1140-SD-SW8	9/28/2000	<12 A	ug/L	EPA 8270C
Phenol	1140-SD-SW9	9/29/2000	<14 A	ug/L	EPA 8270C
Phenol	1140-SD-SW10	10/2/2000	<12 A	ug/L	EPA 8270C
Phenol	1140-SD-SW11	10/4/2000	<25 A	ug/L	EPA 8270C
Phenol	1150-SD-SW11A	10/5/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SW11B	10/5/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SW11C	10/5/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SW11D	10/5/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SW11E	10/5/2000	<20 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA1	10/7/2000	<12 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA2	10/9/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA3	10/10/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA4	10/11/2000	<12 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA5	10/12/2000	<12 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA6	10/18/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA7	10/19/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA8	10/20/2000	<12 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA9	10/20/2000	<14 A	ug/L	EPA 8270C
Phenol	1150-SD-SWA10	10/23/2000	<25 A	ug/L	EPA 8270C
Phenol	1150-SD-SWB1	10/24/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWB2	10/25/2000	<14 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC1	10/26/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC2	10/27/2000	<20 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC3	10/30/2000	<25 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC4	10/31/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC5	11/1/2000	<14 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC6	11/2/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC7	11/3/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC8	11/4/2000	<20 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC9	11/6/2000	<50 A	ug/L	EPA 8270C

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Phenol	1150-SD-SWC10	11/7/2000	<25 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC11	11/8/2000	<20 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC12	11/9/2000	<12 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC13	11/10/2000	<17 A	ug/L	EPA 8270C
Phenol	1150-SD-SWC25	11/27/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC29	12/1/2000	<10 C	ug/L	EPA 8270C
Phenol	1150-SD-SWC30	12/3/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC31	12/4/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC32	12/5/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC33	12/6/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC34	12/7/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC35	12/8/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC36	12/9/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC37	12/11/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC38	12/12/2000	<10	ug/L	EPA 8270C
Phenol	1150-SD-SWC39	12/13/2000	<10	ug/L	EPA 8270C
Phenol	1170-ISCO2-15	5/14/2001	<10	ug/L	EPA 8270C
Phenol	1170-ISCO2-16	5/15/2001	<10	ug/L	EPA 8270C
Phenol	1170-ISCO2-17	5/16/2001	<10	ug/L	EPA 8270C
Phenol	1170-ISCO2-18	5/17/2001	<10	ug/L	EPA 8270C
Phenol	1170-ISCO2-19	5/18/2001	<10	ug/L	EPA 8270C
Phenol	1170-ISCO2-21	5/23/2001	<10	ug/L	EPA 8270C
Phenol	1170-ISCO2-22	5/24/2001	<10	ug/L	EPA 8270C
Pyrene	1140-SD-SW1	9/20/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW2	9/21/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW3	9/22/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW4	9/23/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW5	9/25/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW6	9/26/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW7	9/27/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW8	9/28/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW9	9/29/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW10	10/2/2000	<0.2	ug/L	MADEP EPH
Pyrene	1140-SD-SW11	10/4/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SW11A	10/5/2000	<17 A	ug/L	MADEP EPH
Pyrene	1150-SD-SW11B	10/5/2000	<17 A	ug/L	MADEP EPH
Pyrene	1150-SD-SW11C	10/5/2000	<17 A	ug/L	MADEP EPH
Pyrene	1150-SD-SW11D	10/5/2000	<17 A	ug/L	MADEP EPH
Pyrene	1150-SD-SW11E	10/5/2000	<20 A	ug/L	MADEP EPH
Pyrene	1150-SD-SWA1	10/7/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWA2	10/9/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWA3	10/10/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWA4	10/11/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWA5	10/12/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWA6	10/18/2000	<0.2 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWA7	10/19/2000	<0.2 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWA8	10/20/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWA9	10/20/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWA10	10/23/2000	<0.2 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWB1	10/24/2000	<0.2 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWB2	10/25/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC1	10/26/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC2	10/27/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC3	10/30/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC4	10/31/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC5	11/1/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC6	11/2/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC7	11/3/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC8	11/4/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC9	11/6/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC10	11/7/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC11	11/8/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC12	11/9/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC13	11/10/2000	<1	ug/L	MADEP EPH

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Pyrene	1150-SD-SWC14	11/12/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC15	11/13/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC16	11/14/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC17	11/15/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC18	11/16/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC19	11/17/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC20	11/18/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC21	11/19/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC22	11/20/2000	<0.2	ug/L	MADEP EPH
Pyrene	1150-SD-SWC23	11/21/2000	<0.2 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWC24	11/22/2000	<0.2 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWC25	11/27/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC26	11/28/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC27	11/29/2000	<1 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWC28	11/30/2000	<1 C	ug/L	MADEP EPH
Pyrene	1150-SD-SWC29	12/1/2000	<1	ug/L	MADEP EPH
Pyrene	1150-SD-SWC30	12/3/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC31	12/4/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC32	12/5/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC33	12/6/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC34	12/7/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC35	12/8/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC36	12/9/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC37	12/11/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC38	12/12/2000	<10	ug/L	MADEP EPH
Pyrene	1150-SD-SWC39	12/13/2000	<10	ug/L	MADEP EPH
Pyrene	1170-ISCO2-15	5/14/2001	<10	ug/L	MADEP EPH
Pyrene	1170-ISCO2-16	5/15/2001	<10	ug/L	MADEP EPH
Pyrene	1170-ISCO2-17	5/16/2001	<10	ug/L	MADEP EPH
Pyrene	1170-ISCO2-18	5/17/2001	<10	ug/L	MADEP EPH
Pyrene	1170-ISCO2-19	5/18/2001	<10	ug/L	MADEP EPH
Pyrene	1170-ISCO2-21	5/23/2001	<10	ug/L	MADEP EPH
Pyrene	1170-ISCO2-22	5/24/2001	<10	ug/L	MADEP EPH
Sulfate as SO4	1170-ISCO1-6	3/16/2001	120	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-6	3/16/2001	150	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170 ISCO1-7	3/23/2001	55	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170 ISCO1-8	3/23/2001	220	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170 ISCO2-7	3/23/2001	79	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170 ISCO2-8	3/23/2001	210	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-9	4/2/2001	300	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-9	4/2/2001	400	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO3-9	4/2/2001	50	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-10	4/9/2001	170	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-10	4/9/2001	240	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-11	4/16/2001	180	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-11	4/16/2001	410	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-12	4/23/2001	170	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-12	4/23/2001	680	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-13	4/30/2001	160	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-13	4/30/2001	630	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO3-13	4/30/2001	58	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-14	5/7/2001	150	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-14	5/7/2001	620	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-15	5/14/2001	220	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-15	5/14/2001	660	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-20	5/21/2001	170	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-20	5/21/2001	1200	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-25	6/4/2001	180	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-25	6/4/2001	1300	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO3-25	6/4/2001	67	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-30	6/11/2001	1400	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-31	6/18/2001	19	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-31	6/18/2001	140	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-32	6/25/2001	23	mg/L	EPA 300.0/375.4

South Ditch Surface Water Chemistry Data Collected Since September 2000

ParameterName	Location	Date	Result	Units	AnalysisMethod
Sulfate as SO4	1170-ISCO2-32	6/25/2001	180	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-33 MS/MSD	7/2/2001	47	mg/L	EPA 300
Sulfate as SO4	1170-ISCO2-33	7/2/2001	21	mg/L	EPA 300
Sulfate as SO4	1170-ISCO3-33	7/2/2001	84	mg/L	EPA 300
Sulfate as SO4	1170-ISCO1-34	7/9/2001	63	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-34	7/9/2001	720	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-35	7/16/2001	670	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-36 MS/MSD	7/23/2001	120	mg/L	EPA 300
Sulfate as SO4	1170-ISCO1-37 MS/MSD	7/30/2001	110	mg/L	EPA 300
Sulfate as SO4	1170-ISCO1-38	8/6/2001	24	mg/L	EPA 300
Sulfate as SO4	1170-ISCO2-38 MS/MSD	8/6/2001	220	mg/L	EPA 300
Sulfate as SO4	1170-ISCO3-38	8/6/2001	45	mg/L	EPA 300
Sulfate as SO4	1170-ISCO1-39	8/13/2001	30	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-39	8/13/2001	100	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-40	8/20/2001	110	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-40	8/20/2001	680	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-41	8/27/2001	210	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO2-41	8/27/2001	650	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO1-42	9/4/2001	320	mg/L	EPA 300.0/375.4
Sulfate as SO4	1170-ISCO3-42	9/4/2001	37	mg/L	EPA 300.0/375.4
Toluene	1150-SD-SW11B	10/5/2000	<1	ug/L	MADEP VPH
Toluene	1150-SD-SW11C	10/5/2000	0.96	ug/L	MADEP VPH
Toluene	1150-SD-SW11D	10/5/2000	1.1	ug/L	MADEP VPH
Toluene	1150-SD-SW11E	10/5/2000	<1	ug/L	MADEP VPH
Toluene	1150-SD-SWA1	10/7/2000	<1	ug/L	MADEP VPH

Appendix E

Human Health Imminent Hazard Evaluation for IRA Status Report No. 2 for South Ditch/Former Weir Harding ESE, December 4, 2001

DRAFT

Harding ESE
A MACTEC COMPANY

RECEIVED
DEC 5 2001
GEI CONSULTANTS, INC

Memorandum

TO: Steve Morrow, Olin Corporation DATE: December 4, 2001

FROM: Michael Murphy

SUBJECT: Human Health Imminent Hazard Evaluation for IRA Status Report No. 2 for the South Ditch/Former Weir

Harding ESE is pleased to submit this Human Health Imminent Hazard Evaluation (EIHE) for near-downstream environments with respect to the October 5, 2000 incident during sediment remedial activities involving the inadvertent over-pumping of surface water and the subsequent release of groundwater to the South Ditch at the 51 Eames Street Site in Wilmington, Massachusetts. The Massachusetts Department of Environmental Protection (MADEP) indicated in its June 8, 2001 Conditional Approval letter for the IRA Plan for the South Ditch/Former Weir that a Human Health Imminent Hazard Evaluation (HHIHE) for near-downstream environments must be submitted to MADEP with the IRA Status report No. 2. This evaluation concludes that the October 5, 2000 incident did not result in a Human Health Imminent Hazard.

Given the very specific focus of this HHIHE and because, as described in the IRA Status Report No. 2, the impacts of the October 5, 2000 incident are limited to the South Ditch, this HHIHE is also limited to data from the South Ditch. Sediment data collected from the area of the former Central Pond are not evaluated here because the Central Pond was not affected by the incident (it had already been remediated and did not receive flow from the incident). This HHIHE conservatively evaluates a full-range of environmental conditions in the South Ditch. The samples collected from sample location ISCO-2 during and immediately after storms and snowmelts were not included in the database for this HHIHE. Those data are largely representative of surface water not originating form the site and their inclusion would effectively "dilute" the site-related impacts to the South Ditch.

Clarifications with respect to the Conditional Approval Letter

Harding ESE would like to make the following clarifications with respect to the language of the MADEP Conditional Approval Letter (dated June 8, 2001) for the IRA Plan:

1) MADEP statement, "further investigative work is necessary to determine the extent of contamination from the incident, and to confirm that an Imminent Hazard downstream of the Delta Area has been abated." As a point of clarification, correspondence to date has

indicated that no Imminent Hazard existed or exists for the October 5, 2000 incident. Therefore, it cannot be confirmed that an Imminent Hazard has been abated. The Imminent Hazard Evaluation will be conducted to determine if an Imminent Hazard existed or still exists with respect to the October 5, 2000 incident.

Focus and Objectives of the Human Health Imminent Hazard Evaluation

The HHIHE is focused on the release of OHM associated with the inadvertent pumping of groundwater to the South Ditch on October 5, 2000. The nature of the release and the documentation of conditions in the South Ditch following the October 5 incident are described in detail in the IRA Assessment and Plan – South Ditch/Former Weir (GEI, December 22, 2000) and the IRA Status Report No. 1, South Ditch/Former Weir Area (GEI, June 1, 2001). Sampling and analysis of surface water in the South Ditch before and after the October 5, 2000 incident as reported in those two reports and in the IRA Report No. 2, South Ditch/Former Weir Area (GEI, November 2001) indicate that the following groundwater constituents are most characteristic of the release to surface water: ammonia, chromium, aluminum, iron, sulfate, chloride, barium, nickel, and sodium. Essentially all of the detected OHM in sediment has been evaluated in this document. For floc, chromium and the other detected inorganic parameters are the focus of the HHIHE.

Objectives of this HHHE are to: determine if a Human Health Imminent Hazard existed in the South Ditch and the closest downstream portions of the East Ditch at the time of the October 5 incident; determine if there are any residual effects of the incident that constitute a Human Health Imminent Hazard in the South Ditch or the closest downstream portions of the East Ditch at the present time.

The MADEP's Conditional Approval of the IRA Assessment and Plan (June 8, 2001) states that an "imminent hazard evaluation must be completed to determine if there is significant risk to the environment in near-downstream environments." It has previously been determined that a condition of Substantial Release Migration exists in the South Ditch (continuing groundwater discharge not related to the October 5, 2000 incident) and the Phase II Human Health Risk Assessment (HHRA) previously concluded that a condition of no significant risk of harm to human health exists for on-site workers and neighborhood trespassers. The cancer and non-cancer risks associated with potential exposures to surface water and sediment in the ditch systems were well below the Cumulative Receptor Risk limits specified in the Massachusetts Contingency Plan (MCP). This HHIHE does revisit those previous evaluations and conclusions given the data collected since the 1997 HHRA, but remains focused on the specific issue of whether the October 5, 2000 incident resulted in a Human Health Imminent Hazard.

Requirements for the HHIHE

This HHIHE has been conducted in a manner consistent with the Massachusetts Contingency Plan at 310 CMR 40.0950 and in particular 310 CMR 40.0955(2) as well as the MADEP guidance with respect to Imminent Hazard Evaluations for the Environment as presented in Section 10.2 of Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORS-95-141, July 1995. Section 7 of the Guidance for

Disposal Site Risk Characterization, Interim Final Policy, WSC/ORS-95-141, Method 3 – Environmental Risk Characterization was also consulted during the preparation of this HHIHE.

The MCP criteria (last revised in 1999) include the following requirements specifically for HHIHEs:

The characterization of the risk to human health shall be conducted using Method 3, as described in 310 CMR 40.0993.

(a) The toxicity information used to characterize risk shall be consistent with the type and duration of exposure under evaluation, and shall clearly be identified and documented. Primary consideration shall be given to information developed by the U.S. Environmental Protection Agency for the purpose of conducting such risk assessments. Examples of such toxicity information include:
    1. Reference Doses and Reference Concentrations; and
    2. Carcinogenic Slope factors and unit Risk values.

The MCP (310 CMR 40.0953) identifies those exposures to be considered in Imminent Hazard Evaluations as follows: "The focus of an Imminent hazard Evaluation shall be on actual or likely exposures to Human and Environmental Receptors under current site conditions, considering the current use(s) of the disposal site and the surrounding environment, and considering an appropriate short period of time." The MCP also specifies the following requirements that have some bearing on this HHIHE.

- The short period of time is five years unless the projected time until a Comprehensive Response Action could be completed is less than five years.
- For soil-related exposures, the concentrations of OHM in the accessible surface soil (as close to the ground surface as possible, but not greater than 12 inches below the surface) shall be used in identifying exposure point concentrations. This requirement appears to be transferable to sediment as well.
- Hot spots should be the primary, but not exclusive focus of the IHE, provided they are located in areas of actual or likely exposure under current site conditions.
- If a subset of the OHM present is likely to dominate the risk estimates based on their concentration and toxicity, the IHE may be limited to those OHM.
- The IHE shall consider acute, subchronic, and/or chronic exposures. The EPCs shall be developed to reflect the type of exposure evaluated. The use of upper percentile or maximum concentrations may be appropriate in certain circumstances as described in 310 CMR 40.0926.
- The IHE shall include conservative estimates of potential exposures.
- The IHE shall clearly identify and explain the basis for exposure parameters chosen for the IHE.

The following risk management criteria for determining if an Imminent Hazard to human health exists:

- The conditions at the disposal site pose an Imminent Hazard based upon the potential for carcinogenic health effects, if, for the oil and/or hazardous material evaluated and for each receptor, the estimated Excess lifetime cancer Risk is greater than a cancer risk limit which is an Excess lifetime cancer Risk equal to one-in-100,000.
- The conditions at the disposal site pose an Imminent Hazard based upon non-cancer health effects if, for the oil and/or hazardous material evaluated and for each receptor, the non-cancer risk calculated is greater than a non-cancer risk limit of a Hazard Index equal to ten.
- A release to the environment which produces readily apparent effects to human health poses an imminent hazard. A quantitative evaluation of such exposures is not required.

The MADEP's 1995 risk characterization guidance contains some additional guidance with respect to HHIHEs:

- The EPC should be the average concentration to which a receptor is exposed (notable exceptions, e.g. upper percentile or maximum concentrations for acute effects)

- A hot spot should be treated as a separate exposure point.

- The Method 3 risk assessment for an IHE should be a streamlined version of the method.

Hazard identification and selection of OHM to be evaluated

The inadvertent overpumping of surface water and groundwater occurred at the location of the weir structure at the upstream end of the South Ditch on October 5, 2000. The surface water and sediment data collected from the South Ditch in the time period of September 1, 2000 and September 1, 2001 and the floc data collected in 1995, 1996, and 1998 are used here to identify the OHM to be evaluated. Table 1 identifies the sample identifiers, associated sample locations, sample dates, and media sampled. Tables 2 through 4 are summary tables for surface water data for three time intervals: January 2000 through October 4, 2000; October 5 and 6, 2000; and from October 7, 2000 to September 2001. Table 5 is a summary table for sediment data (collected on September 17, 2001, and Table 6 is a summary table for floc data. No surface water or sediment data have been collected from the East Ditch downstream of the South Ditch or further downstream ditches during this time period. Figure 1 shows the surface water sampling locations. Figure 2 shows the sediment sampling locations used in this HHIHE. Figure 3 shows the location of floc samples used in this HHIHE. The collection of these data have been reported in various RAM Status Reports and IRA status.

Some compounds were available from several different analytical methods. Each analytical method is associated with unique accuracy, precision, and detection limits.

Only one analytical result was used for each sample. The highest detected concentration was used as the reported result for detects, and the lowest sample quantitation limit was used as the reported result for non-detects. For samples in which one or more analytical methods reported a compound as "non-detect" and one or more analytical methods reported it as "detect", the sample was included as a positive detection, and the highest reported detected concentration was used in the risk assessment. For samples in which analyte concentrations were detected outside the calibration range, the samples were diluted and reanalyzed. For analytes that exceeded the calibration range in the original analysis, only the reanalysis results were used in the HHIHE.

Data used in this evaluation

Surface water

Historical data (prior to 1/1/2000) have not been used in this HHIHE. The most recent of these data represent "typical" conditions were collected in 1995. April 2000 surface water sampling was conducted during high flow periods associated with rainfall events. These data are also not considered to be "typical" of South Ditch conditions associated with the October 5, 2000 incident.

Surface water data used in this assessment include samples of ditch surface water and do not include chemical analytical data collected to characterize water quality from the Plant B NPDES discharge nor from the Mobile Treatment Unit that is subject to the NPDES Permit Exclusion. Surface water sampling locations are shown on Figure 1 and they include:

NP-1. Surface water samples were collected daily after September 20, 2000 except during periods of no surface water flow at NP-1 These samples were collected at the haybale check dam shown in Figure 1 of Appendix H of Construction RAM Status Report No. 1, Part 2. These samples were designated with sample IDs like xxxx-SD-SWXXX.

[The data form NP-1 conservatively represent a full range of environmental conditions in the South Ditch including the conditions during and immediately after the October 5, 2000 and may 2001 incidents. There were a number of changing conditions during the period evaluated, but none of the subtleties are particularly relevant for the HHIHE because the HHIHE evaluates actual, current conditions (not potential future conditions in the absence of the Plant B discharge), which are represented by the surface water samples collected in the South Ditch.] The following text discusses the potential impact of the change in location of the NPDES discharge for the facility. This impact is also discussed in Geomega (2001). During some sampling events prior to October 3, 2000, samples collected at this location included (but was not limited to) diverted flow from upstream where sediment excavation, installation of the box culvert, and installation of the temporary weir were occurring. Between September 20, 2000 and December 4, 2000, samples collected at NP-1 were not influenced by the Plant B discharge (it was discharging into the lower South Ditch at the east property line). Between December 4, 2000 and the end of February 2001,samples collected at NP-1 were influenced by the Plant B discharge (it was discharging into the West Ditch Wetland). Starting in March

2001, weekly surface water samples collected at NP-1 were not influenced directly by the Plant B discharge (samples were collected on early Monday mornings before Plant B began weekly discharge). Therefore, results from these samples would overestimate site-related constituent concentrations for actual, typical conditions in the ditch while the Plant B discharge is active.

Data specific to the October 5, 2000 Incident

The following South Ditch surface water sample locations have PAH, VOCs, TPH, and inorganic data on the day of the October 5, 2000 incident. Locations are shown in Figure 1 of Appendix H of Construction RAM Status Report No. 1.

SD-SW11A (at box culvert)
SD-SW11B
SD-SW11C
SD-SW11D = NP-1
SD-SW11E

The following South Ditch surface water sample locations have pH and total and dissolved chromium analytical results for the day following the October 5, 2000 incident (10/06/00). Locations are shown in Figure 2 of Appendix H of Construction RAM Status Report No. 1.

SWLOC-9
SWLOC-10
SWLOC-11
SWLOC-12
SWLOC-14
SWLOC-16

CP-SW. A central Pond surface water sample was collected on 10/09/2000 (1150-CP-SW1). Because Central Pond was not impacted by the incident, and the focus of this HHIHE is the South Ditch, the data from this sample are not used in the evaluation.

Other data

ISCO-1. On-property, upstream of the weir. This sample location represents, in large part, water quality of water flowing onto the property from the West Ditch Off-Property. This sampling location is upstream of the location of the October 5, 2001 incident and is not used in this evaluation.

ISCO-2. Samples collected weekly (and approximately daily between 5/14/01 and 6/07/01) starting on February 9, 2001. Analytical results for detected analytes ammonia, nitrite/nitrate, chloride, sulfate, dissolved aluminum, chromium (total and dissolved) and bis(2-ethylhexyl)phthalate. This location is downstream of NP-1. Most of these data were collected during high flow periods and are not representative of typical conditions or of the October 5, 2000 incident. Therefore, only one sample collected from location ISCO-2 has been used in this HHIHE.

ISCO-3. East Ditch location, upstream of the confluence of the East Ditch and South Ditch. This location does not reflect any surface water conditions related to the October 5, 2001 incident and is not used in this evaluation.

Sediment

Data representative of sediments in the unremediated portion of the South Ditch (Lower South Ditch) have been used here. The historical data for the South Ditch are no longer representative of conditions in the remediated portion of the ditch. Organic sediments have been excavated from the ditch, and the sediments were replaced with imported clean granular fill and imported clean loam. It is assumed for the purposes of this HHIHE that sediment conditions in the remediated portion of the South Ditch (down to and including the Delta area) need not be evaluated in this HHIHE. Concentrations of chromium in sediment are assumed to be less than or equal to historical concentrations in sediment and it is assumed that the historical phthalate contamination in the remediated portion of the ditch has been removed.

The data potentially most representative of current conditions in the unremediated portion of the South Ditch include the recently collected samples. Sediment samples were collected on September 17, 2001 in the lower South Ditch channel and associated floodplain. Samples were collected at two depths in the channel (0 – 0.5 ft, and 0.5 – approximately 1.5 ft) and only surficially (0 – 0.5 ft) in the floodplain locations. Channel locations include SDC-1 through SDC-8. Floodplain sediment sampling locations include SDF-1 through SDF-6. All of the samples from all of these locations have been used in this HHIHE. These sample locations are shown in Figure 2.

Floc

Floc samples have been collected from the locations identified in Figure 3. Two floc samples were collected in May 1995 ("White Floc (May 1995)" or "WF-1" collected from the South Ditch and "Red Floc (May 1995)" or "RP-1" that was collected from the Off-Property West Ditch). These samples were analyzed for inorganic parameters. On a mass basis, the White floc (or aluminum floc) had a relative composition of 30.8 : 10.4 : 1 for aluminum, iron, and chromium respectively [chromium approximately 2.4% of the three major constituents]. Again, on a mass basis, the Red floc (or iron floc) had a relative composition of 5.1 : 2 : 1 for iron, aluminum, and chromium [chromium approximately 12.3% of the three major constituents]. The white floc is predominantly aluminum and iron. The red floc is predominantly iron, aluminum, and chromium (with iron concentrations approximately six times higher than in the White floc, and chromium concentrations approximately twelve times higher than in the White floc).

In 1996 floc samples were collected from the six South Ditch locations. The location identifiers and corresponding chromium concentrations (no analytical data for any other constituents) are shown below.

FLOC-1 (19,000 mg/kg chromium)
FLOC-2 (7,400 mg/kg chromium)

FLOC-3 (18,000 mg/kg chromium)
FLOC-4 (930 mg/kg chromium)
FLOC-5 (5,200 mg/kg chromium)
FLOC-6 (no chemical analysis, collected for electron microprobe analysis only)

These chromium concentrations are more characteristic of Red floc than of White floc.

In 1998, three floc samples were collected (ED-B, a background sample from the East Ditch upstream of the South Ditch, ED-C, a botryoildal growth in the sediment from the East Ditch, and ED-S, a clearly flocculent material that was visually comparable to that collected in the South Ditch in 1996). *(Floc Geochemistry in the East Ditch,* Geomega, March 6, 1998).

The composition of ED-S was dominated by aluminum, iron, silicon, and calcium on a mass basis. Relative composition was approximately 565 : 270 : 48 : 1 for aluminum, iron, silicon, and chromium respectively. The concentration of chromium (230 mg/kg) was orders of magnitude lower than the corresponding concentrations in the 1995 Red floc and White floc samples and the 1996 South Ditch samples.

The complete presentation of analytical data for the floc samples is shown in Table 6.

The 1995 Red floc and White floc data as well as the 1996 South Ditch floc data have been considered in this HHIHE for the near-downstream environment relative to the October 5, 2000 incident.

Included in the chemical analysis of floc was "total chromium". The available information indicates that the chromium in the floc is in the trivalent form.
An imminent hazard evaluation for human exposure to flocculent material was conducted in 1998 (ABB-ES, 1998). This report is attached as Appendix A. That IHE concluded that potential exposures for a neighborhood resident (10-year short-term exposure), a site worker (5-year exposure), and a site worker (30-year longer-term exposure) were associated with cancer and non-cancer risks well below the Imminent Hazard risk limits that appeared in the MCP at that time. Those criteria were: For "short periods of time", cancer risk greater than one in one-hundred thousand, and non-cancer risk greater than a Hazard Index greater than one; for "long-term exposure", cancer risk greater than one in ten-thousand, and non-cancer risk greater than a Hazard Index of one. In fact, the 1998 IHE indicated that the highest estimated cancer risk for any scenario was one in one-million and the highest chronic or subchronic Hazard Index was 0.02. Since the cancer and non-cancer risks are at least ten times lower than both the 1998 and current MCP limits for an imminent hazard, the potential human exposure to floc appears to be an "insignificant" exposure pathway.

In addition, the October 5, 2000 incident did result in the formation of floc in the South Ditch. The floc that accumulated in the Delta area was subsequently physically removed from the Delta area. There is no continuing formation of floc associated with the October 5 incident. Therefore, the historical evaluation is adequate for determining for this evaluation that floc exposure is not associated with an Imminent Hazard.

OHM evaluated for surface water

With the exceptions noted below, all detected OHM for surface water has been evaluated in the HHIHE. Only miscellaneous water quality parameters were eliminated form the risk calculations. These parameters include bicarbonate alkalinity, pH, odor, specific conductance, Total Kjeldahl Nitrogen, total dissolved solids, total organic carbon, and turbidity.

OHM evaluated for sediment

With the exceptions noted below, all detected OHM for sediments have been evaluated in the HHIHE. Detected analytes include 2,4,4-Trimethyl-1-pentene, 2,4,4-Trimethyl-2-pentene, ethylbenzene, benzo(a)pyrene, benzo(g,h,i)perylene, bis(2-ethylhexyl)phthalate, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, arsenic, barium, total chromium, hexavalent chromium (possibly anomalous), lead, mercury, C11-C22 aromatic hydrocarbons, C19-C36 aliphatic hydrocarbons, and C9-C18 aliphatic hydrocarbons.

OHM evaluated for floc

Chromium and the other detected inorganics in floc samples were evaluated in the previous evaluation and the conclusions of that evaluation are incorporated into this HHIHE.

Exposure assessment

Identification of receptors. There are very few, if any, human receptors with potential exposure to surface water, sediment, and floc in the near-downstream area from the October 5, 2000 incident. The entire South Ditch is within the Olin property. The property is fenced to the north and west. The property is not accessible to neighborhood residents or trespassers from the north or west. To the south of the South Ditch is a wetland area and wooded area and the Woburn landfill is further to the south. The South Ditch is really not accessible from the south and there is no indication that people are trespassing on the Olin property in the vicinity of the South Ditch.

The site is bordered to the east by the East Ditch (railroad ditch) that runs to the south along the busy, active MBTA commuter rail line. That rail line is a dangerous place for anyone to be walking or otherwise trespassing. Further to the east of the rail line are industrial properties. In addition, if someone were walking along the rail line, they would need to cross the East Ditch and scale a steep embankment in order to gain access to the Olin property. If access to the property were gained from the east, it would then very difficult to move through the thick ground cover, bushes, and thickets to reach the South Ditch. The South Ditch offers very little in the way of recreational activities. The ditch is shallow and narrow and provides no opportunity for fishing or swimming or wading. There is no reason to expect that trespassers are present on the Olin property or that neighborhood people are gaining access to the South Ditch.

Because the rail line is a dangerous place for any people to be, it is also unlikely that people are present and gaining access to surface water, sediment, or floc in the East Ditch that runs along the rail line to the east of the Olin property. Much of the ditch is not easily accessible because of the heavy growth of purple loosestrife along its banks.

At the present time, it appears that the only adults who have access to the South Ditch are those people who work in some way on the investigation and remediation of the ditch system at the site. These workers minimize their direct contact with surface water, sediment, and floc. People who are making observations, taking measurements or samples, or working on site remediation and restoration do not enter the South Ditch without appropriate personal protective gear such as boots or hip waders.

Even though there appears to be no "trespasser" exposures, this evaluation evaluates a "hypothetical" trespasser exposure scenario. This scenario would involve people in the age range of 6 – 17 years old. There are no residences immediately adjacent to the site, and anyone trespassing would need to cross streets and possibly an active commuter rail line to gain access to the South Ditch [or the East Ditch]. The evaluation of this hypothetical receptor is not strictly required by the MCP, which requires evaluation of only actual or likely exposures to humans. This trespasser scenario is not likely given current site conditions. A hypothetical on-site adult maintenance worker is also evaluated in this assessment.

Exposure points. The near-downstream exposure point for on-site remedial workers is the South Ditch, extending from the weir structure downstream to the confluence of the South Ditch and East Ditch. The exposure point could also include the East Ditch to its terminus as it flows into a culvert prior to entering the remediated portion of the new Boston Street Drainway. However, the South Ditch would have the higher concentrations of OHM, and no recent samples of surface water, sediment, and floc have been collected in the East Ditch downstream of the South Ditch. Therefore, the South Ditch is the exposure point for this HHIHE.

A formal hot spot analysis has not been conducted for this evaluation. An inspection of the analytical data in Tables 2 and 4 does not identify any discrete surface water sampling location(s) that appear to have OHM concentrations significantly higher than other sampling locations. An inspection of the sediment data in Table 5 does identify locations with apparently elevated concentrations relative to the surrounding samples of some OHM: total chromium at SDC-2S, SDF-1S, and SDF-2S; bis(2-ethylhexyl)phthalate at SDC-3D, and SDC-4D; lead at SDF-1S, SDF-2S, and SDF-4S; C11-C22 aromatics at SDC-3D, SDC-4D, SDC-6D, and SDC-8D; C19-C36 aliphatics at SDC-3D, SDC-4D, and SDC-8D, and C9-C18 aliphatics at SDC-3D, SDC-4D, and SDC-8D.

However, most of the elevated concentrations are not more than 100 times the concentrations in the immediately surrounding area and there is no indication that there is greater potential for exposure at the locations with more elevated concentrations (therefore the 100 times rule would apply for hot spot identification). The sediment exposure point includes the area where samples were collected on September 17, 2001 (no hot spots were identified and evaluated). As discussed below, one scenario for the risk calculations for sediments and for surface water utilize maximum detected concentrations for each OHM. This approach is at least as conservative as evaluating risk separately for any hot spots.

Exposure media and exposure pathways

People could potentially contact surface water, sediment, and floc via dermal contact and inadvertent ingestion. However, workers involved in site investigation, remediation, or restoration would typically minimize exposures to the surface water, sediment, and floc. Dermal contact with floc appears to be unlikely in that the floc is a fluffy material suspended in the water column that does not appear to stick to objects inserted into the water and it appears to be chemically inert. These workers would typically use protective gear such as boots or hip waders if they needed to enter the ditch.

An unlikely [under current site conditions] "hypothetical" trespasser could inadvertently contact surface water, sediment, and floc via dermal contact and ingestion during frog-hunting or wading in the ditch. A maintenance worker could "hypothetically" inadvertently contact surface water, sediment, and floc via dermal contact and ingestion during maintenance activities.

Floc exposure – absorption of OHM from floc through the skin is unlikely to occur since the floc is a precipitate and the OHM are not in a soluble form that is necessary for absorption.

Exposure profiles

Adult on-site maintenance worker. The exposure parameters for the hypothetical on-site maintenance worker are shown in Table 7. The exposure frequency is 15 days per year.

Trespasser. The exposure parameters for the hypothetical "adolescent" trespasser are shown in Table 7. The frequency of exposure is 15 days per year.

Exposure point concentrations

As a conservative measure, for each exposure scenario and exposure point, two sets of exposure point concentrations were identified. The first set of exposure point concentrations is the maximum detected concentration of each OHM. The second set of exposure point concentrations is the mean concentration at the exposure point (unless

there is more than 100-fold difference between the maximum detected concentration and either the minimum detected concentration or the minimum sample quantitation limit for non-detects. When there is more than a 100-fold difference, the maximum detected concentration is used as the exposure point concentration. This approach makes it unnecessary to calculate exposure point concentrations for hot spots if they exist (exposure point concentrations for hot spots cannot be higher than the maximum detected concentrations). Exposure point concentrations used in the risk calculations are shown in Tables 2 and 4 for surface water, Table 5 for sediment, and Table 6 for floc.

Toxicity assessment

Recent toxicological information from USEPA (Integrated Risk Information System or IRIS) and MADEP sources have been used in this evaluation. The toxicological information is presented in Appendix A and is shown in the risk calculation spreadsheets in Appendix B.

Risk characterization

Table 8 presents the results of the cancer and non-cancer risks for the receptors evaluated.

Evaluation of Human Health Imminent Hazard Criteria

Consistent with the MCP and the MADEP risk assessment guidance, the criteria identified above (cancer risk, non-cancer risk, and apparent adverse human health effects) are the focus of this HHIHE. Even using maximum detected concentrations of each OHM in surface water and sediment, the cancer and non-cancer risks are below the Imminent Hazard risk criteria for the site maintenance worker and the trespasser. No apparent adverse human health effects were observed. Floc exposures were previously determined to be insignificant.

Discussion of uncertainties

- This HHIHE has calculated risks for hypothetical trespassers and on-site maintenance workers despite there being no evidence that trespassers are exposed to surface water or sediments either in the South Ditch or the East Ditch. The South Ditch is simply not accessible to trespassers based on our observations, including attempts to gain access to the ditch without having keys to the gates at the property. Therefore, the risks calculated for both maximum concentrations and "mean" concentrations actually overestimate risks for trespassers under current conditions.
- The assumption that a site maintenance worker would actually be exposed to surface water and sediment in the ditches is also an overestimate of exposures and risks. Any worker present under current conditions would be aware that remediation activities are occurring and would be taking appropriate measures to minimize exposure.

- The use of two sets of exposure point concentrations for each receptor scenario provides a conservative bracketing of the risks for those receptors. The use of maximum detected concentrations likely overestimates risks for current conditions.
- Exposure frequency for all receptors was assumed to be 15 days/year. This exposure parameter could be increased to 45 days/year without exceeding the lifetime cancer risk value of 10^{-5} or the hazard index of 10.
- The cancer risk value for the receptors evaluated here is predominantly due to the bis(2-ethylhexyl)phthalate concentrations in sediment.
- *Detection limits for PAH compounds in sediment analyzed as semi-volatile* compounds are quite high. However, the same PAH compounds have been analyzed as target analytes in EPH analyses for sediment. The detection limits for those analyses are lower than for the semi-volatiles analysis. In this HHIHE, the more sensitive analytical method results were used to minimize the impact of the elevated semi-volatiles detection limits.

Conclusions

Because none of the conditions that constitute a Human Health Imminent Hazard exists or have existed since the October 5, 2000 incident, the October 5, 2000 incident did not result in an Imminent Hazard condition.

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FIGURES

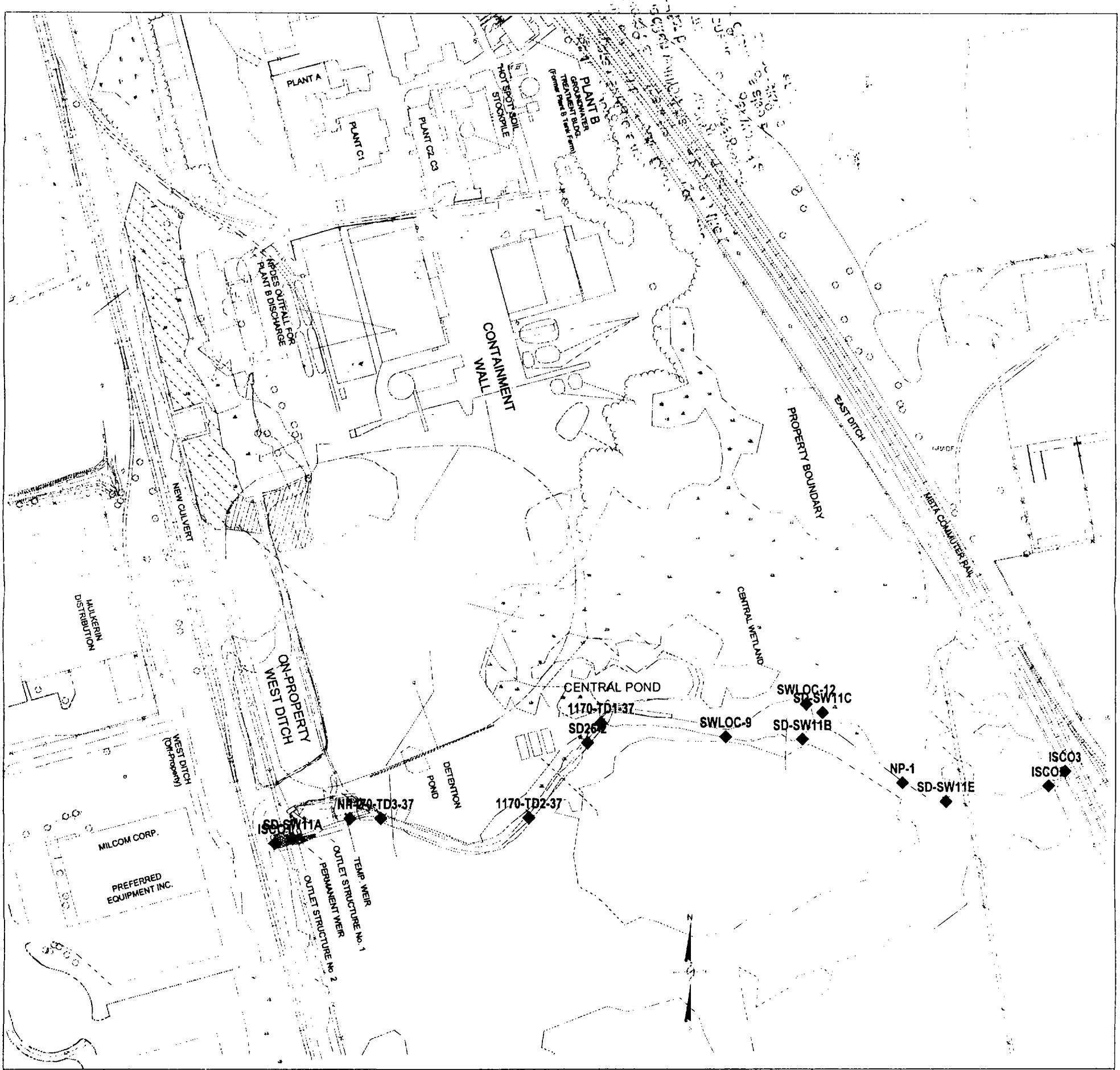

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Figure 1
Surface Water Locations

51 Eames Street
Wilmington, MA

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Figure 2
Sediment Locations

51 Eames Street
Wilmington, MA

Harding ESE
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Figure 3
Floc Locations

51 Eames Street
Wilmington, MA

TABLES

Table 1. Samples Used in the Human Health Imminent Hazard Evaluation
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

	Location	Sample ID	Date Sampled
Surface	NP-1	NP-1C	7/20/00
Water	NP-1	1140-SD-SW1	9/20/00
	NP-1	1140-SD-SW2	9/21/00
	NP-1	1140-SD-SW3	9/22/00
	NP-1	1140-SD-SW4	9/23/00
	NP-1	1140-SD-SW5	9/25/00
	NP-1	1140-SD-SW6	9/26/00
	NP-1	1140-SD-SW7	9/27/00
	NP-1	1140-SD-SW8	9/28/00
	NP-1	1140-SD-SW9	9/29/00
	NP-1	1140-SD-SW10	10/2/00
	NP-1	1140-SD-SW11	10/4/00
	SW11A	1150-SD-SW11A	10/5/00
	SW11B	1150-SD-SW11B	10/5/00
	SW11C	1150-SD-SW11C	10/5/00
	NP-1	1150-SD-SW11D	10/5/00
	SW11E	1150-SD-SW11E	10/5/00
	SW11B	97598-SWLOC-10	10/6/00
	SW11C	97598-SWLOC-11	10/6/00
	SWLOC-12	97598-SWLOC-12	10/6/00
	NP-1	97598-SWLOC-14	10/6/00
	SW11E	97598-SWLOC-16	10/6/00
	SWLOC-9	97598-SWLOC-9	10/6/00
	NP-1	1150-SD-SWA1	10/7/00
	NP-1	1150-SD-SWA2	10/9/00
	NP-1	1150-SD-SWA3	10/10/00
	NP-1	1150-SD-SWA4	10/11/00
	NP-1	1150-SD-SWA5	10/12/00
	NP-1	1150-SD-SWA6	10/18/00
	NP-1	1150-SD-SWA7	10/19/00
	NP-1	1150-SD-SWA8	10/20/00
	NP-1	1150-SD-SWA9	10/20/00
	NP-1	1150-SD-SWA10	10/23/00
	NP-1	1150-SD-SWB1	10/24/00
	NP-1	1150-SD-SWB2	10/25/00
	NP-1	1150-SD-SWC1	10/26/00
	NP-1	1150-SD-SWC2	10/27/00
	NP-1	1150-SD-SWC3	10/30/00
	NP-1	1150-SD-SWC4	10/31/00
	NP-1	1150-SD-SWC5	11/1/00
	NP-1	1150-SD-SWC6	11/2/00
	NP-1	1150-SD-SWC7	11/3/00
	NP-1	1150-SD-SWC8	11/4/00
	NP-1	1150-SD-SWC9	11/6/00
	NP-1	1150-SD-SWC10	11/7/00
	NP-1	1150-SD-SWC11	11/8/00
	NP-1	1150-SD-SWC12	11/9/00
	NP-1	1150-SD-SWC13	11/10/00
	NP-1	1150-SD-SWC14	11/12/00
	NP-1	1150-SD-SWC15	11/13/00
	NP-1	1150-SD-SWC16	11/14/00
	NP-1	1150-SD-SWC17	11/15/00
	NP-1	1150-SD-SWC18	11/16/00
	NP-1	1150-SD-SWC19	11/17/00
	NP-1	1150-SD-SWC20	11/18/00
	NP-1	1150-SD-SWC21	11/19/00
	NP-1	1150-SD-SWC22	11/20/00
	NP-1	1150-SD-SWC23	11/21/00
	NP-1	1150-SD-SWC24	11/22/00
	NP-1	1150-SD-SWC25	11/27/00

Table 1. Samples Used in the Human Health Imminent Hazard Evaluation
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

	Location	Sample ID	Date Sampled
Surface Water (cont)	NP-1	1150-SD-SWC26	11/28/00
	NP-1	1150-SD-SWC27	11/29/00
	NP-1	1150-SD-SWC28	11/30/00
	NP-1	1150-SD-SWC29	12/1/00
	NP-1	1150-SD-SWC30	12/3/00
	NP-1	1150-SD-SWC31	12/4/00
	NP-1	1150-SD-SWC32	12/5/00
	NP-1	1150-SD-SWC33	12/6/00
	NP-1	1150-SD-SWC34	12/7/00
	NP-1	1150-SD-SWC35	12/8/00
	NP-1	1150-SD-SWC36	12/9/00
	NP-1	1150-SD-SWC37	12/11/00
	NP-1	1150-SD-SWC38	12/12/00
	NP-1	1150-SD-SWC39	12/13/00
	NP-1	1150-SD-SWD1	12/21/00
	NP-1	1150-SD-SWD2	12/29/00
	NP-1	1150-SD-SWD3	1/4/01
	NP-1	1150-SD-SWD4	1/11/01
	NP-1	1150-SD-SWD5	1/18/01
	NP-1	1150-SD-SWD6	1/25/01
	NP-1	1150-SD-SWD7	2/2/01
	NP-1	1170-NP1-1	2/9/01
	NP-1	1170-NP1-2	2/15/01
	NP-1	1170-NP1-3	2/23/01
	SD26-2	1170-SD26-2	6/5/01
	SW11C	1170-SD26-3	6/5/01
	ISCO2	1170-SD26-4	6/5/01
	NP-1	1170-SD-29	6/9/01
Sediment	SDC-1	1010-SED-SDC-1D	9/17/01
	SDC-1	1010-SED-SDC-1S	9/17/01
	SDC-2	1010-SED-SDC-2S	9/17/01
	SDC-3	1010-SED-SDC-3D	9/17/01
	SDC-3	1010-SED-SDC-3S	9/17/01
	SDC-4	1010-SED-SDC-4D	9/17/01
	SDC-4	1010-SED-SDC-4S	9/17/01
	SDC-5	1010-SED-SDC-5D	9/17/01
	SDC-5	1010-SED-SDC-5S	9/17/01
	SDC-6	1010-SED-SDC-6D	9/17/01
	SDC-6	1010-SED-SDC-6S	9/17/01
	SDC-7	1010-SED-SDC-7D	9/17/01
	SDC-7	1010-SED-SDC-7S	9/17/01
	SDC-8	1010-SED-SDC-8D	9/17/01
	SDC-8	1010-SED-SDC-8S	9/17/01
	SDF-1	1010-SED-SDF-1S	9/17/01
	SDF-2	1010-SED-SDF-2S	9/17/01
	SDF-3	1010-SED-SDF-3S	9/17/01
	SDF-4	1010-SED-SDF-4S	9/17/01
	SDF-5	1010-SED-SDF-5S	9/17/01
	SDF-6	1010-SED-SDF-6S	9/17/01
FLOC	FLOC #1	FLOC #1	
	FLOC #2	FLOC #2	
	FLOC #3	FLOC #3	
	FLOC #4	FLOC #4	
	FLOC #5	FLOC #5	
	FLOC RP-2	FLOC RP-2	
	FLOC WF-2	FLOC WF-2	

Table 2. Summary of Surface Water Collected from the South Ditch January 1, 2000 through October 4, 2000
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	Frequency of Detection			MinSQL		MaxSQL	MinHit		MaxHit	Mean	EPC		NP 1 1140-SD-SW1 9/20/00	NP 1 1140-SD-SW10 10/2/00	NP 1 1140-SD-SW11 10/4/00
Semivolatile Organics (mg/L)															
bis(2-EthylHexyl)phthalate	10	/	11	0.01	:	0.01	0.0024	-	0.22	4.07E-02	4.07E-02	A	0.003	0.0028	0.0044
Total Metals (mg/L)															
Aluminum, Total	1	/	1		:		0.11	-	0.11	1.10E-01	1.10E-01	M			
Barium, Total	1	/	1		:		0.018	-	0.018	1.80E-02	1.80E-02	M			
Calcium, Total	1	/	1		:		64	-	64	6.40E+01	6.40E+01	M			
Chromium, Total	10	/	12	0.01	:	0.01	0.013	-	1.2	1.65E-01	1.65E-01	A	0.049	< 0.01	0.032
Iron, Total	1	/	1		:		0.39	-	0.39	3.90E-01	3.90E-01	M			
Magnesium, Total	1	/	1		:		7.7	-	7.7	7.70E+00	7.70E+00	M			
Manganese, Total	1	/	1		:		0.39	-	0.39	3.90E-01	3.90E-01	M			
Potassium, Total	1	/	1		:		1.7	-	1.7	1.70E+00	1.70E+00	M			
Sodium, Total	1	/	1		:		92	-	92	9.20E+01	9.20E+01	M			
Strontium, Total	1	/	1		:		0.13	-	0.13	1.30E-01	1.30E-01	M			
Inorganics (mg/L)															
Chloride	1	/	1		:		120	-	120	1.20E+02	1.20E+02	M			
Nitrate as N	1	/	1		:		2.6	-	2.6	2.60E+00	2.60E+00	M			
Nitrite as N	1	/	1		:		0.011	-	0.011	1.10E-02	1.10E-02	M			
Nitrogen, Ammonia	12	/	12		:		28	-	180	7.76E+01	7.76E+01	A	40	120	110
Nitrogen, Total Kjeldahl as N	1	/	1		:		79	-	79	7.90E+01	7.90E+01	M			
Phosphate, Total as P	1	/	1		:		0.89	-	0.89	8.90E-01	8.90E-01	M			
Sulfate as SO4	1	/	1		:		410	-	410	4.10E+02	4.10E+02	M			

Table 2. Summary of Surface Water Collected from the South Ditch January 1, 2000 through October 4, 2000
Imminent Hazard Evaluation
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Wilmington, Massachusetts

ParameterName	NP-1 1140-SD-SW2 9/21/00	NP-1 1140-SD-SW3 9/22/00	NP-1 1140-SD-SW4 9/23/00	NP-1 1140-SD-SW5 9/25/00	NP-1 1140-SD-SW6 9/26/00	NP-1 1140-SD-SW7 9/27/00	NP-1 1140-SD-SW8 9/28/00	NP-1 1140-SD-SW9 9/29/00	NP-1 NP-1C 7/20/00
Semivolatile Organics (mg/L)									
bis(2-EthylHexyl)phthalate	0.0032	0.014	0.0095	0.22	0.18		0.0024	0.0031	< 0.01
Total Metals (mg/L)									
Aluminum, Total									0.11
Barium, Total									0.018
Calcium, Total									64
Chromium, Total	0.018	0.013	0.025	1.2	0.54	0.035	0.041	< 0.01	0.015
Iron, Total									0.39
Magnesium, Total									7.7
Manganese, Total									0.39
Potassium, Total									1.7
Sodium, Total									92
Strontium, Total									0.13
Inorganics (mg/L)									
Chloride									120
Nitrate as N									2.6
Nitrite as N									0.011
Nitrogen, Ammonia	40	33	57	100	180	60	66	28	97
Nitrogen, Total Kjeldahl as N									79
Phosphate, Total as P									0.89
Sulfate as SO4									410

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusets

ParameterName	Frequency of Detection			MinSQL		MaxSQL	MinHit		MaxHit	Mean	EPC		ISCO2 1170 SD26-A 6/5/01	NP-1 1150-SD-SWA1 10/7/00	NP-1 1150-SD-SWA10 10/23/00
Semivolatile Organics (mg/L)															
bis(2-EthylHexyl)phthalate	15	/	37	0.01	:	0.025	0.0018	-	0.025	8.48E-03	8.48E-03	A		0.0018	< 0.025
Fluoranthene	1	/	51	0.0002	:	0.01	0.00025	-	0.00025	1.20E-03	2.50E-04	M		< 0.0002	< 0.0002
Total Metals (mg/L)															
Aluminum, Total	1	/	1		:		0.69	-	0.69	6.90E-01	6.90E-01	M			
Chromium, Total	60	/	65	0.01	:	0.01	0.01	-	3.2	1.09E-01	3.20E+00	M	0.035	< 0.01	0.013
Iron, Total	1	/	1		:		2.3	-	2.3	2.30E+00	2.30E+00	M			
Dissolved Metals (mg/L)															
Chromium, Dissolved	15	/	65	0.01	:	0.01	0.0064	-	1.7	3.37E-02	1.70E+00	M	< 0.01	0.019	0.01
Iron, Dissolved	1	/	1		:		1.4	-	1.4	1.40E+00	1.40E+00	M			
Inorganics (mg/L)															
Nitrate & Nitrite as N	1	/	1		:		1.8	-	1.8	1.80E+00	1.80E+00	M			
Nitrogen, Ammonia	64	/	64		:		18	-	290	8.30E+01	8.30E+01	A	220	61	120

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
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ParameterName	NP-1 1150-SD-SWA2 10/9/00	NP-1 1150-SD-SWA3 10/10/00	NP-1 1150-SD-SWA4 10/11/00	NP-1 1150-SD-SWA5 10/12/00	NP-1 1150-SD-SWA6 10/18/00	NP-1 1150-SD-SWA7 10/19/00	NP-1 1150-SD-SWA8 10/20/00	NP-1 1150-SD-SWA9 10/20/00
Semivolatile Organics (mg/L)								
bis(2-EthylHexyl)phthalate	0.0097	0.0045	0.025	0.024	0.02	< 0.017	< 0.012	0.023
Fluoranthene	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Total Metals (mg/L)								
Aluminum, Total								
Chromium, Total	< 0.01	0.023	0.22	0.16	0.048	0.02	0.033	0.024
Iron, Total								
Dissolved Metals (mg/L)								
Chromium, Dissolved	< 0.01	< 0.01	0.012	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Iron, Dissolved								
Inorganics (mg/L)								
Nitrate & Nitrite as N								
Nitrogen, Ammonia	71	50	65	110	110	32	70	110

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
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ParameterName	NP-1 1150-SD-SWB1 10/24/00	NP-1 1150-SD-SWB2 10/25/00	NP-1 1150-SD-SWC1 10/26/00	NP-1 1150-SD-SWC10 11/7/00	NP-1 1150-SD-SWC11 11/8/00	NP-1 1150-SD-SWC12 11/9/00	NP-1 1150-SD-SWC13 11/10/00	NP-1 1150-SD-SWC14 11/12/00
Semivolatile Organics (mg/L)								
bis(2-EthylHexyl)phthalate	< 0.017	< 0.014	< 0.017	< 0.025	0.0023	0.0041	0.0055	
Fluoranthene	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0002
Total Metals (mg/L)								
Aluminum, Total								
Chromium, Total	0.016	0.011	0.01	< 0.01	0.017	0.014	0.012	0.025
Iron, Total								
Dissolved Metals (mg/L)								
Chromium, Dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.052	< 0.01	< 0.01
Iron, Dissolved								
Inorganics (mg/L)								
Nitrate & Nitrite as N								
Nitrogen, Ammonia	120	160	170	38	62	78	68	18

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusets

ParameterName	NP-1 1150-SD-SWC15 11/13/00	NP-1 1150-SD-SWC16 11/14/00	NP-1 1150-SD-SWC17 11/15/00	NP-1 1150-SD-SWC18 11/16/00	NP-1 1150-SD-SWC19 11/17/00	NP-1 1150-SD-SWC2 10/27/00	NP-1 1150-SD-SWC20 11/18/00	NP-1 1150-SD-SWC21 11/19/00
Semivolatile Organics (mg/L)								
bis(2-EthylHexyl)phthalate						0.006		
Fluoranthene	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.001	< 0.0002	< 0.0002
Total Metals (mg/L)								
Aluminum, Total								
Chromium, Total	0.038	0.044	0.11	0.1	0.084	< 0.01	0.063	0.051
Iron, Total								
Dissolved Metals (mg/L)								
Chromium, Dissolved	< 0.01	< 0.01	0.016	0.017	0.011	< 0.01	< 0.01	< 0.01
Iron, Dissolved								
Inorganics (mg/L)								
Nitrate & Nitrite as N								
Nitrogen, Ammonia	41	72	37	50	87	100	110	94

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
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ParameterName	NP-1 1150-SD-SWC22 11/20/00	NP-1 1150-SD-SWC23 11/21/00	NP-1 1150-SD-SWC24 11/22/00	NP-1 1150-SD-SWC25 11/27/00	NP-1 1150-SD-SWC26 11/28/00	NP-1 1150-SD-SWC27 11/29/00	NP-1 1150-SD-SWC28 11/30/00	NP-1 1150-SD-SWC29 12/1/00
Semivolatile Organics (mg/L)								
bis(2-EthylHexyl)phthalate				< 0.01				< 0.01
Fluoranthene	0.00025	< 0.0002	< 0.0002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Metals (mg/L)								
Aluminum, Total							0.69	
Chromium, Total	0.03	0.078	0.04	0.062	0.08	0.081	0.054	0.048
Iron, Total							2.3	
Dissolved Metals (mg/L)								
Chromium, Dissolved	< 0.01	< 0.01	< 0.01	0.018	< 0.01	< 0.01	< 0.01	< 0.01
Iron, Dissolved							1.4	
Inorganics (mg/L)								
Nitrate & Nitrite as N								
Nitrogen, Ammonia	57	77	76	24	50	84	76	90

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusets

ParameterName	NP-1 1150-SD-SWC3 10/30/00	NP-1 1150-SD-SWC30 12/3/00	NP-1 1150-SD-SWC31 12/4/00	NP-1 1150-SD-SWC32 12/5/00	NP-1 1150-SD-SWC33 12/6/00	NP-1 1150-SD-SWC34 12/7/00	NP-1 1150-SD-SWC35 12/8/00	NP-1 1150-SD-SWC36 12/9/00
Semivolatile Organics (mg/L)								
bis(2-EthylHexyl)phthalate	0.0027	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	< 0.001	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Metals (mg/L)								
Aluminum, Total								
Chromium, Total	< 0.01	0.028	0.043	0.022	0.13	0.25	0.083	0.094
Iron, Total								
Dissolved Metals (mg/L)								
Chromium, Dissolved	< 0.01	< 0.01	< 0.01	< 0.01	0.016	0.015	< 0.01	0.01
Iron, Dissolved								
Inorganics (mg/L)								
Nitrate & Nitrite as N								
Nitrogen, Ammonia	150	70	68	91	84	60	72	55

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusets

ParameterName	NP-1 1150-SD-SWC37 12/11/00	NP-1 1150-SD-SWC38 12/12/00	NP-1 1150-SD-SWC39 12/13/00	NP-1 1150-SD-SWC4 10/31/00	NP-1 1150-SD-SWC5 11/1/00	NP-1 1150-SD-SWC6 11/2/00	NP-1 1150-SD-SWC7 11/3/00	NP-1 1150-SD-SWC8 11/4/00
Semivolatile Organics (mg/L)								
bis(2-EthylHexyl)phthalate	< 0.01	< 0.01	< 0.01	< 0.017	< 0.014	< 0.017	0.015	0.0076
Fluoranthene	< 0.01	< 0.01	< 0.01	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Total Metals (mg/L)								
Aluminum, Total								
Chromium, Total	0.074	0.051	0.047	0.016	0.036	0.014	0.017	0.022
Iron, Total								
Dissolved Metals (mg/L)								
Chromium, Dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Iron, Dissolved								
Inorganics (mg/L)								
Nitrate & Nitrite as N								
Nitrogen, Ammonia	84	72	66	97	50	40	46	60

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusets

ParameterName	NP-1 1150-SD-SWC9 11/6/00	NP-1 1150-SD-SWD1 12/21/00	NP-1 1150-SD-SWD2 12/29/00	NP-1 1150-SD-SWD3 1/4/01	NP-1 1150-SD-SWD4 1/11/01	NP-1 1150-SD-SWD5 1/18/01	NP-1 1150-SD-SWD6 1/25/01	NP-1 1150-SD-SWD7 2/2/01	NP-1 1150-NP-1-[illegible] [illegible]
Semivolatile Organics (mg/L)									
bis(2-EthylHexyl)phthalate	0.015								
Fluoranthene	< 0.001								
Total Metals (mg/L)									
Aluminum, Total									
Chromium, Total	0.012	0.1	0.16	0.12	0.098	0.064	0.072	0.076	0.09
Iron, Total									
Dissolved Metals (mg/L)									
Chromium, Dissolved	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.013
Iron, Dissolved									
Inorganics (mg/L)									
Nitrate & Nitrite as N									
Nitrogen, Ammonia	44	37	96	94	80	81	89	37	85

Table 3. Summary of Surface Water Collected from the South Ditch October 6, 2000 through present
Imminent Hazard Evaluation
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ParameterName	NP-1 1170-NP1-2 2/15/01	NP-1 1170-NP1-3 2/23/01	NP-1 1170-SD-29 6/9/01	SD26-2 1170-SD26-2 6/5/01	SW11C 1170-SD26-3 6/5/01
Semivolatile Organics (mg/L)					
bis(2-EthylHexyl)phthalate					
Fluoranthene					
Total Metals (mg/L)					
Aluminum, Total					
Chromium, Total	0.11	0.12	0.11	3.2	0.16
Iron, Total					
Dissolved Metals (mg/L)					
Chromium, Dissolved	< 0.01	0.027	0.0064	1.7	< 0.01
Iron, Dissolved					
Inorganics (mg/L)					
Nitrate & Nitrite as N		1.8			
Nitrogen, Ammonia	34	74		290	250

Table 4. Summary of Surface Water Collected from the South Ditch on October 5-6, 2000
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	Frequency of Detection	MinSQL		MaxSQL	MinHit		MaxHit	Mean	EPC		NR1 [illegible] 10/5/00	NR1 [illegible] 10/6/00	SW11A [illegible] 10/5/00
Semiolatile Organics (mg/L)													
bis(2-EthylHexyl)phthalate	5 / 5		:		0.0025	-	0.0039	3.26E-03	3.26E-03	A	0.0034	0.0026	0.0025
Inorganics (mg/L)													
Chromium, Total	6 / 6		:		0.025	-	0.078	4.37E-02	4.37E-02	A			

Table 4. Summary of Surface Water Collected from the South Ditch on October 5-6, 2000
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	SW11B 1150-SD-SW11B 10/5/00	SW11B 97598-SWLOC-10 10/6/00	SW11C 1150-SD-SW11C 10/5/00	SW11C 97598-SWLOC-11 10/6/00	SW11E 1150-SD-SW11E 10/5/00	SW11E 97598-SWLOC-16 10/6/00	SWLOC-12 97598-SWLOC-12 10/6/00	SWLOC-9 97598-SWLOC-9 10/6/00
Semiolatile Organics (mg/L)								
bis(2-EthylHexyl)phthalate	0.0039	0.0039						
Inorganics (mg/L)								
Chromium, Total			0.035	0.04	0.048	0.036	0.078	0.025

Table 5. Summary of Sediment Collected from the South Ditch on September 17, 2001
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	Frequency of Detection			MinSQL		MaxSQL	MinHit		MaxHit	Mean	EPC	EPC Comment	SPC11 [illegible] 9/17/01	SPC11 [illegible] 9/17/01
Volatile Organics (mg/Kg)														
2,4,4-Trimethyl-1-pentene	3	/	21	0.19	:	0.79	0.34	-	2.8	3.71E-01	3.71E-01	A	< 0.39	< 0.45
2,4,4-Trimethyl-2-Pentene	1	/	21	0.19	:	0.79	1	-	1	2.49E-01	1.00E+00	M	< 0.39	< 0.45
Ethylbenzene	1	/	21	0.14	:	0.79	0.26	-	0.26	2.11E-01	2.60E-01	M	< 0.39	< 0.45
Semivolatile Organics (mg/Kg)														
Benzo(a)pyrene	4	/	21	0.5	:	23	1.2	-	3.4	3.93E+00	3.93E+00	A	< 0.5	< 15
Benzo(g,h,i)perylene	3	/	21	0.5	:	23	2.3	-	8.4	4.20E+00	4.20E+00	A	< 0.5	< 15
bis(2-EthylHexyl)phthalate	21	/	21		:		2.2	-	24827	3.25E+03	2.48E+04	M	15	102
Chrysene	1	/	21	0.5	:	23	1.7	-	1.7	3.66E+00	1.70E+00	M	< 0.5	< 15
Fluoranthene	2	/	21	0.5	:	23	2.6	-	34	5.26E+00	5.30E+00	A	< 0.5	< 15
Indeno (1,2,3-cd) pyrene	2	/	21	0.5	:	23	13	-	19	5.04E+00	5.04E+00	A	< 0.5	< 15
Inorganics (mg/Kg)														
Arsenic, Total	3	/	21	8	:	37	28	-	40	1.15E+01	1.15E+01	A	< 8	28
Barium, Total	20	/	21	19	:	19	10	-	90	3.36E+01	3.36E+01	A	31	40
Chromium, Total	21	/	21		:		140	-	21000	4.37E+03	2.10E+04	M	380	4000
Hexavalent Chromium, Total	5	/	21	0.75	:	2.5	10	-	28	5.44E+00	5.44E+00	A	11	< 2.1
Lead, Total	20	/	21	8	:	8	11	-	120	3.90E+01	3.90E+01	A	12	56
Mercury, Total	21	/	21		:		0.078	-	1.8	7.11E-01	7.10E-01	A	0.089	0.62
EPH (mg/Kg)														
C11-C22 Aromatics, Unadjusted	21	/	21		:		32	-	21000	6.00E+03	2.10E+04	M	41	820
C11-C22 Aromatics (FID)	21	/	21		:		30	-	21000	6.00E+03	2.10E+04	M	41	820
C19-C36 Aliphatics (PID)	21	/	21		:		39	-	16000	4.24E+03	1.60E+04	M	58	1300
C9-C18 Aliphatics (FID)	21	/	21		:		8.4	-	3100	8.01E+02	3.10E+03	M	9.5	270
EPH Concentration (Total)	21	/	21		:		77	-	39000	1.10E+04	3.90E+04	M	110	2400

Table 5. Summary of Sediment Collected from the South Ditch on September 17, 2001
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	SDC-2 1010-SED-SDC-2S 0-0.5 9/17/01	SDC-3 1010-SED-SDC-3D 0.5-1.3 9/17/01	SDC-3 1010-SED-SDC-3S 0-0.5 9/17/01	SDC-4 1010-SED-SDC-4D 0.5-1.8 9/17/01	SDC-4 1010-SED-SDC-4S 0-0.5 9/17/01	SDC-5 1010-SED-SDC-5D 0.5-1.3 9/17/01	SDC-5 1010-SED-SDC-5S 0-0.5 9/17/01
Volatile Organics (mg/Kg)							
2,4,4-Trimethyl-1-pentene	< 0.68	< 0.34	< 0.34	2.8	< 0.2	0.76	< 0.23
2,4,4-Trimethyl-2-Pentene	< 0.68	< 0.34	< 0.34	1	< 0.2	< 0.43	< 0.23
Ethylbenzene	< 0.68	< 0.34	< 0.34	< 0.14	< 0.2	< 0.43	< 0.23
Semivolatile Organics (mg/Kg)							
Benzo(a)pyrene	< 1.8	< 23	< 6.5	< 17	< 6.4	< 1.7	< 5.7
Benzo(g,h,i)perylene	< 1.8	< 23	< 6.5	< 17	< 6.4	< 1.7	< 5.7
bis(2-EthylHexyl)phthalate	105	24827	2620	16956	3119	3079	609
Chrysene	< 1.8	< 23	< 6.5	< 17	< 6.4	1.7	< 5.7
Fluoranthene	< 1.8	< 23	< 6.5	< 17	< 6.4	34	< 5.7
Indeno (1,2,3-cd) pyrene	< 1.8	< 23	< 6.5	< 17	< 6.4	19	< 5.7
Inorganics (mg/Kg)							
Arsenic, Total	35	< 9	< 10	< 8	< 10	< 27	< 8
Barium, Total	39	26	16	15	14	90	10
Chromium, Total	10000	5300	2300	4800	3600	2800	2700
Hexavalent Chromium, Total	< 2.4	27	< 1	< 2.2	< 0.9	< 1.2	< 0.84
Lead, Total	40	21	22	16	17	57	13
Mercury, Total	0.37	1.8	0.22	0.8	1.7	0.52	0.78
EPH (mg/Kg)							
C11-C22 Aromatics, Unadjusted	420	20000	4100	21000	9100	4400	5700
C11-C22 Aromatics (FID)	420	20000	4100	21000	9100	4400	5700
C19-C36 Aliphatics (PID)	450	16000	2800	11000	6800	2600	4600
C9-C18 Aliphatics (FID)	73	3100	480	2300	1200	590	740
EPH Concentration (Total)	950	39000	7400	35000	17000	7500	11000

Table 5. Summary of Sediment Collected from the South Ditch on September 17, 2001
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	SDC-6 1010-SED-SDC-6D 0.5-1.4 9/17/01	SDC-6 1010-SED-SDC-6S 0-0.5 9/17/01	SDC-7 1010-SED-SDC-7D 0.5-1.1 9/17/01	SDC-7 1010-SED-SDC-7S 0-0.5 9/17/01	SDC-8 1010-SED-SDC-8D 0.5-1.1 9/17/01	SDC-8 1010-SED-SDC-8S 0-0.5 9/17/01	SDF-1 1010-SED-SDF-1S 0-0.5 9/17/01
Volatile Organics (mg/Kg)							
2,4,4-Trimethyl-1-pentene	0.34	< 0.19	< 0.2	< 0.71	< 0.34	< 0.47	< 0.47
2,4,4-Trimethyl-2-Pentene	< 0.24	< 0.19	< 0.2	< 0.71	< 0.34	< 0.47	< 0.47
Ethylbenzene	0.26	< 0.19	< 0.2	< 0.71	< 0.34	< 0.47	< 0.47
Semivolatile Organics (mg/Kg)							
Benzo(a)pyrene	< 11	< 7.6	< 0.5	< 15	< 19	< 12	< 2.6
Benzo(g,h,i)perylene	< 11	< 7.6	< 0.5	< 15	< 19	< 12	< 2.6
bis(2-EthylHexyl)phthalate	5228	4092	13	2534	3958	605	216
Chrysene	< 11	< 7.6	< 0.5	< 15	< 19	< 12	< 2.6
Fluoranthene	< 11	< 7.6	< 0.5	< 15	< 19	< 12	2.6
Indeno (1,2,3-cd) pyrene	< 11	< 7.6	< 0.5	< 15	< 19	< 12	13
Inorganics (mg/Kg)							
Arsenic, Total	< 8	< 12	< 8	< 23	< 20	< 19	< 37
Barium, Total	22	14	56	73	17	< 19	65
Chromium, Total	3300	3000	140	6200	3000	4500	21000
Hexavalent Chromium, Total	< 0.8	< 1	< 0.75	< 2	10	< 2.1	28
Lead, Total	< 8	16	11	43	14	27	120
Mercury, Total	0.48	0.65	0.078	0.75	1.2	0.77	1.4
EPH (mg/Kg)							
C11-C22 Aromatics, Unadjusted	11000	8300	73	8300	17000	6500	7500
C11-C22 Aromatics (FID)	11000	8300	73	8300	17000	6500	7500
C19-C36 Aliphatics (PID)	5500	5400	47	7400	13000	4900	4900
C9-C18 Aliphatics (FID)	1200	1100	11	1300	2500	900	780
EPH Concentration (Total)	18000	15000	130	17000	32000	12000	13000

Table 5. Summary of Sediment Collected from the South Ditch on September 17, 2001
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	SDF-2 1010-SED-SDF-2S 0-0.5 9/17/01	SDF-3 1010-SED-SDF-3S 0-0.5 9/17/01	SDF-4 1010-SED-SDF-4S 0-0.5 9/17/01	SDF-5 1010-SED-SDF-5S 0-0.5 9/17/01	SDF-6 1010-SED-SDF-6S 0-0.5 9/17/01
Volatile Organics (mg/Kg)					
2,4,4-Trimethyl-1-pentene	< 0.56	< 0.72	< 0.79	< 0.3	< 0.4
2,4,4-Trimethyl-2-Pentene	< 0.56	< 0.72	< 0.79	< 0.3	< 0.4
Ethylbenzene	< 0.56	< 0.72	< 0.79	< 0.3	< 0.4
Semivolatile Organics (mg/Kg)					
Benzo(a)pyrene	< 2.2	2.2	3.4	1.2	2
Benzo(g,h,i)perylene	2.3	< 0.8	< 1.2	3.9	8.4
bis(2-EthylHexyl)phthalate	106	2.2	20	7	6.9
Chrysene	< 2.2	< 0.8	< 1.2	< 1.1	< 1.3
Fluoranthene	< 2.2	< 0.8	< 1.2	< 1.1	< 1.3
Indeno (1,2,3-cd) pyrene	< 2.2	< 0.8	< 1.2	< 1.1	< 1.3
Inorganics (mg/Kg)					
Arsenic, Total	40	< 12	< 18	< 18	< 21
Barium, Total	23	19	52	52	23
Chromium, Total	12000	310	1700	300	400
Hexavalent Chromium, Total	26	< 1.1	< 1.7	< 1.7	< 2.5
Lead, Total	85	62	85	52	45
Mercury, Total	1.5	0.24	0.41	0.33	0.23
EPH (mg/Kg)					
C11-C22 Aromatics, Unadjusted	1400	32	85	140	100
C11-C22 Aromatics (FID)	1400	30	81	130	92
C19-C36 Aliphatics (PID)	1800	39	110	190	110
C9-C18 Aliphatics (FID)	200	8.4	16	17	17
EPH Concentration (Total)	3400	77	200	340	210

Table 6. Flocculent Data
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

ParameterName	Sample ID						
	FLOC #1	FLOC #2	FLOC #3	FLOC #4	FLOC #5	FLOC RP-2	FLOC WF-2
Inorganics (mg/kg)							
Aluminum						70000	77000
Barium						32	4600
Beryllium						6.7	6.1
Cadmium						2.8	0.6
Calcium						950	2700
Chloride						210	
Chromium	19000	7400	18000	930	5200	35000	2500
Cobalt						15	1.8
Copper						270	25
Iron						180000	26000
Magnesium						1100	380
Manganese						85	46
Nickel						18	8.8
Potassium						560	2800
Silica as SiO2						6200	1200
Sodium						400	8700
Sulfate as SO4						740	
Vanadium						81	11
Zinc						110	3400

Table 7. Exposure Parameters
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

PARAMETER	SYMBOL	UNITS	RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER VALUE	SOURCE	ADULT TRESPASSER VALUE	SOURCE	CHILD TRESPASSER VALUE	SOURCE
SURFACE WATER								
CONCENTRATION OF CPC	[OHM]sw	mg/l	chemical-specific		chemical-specific		chemical-specific	
SURFACE WATER INGESTION RATE	IRsw	l/day	0.02	Assumption (1)	0.01	Assumption (1)	0.01	Assumption (1)
SKIN SURFACE AREA	SA	cm^2	3900	per MADEP, 1995	10000	per MADEP, 1995	6578	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	cm/hr	chemical-specific		chemical-specific		chemical-specific	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	unitless	chemical-specific		chemical-specific		chemical-specific	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	unitless	chemical-specific		chemical-specific		chemical-specific	
BODY WEIGHT	BW	kg	70	per MADEP, 1995	70	per MADEP, 1995	42	per MADEP, 1995
EXPOSURE TIME	ET	hr/event	4	Assumption	2	Assumption	2	Assumption
EXPOSURE FREQUENCY [1]	EF	event/yr	15	Assumption	15	Assumption	15	Assumption
EXPOSURE DURATION	ED	yr	5	Assumption	5	Assumption	5	Assumption
AVERAGING TIME CANCER	AT	yr	75	MADEP, 1995	75	MADEP, 1995	75	MADEP, 1995
AVERAGING TIME NONCANCER	AT	yr	5	per MADEP, 1995	5	per MADEP, 1995	5	per MADEP, 1995
CONVERSION FACTOR 1	CF1	l/cm^3	0.001		0.001		0.001	
CONVERSION FACTOR 2	CF2	day/yr	365		365		365	
SEDIMENT								
CONCENTRATION OF CPC	[OHM]sed	mg/kg	chemical-specific		chemical-specific		chemical-specific	
SEDIMENT INGESTION RATE	IR s	mg/day	50	MADEP, 1995	50	MADEP, 1995	50	MADEP, 1995
SKIN SURFACE AREA	SA	cm^2/day	3900	per MADEP, 1995	6305	per MADEP, 1995	4521	per MADEP, 1995
ADHERENCE FACTOR	AF	mg/cm^2	0.51	MADEP, 1995	0.51	MADEP, 1995	0.51	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	unitless	chemical-specific		chemical-specific		chemical-specific	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	unitless	chemical-specific		chemical-specific		chemical-specific	
AREA WEIGHTING FACTOR	AWF	unitless	1		1		1	
BODY WEIGHT	BW	kg	70	MADEP, 1995	70	MADEP, 1995	42	MADEP, 1995
EXPOSURE FREQUENCY	EF	day/yr	15	Assumption	15	Assumption	15	Assumption
EXPOSURE DURATION	ED	yr	5	Assumption	5	Assumption	5	Assumption
AVERAGING TIME CANCER	AT	yr	75	MADEP, 1995	75	MADEP, 1995	75	MADEP, 1995
AVERAGING TIME NONCANCER	AT	yr	5	per MADEP, 1995	5	per MADEP, 1995	5	per MADEP, 1995
CONVERSION FACTOR 1	CF1	kg/mg	0.000001		0.000001		0.000001	
CONVERSION FACTOR 2	CF2	day/yr	365		365		365	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]sw \times IRsw \times RAF\text{-}O \times EF \times ED}{BW \times AT \times CF2}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]sw \times SA \times Kp \times RAF\text{-}D \times ET \times EF \times ED \times CF1}{BW \times AT \times CF2}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]sed \times IR\ s \times RAF\text{-}O \times AWF \times EF \times ED \times CF1}{BW \times AT \times CF2}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]sed \times SA \times AF \times RAF\text{-}D \times AWF \times EF \times ED \times CF1}{BW \times AT \times CF2}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Notes:

Assumption (1) - 1/10th the value for swimming (50 ml per hour).

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.

Table 8. Summary of Human Health Risks
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

Exposure Scenario	Pre or Post Incident	Medium	Concentration	Exposure Route	HI	ELCR
Commercial/Industrial Worker		Sediment	MAX	Ingestion/Dermal	0.2	2.E-06
	Pre-Incident	Surface Water	MAX	Ingestion/Dermal	0.002	4.E-09
				Total Receptor Risk	**0.2**	**2.E-06**
Commercial/Industrial Worker		Sediment	MAX	Ingestion/Dermal	0.2	2.E-06
	Post-Incident	Surface Water	MAX	Ingestion/Dermal	0.003	4.E-10
				Total Receptor Risk	**0.2**	**2.E-06**
Commercial/Industrial Worker		Sediment	EPC	Ingestion/Dermal	0.2	1.E-06
	Pre-Incident	Surface Water	EPC	Ingestion/Dermal	0.0009	7.E-10
				Total Receptor Risk	**0.2**	**1.E-06**
Commercial/Industrial Worker		Sediment	EPC	Ingestion/Dermal	0.2	1.E-06
	Post-Incident	Surface Water	EPC	Ingestion/Dermal	0.0007	1.E-10
				Total Receptor Risk	**0.20**	**1.E-06**
Child Trespasser		Sediment	MAX	Ingestion/Dermal	0.5	3.E-06
	Pre-Incident	Surface Water	MAX	Ingestion/Dermal	0.002	4.E-09
				Total Receptor Risk	**0.5**	**3.E-06**
Child Trespasser		Sediment	MAX	Ingestion/Dermal	0.5	3.E-06
	Post-Incident	Surface Water	MAX	Ingestion/Dermal	0.002	4.E-10
				Total Receptor Risk	**0.5**	**3.E-06**
Child Trespasser		Sediment	EPC	Ingestion/Dermal	0.4	3.E-06
	Pre-Incident	Surface Water	EPC	Ingestion/Dermal	0.0008	7.E-10
				Total Receptor Risk	**0.4**	**3.E-06**
Child Trespasser		Sediment	EPC	Ingestion/Dermal	0.4	3.E-06
	Post-Incident	Surface Water	EPC	Ingestion/Dermal	0.0006	1.E-10
				Total Receptor Risk	**0.4**	**3.E-06**

Table 8. Summary of Human Health Risks
Imminent Hazard Evaluation
51 Eames Street
Wilmington, Massachusetts

Exposure Scenario	Pre or Post Incident	Medium	Concentration	Exposure Route	HI	ELCR
Adult Trespasser		Sediment	MAX	Ingestion/Dermal	0.4	2.E-06
	Pre-Incident	Surface Water	MAX	Ingestion/Dermal	0.001	3.E-09
				Total Receptor Risk	**0.4**	**2.E-06**
Adult Trespasser		Sediment	MAX	Ingestion/Dermal	0.4	2.E-06
	Post-Incident	Surface Water	MAX	Ingestion/Dermal	0.001	3.E-10
				Total Receptor Risk	**0.4**	**2.E-06**
Adult Trespasser		Sediment	EPC	Ingestion/Dermal	0.4	2.E-06
	Pre-Incident	Surface Water	EPC	Ingestion/Dermal	0.0005	5.E-10
				Total Receptor Risk	**0.4**	**2.E-06**
Adult Trespasser		Sediment	EPC	Ingestion/Dermal	0.4	2.E-06
	Post-Incident	Surface Water	EPC	Ingestion/Dermal	0.0004	1.E-10
				Total Receptor Risk	**0.4**	**2.E-06**

NC = No OHM that are potentially carcinogenic via this exposure route were detected at the exposure point.
ND = no toxicity data for OHM are available.
HI = Hazard Index
ELCR = Excess Lifetime Cancer Risk

APPENDIX A
DOSE RESPONSE DATA

TABLE A-1
ORAL DOSE-RESPONSE DATA
FOR CARCINOGENIC EFFECTS

MADEP CRITERIA

Compound	Chemical Group	Weight of Evidence	Oral Slope Factor (mg/kg/day)		Test Species	Study Type	Tumor Type	Source
BASE NEUTRAL COMPOUNDS								
Benzo(a)pyrene	B	B2	7.3E+00		Mouse	Oral-diet	Forestomach	IRIS
Benzo(g,h,i)perylene	B	D						IRIS
Bis (2-ethylhexyl) phthalate (BEHP)	B	B2	1.4E-02		Mouse	Oral-diet	Liver	IRIS
Chrysene	B	B2	7.3E-03	**				NCEA
Fluoranthene	B	D						IRIS
Indeno(1,2,3-cd)pyrene	B	B2	7.3E-01	**				NCEA
INORGANICS/METALS								
Aluminum	I/M	ND						
Arsenic	I/M	A	1.5E+00		Human	Oral-DW	Skin	IRIS
Barium	I/M	ND						
Calcium	I/M	ND						
Chromium III	I/M	ND						
Chromium VI	I/M	ND						
Chloride	I/M	ND						
Iron	I/M	ND						
Magnesium	I/M	ND						
Manganese (drinking water)	I/M	D						
Manganese (food)	I/M	D						
Manganese (soil)	I/M	D						IRIS
Mercury-Inorganic (as mercuric chloride)	I/M	C	ND					IRIS
Nitrate	I/M	ND						
Nitrite	I/M	ND						
Nitrogen, ammonia	I/M	ND						
Potassium	I/M	ND						
Sodium	I/M	ND						
Strontium	I/M	ND						
Sulfates as SO4	I/M	ND						
VOLATILES								
2,4,4-Trimethyl-1-pentene	V	ND						
2,4,4-Trimethyl-2-pentene	V	ND						
Ethylbenzene	V	D						IRIS
TPH								
EPH								
C9-C18 Aliphatics	B	D						MADEP
C19-C36 Aliphatics	B	D						MADEP
C10-C22 Aromatics	B	D						MADEP

TABLE A-1
ORAL DOSE-RESPONSE DATA
FOR CARCINOGENIC EFFECTS

MADEP CRITERIA

NOTES:
ND - Not determined/No data
DW - Drinking water
mg - milligram
kg - kilogram
IRIS - Integrated Risk Information System
HEAST - Health Effects Assessment Summary Tables
MADEP - Massachusetts Department of Environmental Protection
"Background Documentation for the Development of the MCP Numerical Standards" April, 1994
CA EPA - California Environmental Protection Agency
"California Environmental Protection Agency Criteria for Carcinogens" November, 1994
NCEA - National Center for Environmental Assessment
USEPA Region III Risk Based Concentrations, April 12, 1999.

Sources (in order used, per MADEP, 1995):
IRIS as of 11/98
HEAST, 1997
CA EPA, 1994
MADEP, 1994
NCEA, date varies

Chemical Groups:
A - Acid extractable
B - Base neutral extractable
I/M - Inorganic/Metal
P - Pesticide
V - Volatile
W - Waste

** - Slope Factor for Benzo(a)Pyrene used for other carcinogenic PAHs, adjusted by Relative Potency Factors of 1.0 [benzo(a)pyrene, dibenz(a,h)anthracene]; 0.1 [benzo(a)anthracene, benzo(b)flouoranthene, indeno(1,2,3-c,d)pyrene]; 0.01 [benzo(k)fluoranthene]; 0.001 [chrysene].

Weight of Evidence (Route-Specific):
A - Human carcinogen
B - Probable human carcinogen
  B1 - limited evidence of cancer in humans
  B2 - sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans
C - Possible human carcinogen
D - Not classifiable as to human carcinogenicity
E - Evidence of lack of carcinogenicity to humans

TABLE A-2
ORAL DOSE-RESPONSE DATA
FOR NONCARCINOGENIC EFFECTS

MADEP CRITERIA

Compound	CHEMICAL SOURCE	CHRONIC ORAL RfD (mg/kg-day)		SUBCHRONIC ORAL RfD[1] (mg/kg-day)		STUDY TYPE	CONFIDENCE LEVEL	CRITICAL EFFECT	TEST ANIMAL	UNCERTAINTY FACTOR	SOURCE
BASE NEUTRAL COMPOUNDS											
Benzo(a)pyrene	B	3.0E-02	*	3.0E-01	*						IRIS
Benzo(g,h,i)perylene	B	3.0E-02	*	3.0E-01	*						IRIS
Bis (2-ethylhexyl) phthalate (BEHP)	B	2.0E-02		2.0E-02	(W1)	Oral-diet	Medium	Increased liver weight	Guinea Pig	1000 H,A,S	IRIS, MADEP
Chrysene	B	3.0E-02	*	3.0E-01	*						IRIS
Fluoranthene	B	4.0E-02		4.0E-01		Oral-gavage	Medium	Increased liver weight	Mouse	3,000 H,A,S	IRIS
Indeno(1,2,3-cd)pyrene	B	3.0E-02	*	3.0E-01	*						IRIS
INORGANICS/METALS											
Aluminum	I/M	(N5)		ND							NCEA
Arsenic	I/M	3.0E-04		3.0E-04		Oral-DW	Medium	Keratosis and hyperpigmentation	Human	3 H	IRIS
Barium	I/M	7.0E-02		7.0E-02		Oral-DW	Medium	Increased blood pressure	Human	3 H	IRIS
Calcium	I/M	ND									
Chromium III	I/M	1.5E+00		1.5E+00		Oral-diet	Low	No effects observed	Rat	100 H,A; 10 M	IRIS
Chromium VI	I/M	3.0E-03		2.0E-02		Oral-DW	Low	No effects observed	Rat	300 H,A,S	IRIS
Chloride	I/M	ND									
Iron	I/M	(N6)		ND							NCEA
Magnesium	I/M	ND									
Manganese (drinking water)	I/M	4.7E-02	I	ND						1,3 M	IRIS
Manganese (food)	I/M	1.4E-01		1.4E-01		Oral-diet	Medium	No effects observed	Human	1,1 M	IRIS
Manganese (soil)	I/M	4.7E-02	II	ND						1.3 M	IRIS
Mercury-Inorganic (as mercuric chloride)	I/M	3.0E-04		3.0E-03		Oral-diet	High	Autoimmune effects	Rat	1,000 H,A,S,L	IRIS
Nitrate	I/M	1.6E+00		ND		Oral-DW	High	Early clinical signs of methemoglobinemia	Human	1	IRIS
Nitrite	I/M	1.0E-01		1.0E-01		Oral-DW	High	Early clinical signs of methemoglobinemia	Human	1	IRIS
Nitrogen, ammonia	I/M	9.7E-01	***	9.7E-01	***	Oral-DW	ND	Organoleptic effects	Human	1	HEAST
Potassium	I/M	ND									
Sodium	I/M	ND									
Strontium	I/M	6.0E-01		ND		Oral-diet	Medium	Rachitic bones	Rat	300 H,A,D	IRIS
Sulfates as SO4	I/M	1.4E+01	**	ND		Oral-DW	ND	Laxative effects			USEPA
VOLATILES											
2,4,4-Trimethyl-1-pentene	V	2.1E-02		ND		Oral-gavage	ND	Hepatic changes	Rat	10,000 H,A,L,S	HLA
2,4,4-Trimethyl-2-pentene	V	2.1E-02		ND		Oral-gavage	ND	Hepatic changes	Rat	10,000 H,A,L,S	HLA
Ethylbenzene	V	1.0E-01		1.0E+00	(W1)	Oral-gavage	Low	Liver and kidney toxicity	Rat	1,000 H,A,S	IRIS, MADEP
EPH											
C9-C18 Aliphatics	B	6.0E-01	@@@	6.0E+00	@@@	ND		ND			MADEP (2)
C19-C36 Aliphatics	B	6.0E+00	@@@	6.0E+01	@@@	ND		ND			MADEP (2)
C10-C22 Aromatics	B	3.0E-02	*	3.0E-01	*	ND		ND			IRIS, MADEP (2)

TABLE A-2
ORAL DOSE-RESPONSE DATA
FOR NONCARCINOGENIC EFFECTS

MADEP CRITERIA

NOTES:
ND - No data available
W - RfD withdrawn from IRIS/HEAST
mg - milligram
kg - kilogram
DW - Drinking Water
IRIS - Integrated Risk Information System
HEAST - Health Effects Assessment Summary Tables
USEPA - United States Environmental Protection Agency (Office of Water; "Drinking Water Regulations and Health Advisories"; October, 1996))
NCEA - National Center for Environmental Assessment (formerly ECAO)
ATSDR - Agency for Toxic Substances Disease Registry (Toxicological Profiles; chemical-specific)
MADEP - Massachusetts Department of Environmental Protection
"Background Documentation for the Development of the MCP Numerical Standards" April, 1994
MADEP(2) - "Interim Final Petroleum Report: Development of Health-Based Alternative to the Total Petroleum Hydrocarbon (TPH) Parameter (1994)" and Revisions to the MCP - 10/31/97.

[1] - Source for all subchronic RfDs is HEAST (1997) if chronic RfD is from IRIS or HEAST (1997), unless otherwise indicated.
* RfD for pyrene is used as surrogate for PAHs without assigned RfD
This value was also used for the aromatics EPH and VPH fractions, per MADEP 1997
I RfD for manganese in food divided by modifying factor of 3, as recommended in IRIS
II RfD for manganese in food divided by modifying factor of 3, as recommended in IRIS
'' Value is the proposed MCL (500mg/L), converted to a dose (2 L/day x 500 mg/L / 70 Kg)
''' Value is the drinking water value (34 mg/L), converted to a dose (2L/day x 34 mg/L / 70 Kg): not a health-based value
@@@ Value based on n-hexane, per MADEP, 1997

W1 = Value was withdrawn from HEAST in FY 1993 update.

SOURCES (in order used, per MADEP, 1995):
IRIS as of 11/98; chronic RfDs
HEAST, FY 1997; chronic and subchronic RfDs
MADEP, 1994; MADEP (2); RfDs
ATSDR (chemical-specific); Minimum Risk Levels (MRLs)
USEPA; RfDs
NCEA; RfDs

Uncertainty factors:
H - variation in human sensitivity
A - animal to human extrapolation
S - extrapolation from subchronic to chronic NOAEL
L - extrapolation from LOAEL to NOAEL
N - NOEL not attained
D - Lack of supporting data
M - additional modifying factor

Chemical Group:
A - Acid extractable
B - Base neutral extractable
I/M - Inorganic/Metal
P - Pesticide
V - Volatile
W - Waste
X - Other

TABLE A-3
INHALATION DOSE-RESPONSE DATA
FOR CARCINOGENI EFFECTS

MADEP CRITERIA

Compound	Chemical Group	Weight of Evidence	Inhalation Slope Factor* (mg/kg/day)⁻¹		Unit Risk (µg/m³)⁻¹		Test Species	Study Type	Tumor Type	Source
BASE NEUTRAL COMPOUNDS										
Benzo(a)pyrene	B	B2	3.9E+00	(N2)(W2)	1.1E-03		Hamster	Inhalation	Respiratory tract	CA EPA
Benzo(g,h,i)perylene	B	D								IRIS
Bis (2-ethylhexyl) phthalate (BEHP)	B	B2	8.4E-03	(N3)	2.4E-06		Mouse	Oral-diet	Liver	CA EPA
Chrysene	B	B2	3.9E-03	**	1.1E-06	**				CA EPA
Fluoranthene	B	D								IRIS
Indeno(1,2,3-cd)pyrene	B	B2	3.9E-01	**	1.1E-04	**				CA EPA
INORGANICS/METALS										
Aluminum	I/M	ND								
Arsenic	I/M	A	1.5E+01	(W1)	4.3E-03		Human	Inhalation	Lung	IRIS
Barium	I/M	ND								
Calcium	I/M	ND								
Chromium III	I/M	ND								
Chromium VI	I/M	A	4.1E+01		1.2E-02		Human	Inhalation	Lung	IRIS
Chloride	I/M	ND								
Iron	I/M	ND								
Magnesium	I/M	ND								
Manganese (drinking water)	I/M	D								
Manganese (food)	I/M	D								
Manganese (soil)	I/M	D								IRIS
Mercury-Inorganic (as mercuric chloride)	I/M	C	ND		ND					IRIS
Nitrate	I/M	ND								
Nitrite	I/M	ND								
Nitrogen, ammonia	I/M	ND								
Potassium	I/M	ND								
Sodium	I/M	ND								
Strontium	I/M	ND								
Sulfates as SO4	I/M	ND								
VOLATILES										
2,4,4-Trimethyl-1-pentene	V	ND								
2,4,4-Trimethyl-2-pentene	V	ND								
Ethylbenzene	V	D								IRIS
EPH										
C9-C18 Aliphatics	B	D								MADEP
C19-C36 Aliphatics	B	D								MADEP
C10-C22 Aromatics	B	D								MADEP

TABLE A-3
INHALATION DOSE-RESPONSE DATA
FOR CARCINOGENI EFFECTS

MADEP CRITERIA

NOTES:
ND - Not determined/No data
DW - Drinking water
µg - microgram
mg - milligram
kg - kilogram
IRIS - Integrated Risk Information System
HEAST - Health Effects Assessment Summary Tables
MADEP - Massachusetts Department of Environmental Protection
"Background Documentation for the Development of the MCP Numerical Standards" April, 1994
CA EPA - California Environmental Protection Agency
"California Environmental Protection Agency Criteria for Carcinogens" November, 1994
NCEA - National Center for Environmental Assessment

** Slope factor for benzo(a)pyrene used for other carcinogenic PAHs, adjusted by Relative Potency Factors of 1.0 [benzo(a)pyrene, dibenz(a,h)anthracene]; 0.1 [benzo(a)anthracene, benzo(b)flouoranthene, indeno(1,2,3-cd)pyrene]; 0.01 [benzo(k)fluoranthene]; 0.001 [chrysene].

W1 = Value was withdrawn from HEAST in FY 1997 update
W2 = Value of 6.1E+00 was withdrawn from HEAST in FY 1993 update

N2 = An NCEA provisional regional support value of 3.1E+00 has been published in Region III RBC Table MADEP does not recommend the use of this value.
N3 = An NCEA provisional regional support value of 1.4E-02 has been published in Region III RBC Table. MADEP does not recommend the use of this value.

Sources (in order used, per MADEP, 1995).
IRIS as of 11/98
HEAST, 1997 (including July updates)
CA EPA, 1994
MADEP, 1994
NCEA, date varies

Chemical Groups:
A - Acid extractable
B - Base neutral extractable
I/M - Inorganic/Metal
P - Pesticide
V - Volatile
W - Waste

Weight of Evidence (Route-Specific):
A - Human carcinogen
B - Probable human carcinogen
B1 - limited evidence of cancer in humans
B2 - sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans
C - Possible human carcinogen
D - Not classifiable as to human carcinogenicity
E - Evidence of lack of carcinogenicity to humans

TABLE A-4
INHALATION DOSE-RESPONSE DATA
FOR NON-CARCINOGENIC EFFECTS

MADEP CRITERIA

COMPOUND	CHEMICAL GROUP	CHRONIC INHALATION RfC (mg/m(3))		SUBCHRONIC[1] INHALATION RfC (mg/m(3))	CHRONIC INHALATION RfD[2] (mg/kg-day)		SUBCHRONIC INHALATION RfD[2] (mg/kg-day)		STUDY TYPE	CONFIDENCE LEVEL	CRITICAL EFFECT	TEST ANIMAL	UNCERTAINTY FACTOR	SOURCE
BASE NEUTRAL COMPOUNDS														
Benzo(a)pyrene	B	3.0E-03	~	ND	ND		ND							MADEP
Benzo(g,h,i)perylene	B	3.0E-03	~	ND	ND		ND							MADEP
Bis (2-ethylhexyl) phthalate (BEHP)	B	7.0E-03		ND	ND		ND							MADEP
Chrysene	B	3.0E-03	~	ND	ND		ND							MADEP
Fluoranthene	B	3.0E-03	~	ND	ND		ND							MADEP
Indeno(1,2,3-cd)pyrene	B	3.0E-03	~	ND	ND		ND							MADEP
INORGANICS/METALS														
Aluminum	I/M	ND		ND	ND	(N1)	ND							
Arsenic	I/M	2.5E-06		ND	ND		ND							ATC
Barium	I/M	5.0E-04		5.0E-03	1.0E-04	[3]	1.0E-04	[3]	Inhalation	Low	Fetotoxicity	Rat	1,000 H,A,S	HEAST
Calcium	I/M	ND		ND	ND		ND							
Chromium III	I/M	6.8E-03		ND	ND		ND							ATC
Chromium VI	I/M	1.0E-04	[5]	ND	2.9E-05		ND		Inhalation	Medium	Increase in Lactate Dehydogenase	Rat	300 H, S, A	IRIS
Chloride	I/M	ND		ND	ND		ND							
Iron	I/M	ND		ND	ND		ND							
Magnesium	I/M	ND		ND	ND		ND							
Manganese (drinking water)	I/M	5.0E-05												
Manganese (food)	I/M	5.0E-05												
Manganese (soil)	I/M	5.0E-05		ND	ND		ND		Inhalation	Medium	Neurobehavioral impairment	Human	1000 H,L,D	IRIS
Mercury-Inorganic (as elemental mercury)	I/M	3.0E-04		3.0E-04	ND		ND		Inhalation	Low	Neurotoxicity	Human	30 H,D	HEAST
Nitrate	I/M	ND		ND	ND		ND							
Nitrite	I/M	ND		ND	ND		ND							
Nitrogen, ammonia	I/M	1.0E-01		1.0E-01	ND		ND		Inhalation	Medium	Lack of respiratory effects	Human	30 H,D	IRIS
Potassium	I/M	ND		ND	ND		ND							
Sodium	I/M	ND		ND	ND		ND							
Strontium	I/M	ND		ND	ND		ND							
Sulfates as SO4	I/M	ND		ND	ND		ND							
VOLATILES														
2,4,4-Trimethyl-1-pentene	V	7.2E-02		ND	2.1E-02		ND							HLA [6]
2,4,4-Trimethyl-2-pentene	V	7.2E-02		ND	2.1E-02		ND							HLA [6]
Ethylbenzene	V	1.0E+00		ND	ND		ND		Inhalation	Low	Developmental toxicity	Rat/Rabbit	300 H,A,S	IRIS
EPH														
C9-C18 Aliphatics	B	2.0E+00		ND	5.7E-01		ND							MADEP (2)
C19-C36 Aliphatics	B	ND		ND	ND		ND							MADEP (2)
C10-C22 Aromatics	B	7.1E-02		ND	2.0E-02		ND							MADEP (2)

TABLE A-4
INHALATION DOSE-RESPONSE DATA
FOR NON-CARCINOGENIC EFFECTS

MADEP CRITERIA

NOTES.
ND - No data available
W - RfD withdrawn from IRIS/HEAST
mg - milligram
kg - kilogram
µg - microgram

DW - Drinking Water
IRIS - Integrated Risk Information System
HEAST - Health Effects Assessment Summary Tables
ATSDR - Agency for Toxic Substances Disease Registry (Toxicological Profiles; chemical-specific)
MADEP - Massachusetts Department of Environmental Protection

~Value for napthalene is used as surrogate for PAHs without assigned RfCs.
[3] - HEAST Table 2: Alternate Methods; RfD calculated from RfC by HEAST
[5] Value for chromium VI particulates; value for chromium VI as dissolved chromium VI aerosols or chromic acid mists is 8E-6 mg/m^3
N1 = An NCEA provisional regional support value of 1.0E-03 has been published in Region III RBC Table. MADEP does not recommend the use of this value.

"Background Documentation for the Development of the MCP Numerical Standards" April, 1994
ATC - Ambient Threshold Concentration. Calculated from Threshold Effects Exposure Limits (TELs) provided in "Massachusetts Threshold Effects Exposure Limits and Allowable Ambient Limits for Ambient Air" (December, 1995). ATC calculated as follows: TEL (ug/m3) x 5 x 0.001 mg/ug
MADEP(2) - "Interim Final Petroleum Report: Development of Health-Based Alternative to the Total Petroleum Hydrocarbon (TPH) Parameter (1994)" and Revisions to the MCP - 10/31/97.
NCEA - National Center for Environmental Assessment

SOURCES (in order used, per MADEP, 1995).
IRIS as of 10/2000; chronic RfCs
HEAST, FY 1997; chronic and subchronic RfCs and RfDs
MADEP, 1994; RfDs; MADEP (2); RfDs
ATSDR (chemical-specific), Minimum Risk Levels (MRLs)
MADEP TEL, ATCs
NCEA, RfDs

Uncertainty factors:
H - variation in human sensitivity
A - animal to human extrapolation
S - extrapolation from subchronic to chronic NOAEL
L - extrapolation from LOAEL to NOAEL
N - NOEL not attained
D - Lack of supporting data
M - additional modifying factor

Chemical Group:
A - Acid extractable
B - Base neutral extractable
I/M - Inorganic/Metal
P - Pesticide
V - Volatile
W - Waste
X - Other

TABLE A-5
RELATIVE ABSORPTION FACTORS
FOR CARCINOGENIC EFFECTS

		SITE OF EXPOSURE [a]					STUDY EXPOSURE ROUTE [a]						RAF - CANCER						
ANALYTE	CHEMICAL TYPE	Soil Ingestion	Soil Dermal Contact	Water Ingestion	Water Dermal Contact	Produce Ingestion	Gavage	Drinking Water	Dietary (food)	Injection	Inhalation	Dermal Contact	Dose-response Study Type [b]	Soil Cancer Oral	Soil Cancer Dermal	Water Cancer Oral	Water Cancer Dermal	Produce Ingestion Oral	RAF Source [c]
BASE NEUTRAL COMPOUNDS																			
Benzo(a)pyrene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	D	1	0.04	1	1.05	NA	MADEP, 1994
Benzo(g,h,i)perylene	B												NC						
Bis(2-ethylhexyl)phthalate (BEHP)	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	D	1	0.02	1	1.05	NA	MADEP, 1994
Chrysene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	D	1	0.04	1	1.05	NA	MADEP, 1994
Fluoranthene	B												NC						
Indeno(1,2,3-cd)pyrene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	D	1	0.04	1	1.05	NA	MADEP, 1994
INORGANICS/METALS																			
Aluminum	I/M												NA						
Arsenic	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	1	0.03	1	1.82	NA	MADEP, 1994
Barium	I/M												NA						
Calcium	I/M												NA						
Chromium III	I/M												NA						
Chromium VI	I/M												NA						
Chloride	I/M												NA						
Iron	I/M												NA						
Magnesium	I/M												NA						
Manganese (drinking water)	I/M												NC						
Manganese (food)	I/M												NC						
Manganese (soil)	I/M												NC						
Mercury-Inorganic (as Mercuric chloride)	I/M												ND						
Nitrate	I/M												NA						
Nitrite	I/M												NA						
Nitrogen, Ammonia	I/M												NA						
Potassium	I/M												NA						
Sodium	I/M												NA						
Strontium	I/M												NA						
Sulfates as SO4	I/M												NA						
VOLATILES																			
2,4,4-Trimethyl-1-pentene	V												NA						
2,4,4-Trimethyl-2-pentene	V												NA						
Ethylbenzene	V												NC						
EPH																			
C9-C18 Aliphatics	B												NA						
C19-C36 Aliphatics	B												NA						
C10-C22 Aromatics	B												NA						

TABLE A-5
RELATIVE ABSORPTION FACTORS
FOR CARCINOGENIC EFFECTS

NOTES:

NC = Not carcinogenic
NA = Not available
ND = Analyte is a potential carcinogen, but dose-response data are not available.
W = Drinking water
G = Gavage
D = Dietary/food
I = Inhalation
IV = Injection
DC= Dermal contact
RAF = Relative absorption factor
VOC = Volatile organic compound
SVOC = Semivolatile organic compound

SOURCES:

MADEP, 1994: Background Documentation for the Development of the MCP Numerical Standards (April, 1994). RAFs are those provided in Table 2-1 of this document, and were not calculated by ABB-ES.
MADEP, 1995: Guidance for Disposal Site Risk Characterization, Appendix B, Section K "Absorption Efficiency".

[a] Source is MADEP, 1995, unless otherwise noted.
[b] Study type for which the dose-response value is based. This information is provided in the dose-response tables.
[c] For RAF sources identified as "per MADEP, 1995", the RAF was calculated by dividing absorption efficiency for the site of exposure by the absorption efficiency for the study exposure route. The default absorption efficiencies provided below were used if data were not located in the literature. The values for SVOCs were used as surrogates for pesticides. All water dermal RAFs were calculated per MADEP, 1995.
[d] Quantitative absorption data were not available for the drinking water exposure route. A value of 1 (representing 100% absorption) was used to be conservative.
[e] No MADEP default value for the dietary route; a value of 98% dietary absorption was obtained from Risk Assessment Residential Shortform (MADEP, 1992).

Default Absorption Efficiencies (from MADEP, 1995)			
Route/Medium of Exposure	VOCs	SVOCs	Inorganics
SITE			
Soil Ingestion	0.99	0.91	0.39
Soil Dermal Contact	0.11	0.17	0.03
Water Ingestion	0.99	0.92	0.4
Water Dermal Contact [a]	1	1	1
Produce Ingestion	0.99	0.92	0.39
STUDY			
Gavage (Oil)	1	0.91	NA
Drinking Water	1	NA	0.55
Food	NA	0.95	0.21
Injection	1	1	1
Inhalation	0.91	NA	NA
Dermal Contact	0.11	0.14	0.017

[a] Per MADEP (1995), the RAF for dermal contact with water is calculated for an abosorbed dose. Therefore, the absorption efficiency for the site of exposure is assumed to be 100%.

TABLE A-8
RELATIVE ABSORPTION FACTORS
FOR NONCARCINOGENIC EFFECTS

		SITE OF EXPOSURE [a]					STUDY EXPOSURE ROUTE [a]						RAF - NON-CANCER								
ANALYTE	CHEMICAL TYPE	Soil Ingestion	Soil Dermal Contact	Water Ingestion	Water Dermal Contact	Produce Ingestion	Gavage	Drinking Water	Dietary (food)	Injection	Inhalation	Dermal Contact	Dose-response Study Type [b]	Soil Subchronic Oral	Soil Subchronic Dermal	Soil Chronic Oral	Soil Chronic Dermal	Water Chronic Oral	Water Chronic Dermal	Produce Ingestion Oral	RAF Source [c]
BASE NEUTRAL COMPOUNDS																					
Benzo(a)pyrene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	G	0.91	0.04	0.91	0.04	0.91	1.10	NA	MADEP, 1994
Benzo(g,h,i)perylene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	G	0.91	0.04	0.91	0.04	0.91	1.10	NA	MADEP, 1994
Bis(2-ethylhexyl)phthalate (BEHP)	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	D	1	0.02	1	0.02	1	1.05	NA	MADEP, 1994
Chrysene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	G	0.91	0.04	0.91	0.04	0.91	1.10	NA	MADEP, 1994
Fluoranthene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	G	1	0.04	1	0.04	1	1.10	NA	MADEP, 1994
Indeno(1,2,3-cd)pyrene	B	0.91	0.17	0.92	1	0.92	0.91	NA	0.95	1	NA	0.14	G	0.91	0.04	0.91	0.04	0.91	1.10	NA	MADEP, 1994
INORGANICS/METALS																					
Aluminum	I/M												NA	NA	NA	NA	NA	NA	NA	NA	
Arsenic	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	1	0.03	1	0.03	1	1.82	NA	MADEP, 1994
Barium	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	0.71	0.05	0.71	0.05	0.73	1.82	0.71	per MADEP, 1995
Calcium	I/M												NA		NA	NA	NA	NA	NA	NA	
Chromium III	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	D	1	0.04	1	0.04	1	4.76	NA	MADEP, 1994
Chromium VI	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	1	0.09	1	0.09	1	1.82	NA	MADEP, 1994
Chloride	I/M												NA								
Iron	I/M												NA		NA	NA	NA	NA	NA	NA	
Magnesium	I/M												NA		NA	NA	NA	NA	NA	NA	
Manganese (drinking water)	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	D	1.86	0.14	1.86	0.14	1.90	4.76	1.86	per MADEP, 1995
Manganese (food)	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	D	1.86	0.14	1.86	0.14	1.90	4.76	1.86	per MADEP, 1995
Manganese (soil)	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	D	1.86	0.14	1.86	0.14	1.90	4.76	1.86	per MADEP, 1995
Mercury-Inorganic (as Mercuric chlori	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	D	1	0.05	1	0.05	1	4.76	NA	MADEP, 1994
Nitrate	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	0.71	0.05	0.71	0.05	0.73	1.82	0.71	per MADEP, 1995
Nitrite	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	0.71	0.05	0.71	0.05	0.73	1.82	0.71	per MADEP, 1995
Nitrogen, Ammonia	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	0.71	0.05	0.71	0.05	0.73	1.82	0.71	per MADEP, 1995
Potassium	I/M												NA		NA	NA	NA	NA	NA	NA	
Sodium	I/M												NA		NA	NA	NA	NA	NA	NA	
Strontium	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	D	1.86	0.14	1.86	0.14	1.90	4.76	1.86	per MADEP, 1995
Sulfates as SO4	I/M	0.39	0.03	0.4	1	0.39	NA	0.55	0.21	1	NA	0.017	W	0.71	0.05	0.71	0.05	0.73	1.82	0.71	per MADEP, 1995
VOLATILES																					
2,4,4-Trimethyl-1-pentene	V	0.99	0.11	0.99	1	0.99	1	1	NA	1	0.91	0.11	G	0.99	0.11	0.99	0.11	0.99	1.00	0.99	per MADEP, 1995
2,4,4-Trimethyl-2-pentene	V	0.99	0.11	0.99	1	0.99	1	1	NA	1	0.91	0.11	G	0.99	0.11	0.99	0.11	0.99	1.00	0.99	per MADEP, 1995
Ethylbenzene	V	0.99	0.11	0.99	1	0.99	1	1	NA	1	0.91	0.11	G	1	0.2	1	0.2	1	1.00	NA	MADEP, 1994
EPH																					
C9-C18 Aliphatics	B												NA	0.91	0.2	0.91	0.2	1	1.00	NA	MADEP, 1997 [v]
C19-C36 Aliphatics	B												NA	0.91	0.1	0.91	0.1	1	1.00	NA	MADEP, 1997 [v]
C10-C22 Aromatics	B												NA	0.91	0.18	0.91	0.18	0.91	1.10	NA	MADEP, 1997 [v]

TABLE A-6
RELATIVE ABSORPTION FACTORS
FOR NONCARCINOGENIC EFFECTS

NOTES:

NA = Not available
W = Drinking water
G = Gavage
D = Dietary/food
I = Inhalation
IV = Injection
DC = Dermal contact
RAF = Relative absorption factor
VOC = Volatile organic compound
SVOC = Semivolatile organic compound

SOURCES:

MADEP, 1992: Risk Assessment Shortform Residential Scenario. WSC/ORS-142-92.
MADEP, 1994: Background Documentation for the Development of the MCP Numerical Standards (April, 1994).
RAFs are those provided in Table 2-1 of this document, and were not calculated by ABB-ES.
MADEP, 1995: Guidance for Disposal Site Risk Characterization, Appendix B, Section K "Absorption Efficiency".
[a] Source is MADEP, 1995, unless otherwise noted.
[b] Study type for which the dose-response value is based. This information is provided in the dose-response tables.
[c] For RAF sources identified as "per MADEP, 1995", the RAF was calculated by dividing absorption efficiency for the site of exposure by the absorption efficiency for the study exposure route. The default absorption efficiencies provided below were used if data were not located in the literature. The values for SVOCs were used as surrogates for pesticides. All water dermal RAFs were calculated per MADEP, 1995.
[v] Dermal RAF for water based on n-hexane for all aliphatic fractions, and pyrene for all aromatic fractions.

Default Absorption Efficiencies (from MADEP, 1995)			
Route/Medium of Exposure	VOCs	SVOCs	Inorganics
SITE			
Soil Ingestion	0.99	0.91	0.39
Soil Dermal Contact	0.11	0.17	0.03
Water Ingestion	0.99	0.92	0.4
Water Dermal Contact [a]	1	1	1
Produce Ingestion	0.99	0.92	0.39
STUDY			
Gavage (Oil)	1	0.91	NA
Drinking Water	1	NA	0.55
Food	NA	0.95	0.21
Injection	1	1	1
Inhalation	0.91	NA	NA
Dermal Contact	0.11	0.14	0.017

[a] Per MADEP (1995), the RAF for dermal contact with water is calculated for an abosorbed dose. Therefore, the absorption efficiency for the site of exposure is assumed to be 100%.

APPENDIX B
RISK CALCULATION SPREADSHEETS

TABLE B-1
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	6578	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	42	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sw} \times \text{IRsw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. *Interim Final Policy* WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	2.2E-01	1	1.4E-07	0.02	0.033	1.2E-07	1.4E-02	2.0E-09	1.7E-09	3.8E-09
							SUMMARY CANCER RISK:	2E-09	2E-09	4E-09

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-1
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	2.2E-01	1	2.2E-06	0.02	0.033	1.9E-06	2.0E-02	1.1E-04	9.3E-05	2.0E-04
Aluminum, Total	1.1E-01									
Barium, Total	1.8E-02	0.71	1.3E-07	0.05	0.001	1.2E-08	7.0E-02	1.8E-06	1.7E-07	2.0E-06
Calcium, Total	6.4E+01									
Chromium, Total	1.2E+00	1	1.2E-05	0.09	0.001	1.4E-06	1.5E+00	7.8E-06	9.3E-07	8.8E-06
Iron, Total	3.9E-01									
Magnesium, Total	7.7E+00									
Manganese, Total	3.9E-01	1.86	7.1E-06	0.14	0.001	7.0E-07	4.7E-02	1.5E-04	1.5E-05	1.7E-04
Potassium, Total	1.7E+00									
Sodium, Total	9.2E+01									
Strontium, Total	1.3E-01	1.86	2.4E-06	0.14			6.0E-01	3.9E-06		3.9E-06
Chloride	1.2E+02									
Nitrate as N	2.6E+00									
Nitrite as N	1.1E-02									
Nitrogen, Ammonia	1.8E+02	0.71	1.3E-03	0.05			9.7E-01	1.3E-03		1.3E-03
Nitrogen, Total Kjeldahl as N	7.9E+01									
Phosphate, Total as P	8.9E-01									
Sulfate as SO4	4.1E+02									
							SUMMARY HAZARD INDEX:	0.002	0.0001	0.002

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-2
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	10000	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sw} \times \text{IRsw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

TABLE B-2
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	2.2E-01	1	8.6E-08	0.02	0.033	1.1E-07	1.4E-02	1.2E-09	1.6E-09	2.8E-09
							SUMMARY CANCER RISK:	1E-09	2E-09	3E-09

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-2
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	2.2E-01	1	1.3E-06	0.02	0.033	1.7E-06	2.0E-02	6.5E-05	8.5E-05	1.5E-04
Aluminum, Total	1.1E-01									
Barium, Total	1.8E-02	0.71	7.5E-08	0.05	0.001	1.1E-08	7.0E-02	1.1E-06	1.5E-07	1.2E-06
Calcium, Total	6.4E+01									
Chromium, Total	1.2E+00	1	7.0E-06	0.09	0.001	1.3E-06	1.5E+00	4.7E-06	8.5E-07	5.5E-06
Iron, Total	3.9E-01									
Magnesium, Total	7.7E+00									
Manganese, Total	3.9E-01	1.86	4.3E-06	0.14	0.001	6.4E-07	4.7E-02	9.1E-05	1.4E-05	1.0E-04
Potassium, Total	1.7E+00									
Sodium, Total	9.2E+01									
Strontium, Total	1.3E-01	1.86	1.4E-06	0.14			6.0E-01	2.4E-06		2.4E-06
Chloride	1.2E+02									
Nitrate as N	2.6E+00									
Nitrite as N	1.1E-02									
Nitrogen, Ammonia	1.8E+02	0.71	7.5E-04	0.05			9.7E-01	7.7E-04		7.7E-04
Nitrogen, Total Kjeldahl as N	7.9E+01									
Phosphate, Total as P	8.9E-01									
Sulfate as SO4	4.1E+02									
							SUMMARY HAZARD INDEX:	0.0009	0.0001	0.001

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-3
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.02	l/day	Assumption (1)
SKIN SURFACE AREA	SA	3900	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	4	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sw} \times \text{IRsw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands and arms.

TABLE B-3
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	2.2E-01	1	1.7E-07	0.02	0.033	8.9E-08	1.4E-02	2.4E-09	1.2E-09	3.7E-09
							SUMMARY CANCER RISK:	2E-09	1E-09	4E-09

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-3
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM PRE-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	2.2E-01	1	2.6E-06	0.02	0.033	1.3E-06	2.0E-02	1.3E-04	6.6E-05	2.0E-04
Aluminum, Total	1.1E-01									
Barium, Total	1.8E-02	0.71	1.5E-07	0.05	0.001	8.2E-09	7.0E-02	2.1E-06	1.2E-07	2.3E-06
Calcium, Total	6.4E+01									
Chromium, Total	1.2E+00	1	1.4E-05	0.09	0.001	9.9E-07	1.5E+00	9.4E-06	6.6E-07	1.0E-05
Iron, Total	3.9E-01									
Magnesium, Total	7.7E+00									
Manganese, Total	3.9E-01	1.86	8.5E-06	0.14	0.001	5.0E-07	4.7E-02	1.8E-04	1.1E-05	1.9E-04
Potassium, Total	1.7E+00									
Sodium, Total	9.2E+01									
Strontium, Total	1.3E-01	1.86	2.8E-06	0.14			6.0E-01	4.7E-06		4.7E-06
Chloride	1.2E+02									
Nitrate as N	2.6E+00									
Nitrite as N	1.1E-02									
Nitrogen, Ammonia	1.8E+02	0.71	1.5E-03	0.05			9.7E-01	1.5E-03		1.5E-03
Nitrogen, Total Kjeldahl as N	7.9E+01									
Phosphate, Total as P	8.9E-01									
Sulfate as SO4	4.1E+02									
							SUMMARY HAZARD INDEX:	0.002	0.00008	0.002

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-4
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	6578	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	42	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[OHM]sw \times IRsw \times RAF\text{-}O \times EF \times ED}{BW \times AT \times CF2}$$

$$\text{INTAKE-DERM} = \frac{[OHM]sw \times SA \times Kp \times RAF\text{-}D \times ET \times EF \times ED \times CF1}{BW \times AT \times CF2}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	2.5E-02	1	1.6E-08	0.02	0.033	1.4E-08	1.4E-02	2.3E-10	2.0E-10	4.3E-10
							SUMMARY CANCER RISK:	2E-10	2E-10	4E-10

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-4
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	2.5E-02	1	2.4E-07	0.02	0.033	2.1E-07	2.0E-02	1.2E-05	1.1E-05	2.3E-05
Fluoranthene	2.5E-04	1	2.4E-09	0.04	0.36	4.6E-08	4.0E-02	6.1E-08	1.2E-06	1.2E-06
Aluminum, Total	6.9E-01									
Chromium, Total	3.2E+00	1	3.1E-05	0.09	0.001	3.7E-06	1.5E+00	2.1E-05	2.5E-06	2.3E-05
Iron, Total	2.3E+00									
Nitrate & Nitrite as N	1.8E+00									
Nitrogen, Ammonia	2.9E+02	0.71	2.0E-03	0.05			9.7E-01	2.1E-03		2.1E-03
							SUMMARY HAZARD INDEX:	0.002	0.00001	0.002

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-5
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	10000	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]_{sw} \times \text{IR}_{sw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]_{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

TABLE B-5
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	2.5E-02	1	9.8E-09	0.02	0.033	1.3E-08	1.4E-02	1.4E-10	1.8E-10	3.2E-10
							SUMMARY CANCER RISK:	1E-10	2E-10	3E-10

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-5
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	2.5E-02	1	1.5E-07	0.02	0.033	1.9E-07	2.0E-02	7.3E-06	9.7E-06	1.7E-05
Fluoranthene	2.5E-04	1	1.5E-09	0.04	0.36	4.2E-08	4.0E-02	3.7E-08	1.1E-06	1.1E-06
Aluminum, Total	6.9E-01									
Chromium, Total	3.2E+00	1	1.9E-05	0.09	0.001	3.4E-06	1.5E+00	1.3E-05	2.3E-06	1.5E-05
Iron, Total	2.3E+00									
Nitrate & Nitrite as N	1.8E+00									
Nitrogen, Ammonia	2.9E+02	0.71	1.2E-03	0.05			9.7E-01	1.2E-03		1.2E-03
							SUMMARY HAZARD INDEX:	0.001	0.00001	0.001

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-6
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.02	l/day	Assumption (1)
SKIN SURFACE AREA	SA	3900	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	4	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sw} \times \text{IRsw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands and arms.

TABLE B-6
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	2.5E-02	1	2.0E-08	0.02	0.033	1.0E-08	1.4E-02	2.7E-10	1.4E-10	4.2E-10
							SUMMARY CANCER RISK:	3E-10	1E-10	4E-10

Notes:
[1] MADEP. 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-6
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - MAXIMUM POST-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	2.5E-02	1	2.9E-07	0.02	0.033	1.5E-07	2.0E-02	1.5E-05	7.6E-06	2.2E-05
Fluoranthene	2.5E-04	1	2.9E-09	0.04	0.36	3.3E-08	4.0E-02	7.3E-08	8.2E-07	9.0E-07
Aluminum, Total	6.9E-01									
Chromium, Total	3.2E+00	1	3.8E-05	0.09	0.001	2.6E-06	1.5E+00	2.5E-05	1.8E-06	2.7E-05
Iron, Total	2.3E+00									
Nitrate & Nitrite as N	1.8E+00									
Nitrogen, Ammonia	2.9E+02	0.71	2.4E-03	0.05			9.7E-01	2.5E-03		2.5E-03
							SUMMARY HAZARD INDEX:	0.003	0.00001	0.003

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-7
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SEDIMENT	[OHM]sed	chemical-specific	mg/kg	
SEDIMENT INGESTION RATE	IR s	50	mg/day	MADEP, 1995
SKIN SURFACE AREA	SA	4521	cm2/day	per MADEP, 1995
ADHERENCE FACTOR	AF	0.51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
AREA WEIGHTING FACTOR	AWF	1	unitless	
BODY WEIGHT	BW	42	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	15	day/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sed} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sed} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

TABLE B-7
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1] (unitless)	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1] (unitless)	INTAKE-DERM (mg/kg/day)	CANCER SLOPE FACTOR (mg/kg/day)$^{-1}$	CANCER RISK INGESTION	CANCER RISK DERMAL	TOTAL CANCER RISK
Benzo(a)pyrene	3.4E+00	1	1.1E-08	0.04	2.0E-08	7.3E+00	8.1E-08	1.5E-07	2.3E-07
bis(2-EthylHexyl)phthalate	2.5E+04	1	8.1E-05	0.02	7.5E-05	1.4E-02	1.1E-06	1.0E-06	2.2E-06
Chrysene	1.7E+00	1	5.5E-09	0.04	1.0E-08	7.3E-03	4.0E-11	7.5E-11	1.2E-10
Indeno (1,2,3-cd) pyrene	1.9E+01	1	6.2E-08	0.04	1.1E-07	7.3E-01	4.5E-08	8.3E-08	1.3E-07
Arsenic, Total	4.0E+01	1	1.3E-07	0.03	1.8E-07	1.5E+00	2.0E-07	2.7E-07	4.7E-07
Lead, Total	1.2E+02								
Mercury, Total	1.8E+00								
						SUMMARY CANCER RISK:	1E-06	2E-06	3E-06

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-7
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
2,4,4-Trimethyl-1-pentene	2.8E+00	0.99	1.4E-07	0.11	6.9E-07	2.1E-01	6.5E-07	3.3E-06	4.0E-06
2,4,4-Trimethyl-2-Pentene	1.0E+00	0.99	4.8E-08	0.11	2.5E-07	2.1E-01	2.3E-07	1.2E-06	1.4E-06
Ethylbenzene	2.6E-01	1	1.3E-08	0.2	1.2E-07	1.0E-01	1.3E-07	1.2E-06	1.3E-06
Benzo(a)pyrene	3.4E+00	0.91	1.5E-07	0.04	3.1E-07	3.0E-02	5.0E-06	1.0E-05	1.5E-05
Benzo(g,h,i)perylene	8.4E+00	0.91	3.7E-07	0.04	7.6E-07	3.0E-02	1.2E-05	2.5E-05	3.8E-05
bis(2-EthylHexyl)phthalate	2.5E+04	1	1.2E-03	0.02	1.1E-03	2.0E-02	6.1E-02	5.6E-02	1.2E-01
Chrysene	1.7E+00	0.91	7.6E-08	0.04	1.5E-07	3.0E-02	2.5E-06	5.1E-06	7.6E-06
Fluoranthene	3.4E+01	1	1.7E-06	0.04	3.1E-06	4.0E-02	4.2E-05	7.7E-05	1.2E-04
Indeno (1,2,3-cd) pyrene	1.9E+01	0.91	8.5E-07	0.04	1.7E-06	3.0E-02	2.8E-05	5.7E-05	8.5E-05
Arsenic, Total	4.0E+01	1	2.0E-06	0.03	2.7E-06	3.0E-04	6.5E-03	9.0E-03	1.6E-02
Barium, Total	9.0E+01	0.71	3.1E-06	0.05	1.0E-05	7.0E-02	4.5E-05	1.5E-04	1.9E-04
Chromium, Total	2.1E+04	1	1.0E-03	0.09	4.3E-03	1.5E+00	6.8E-04	2.8E-03	3.5E-03
Hexavalent Chromium, Total	2.8E+01	1	1.4E-06	0.09	5.7E-06	3.0E-03	4.6E-04	1.9E-03	2.4E-03
Lead, Total	1.2E+02	0.5	2.9E-06	0.006	1.6E-06	7.5E-04	3.9E-03	2.2E-03	6.1E-03
Mercury, Total	1.8E+00	1	8.8E-08	0.05	2.0E-07	3.0E-04	2.9E-04	6.8E-04	9.7E-04
C11-C22 Aromatics (FID)	2.1E+04	0.91	9.3E-04	0.18	8.5E-03	3.0E-02	3.1E-02	2.8E-01	3.2E-01
C19-C36 Aliphatics (FID)	1.6E+04	0.91	7.1E-04	0.1	3.6E-03	6.0E+00	1.2E-04	6.0E-04	7.2E-04
C9-C18 Aliphatics (FID)	3.1E+03	0.91	1.4E-04	0.2	1.4E-03	6.0E-01	2.3E-04	2.3E-03	2.6E-03
						SUMMARY HAZARD INDEX:	0.1	0.4	0.5

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-8
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SEDIMENT	[OHM]sed	chemical-specific	mg/kg	
SEDIMENT INGESTION RATE	IR s	50	mg/day	MADEP, 1995
SKIN SURFACE AREA	SA	6305	cm2/day	per MADEP, 1995
ADHERENCE FACTOR	AF	0.51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
AREA WEIGHTING FACTOR	AWF	1	unitless	
BODY WEIGHT	BW	70	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	15	day/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sed} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sed} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

TABLE B-8
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1] (unitless)	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1] (unitless)	INTAKE-DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK DERMAL	TOTAL CANCER RISK
Benzo(a)pyrene	3.4E+00	1	6.7E-09	0.04	1.7E-08	7.3E+00	4.9E-08	1.2E-07	1.7E-07
bis(2-EthylHexyl)phthalate	2.5E+04	1	4.9E-05	0.02	6.2E-05	1.4E-02	6.8E-07	8.7E-07	1.6E-06
Chrysene	1.7E+00	1	3.3E-09	0.04	8.6E-09	7.3E-03	2.4E-11	6.2E-11	8.7E-11
Indeno (1,2,3-cd) pyrene	1.9E+01	1	3.7E-08	0.04	9.6E-08	7.3E-01	2.7E-08	7.0E-08	9.7E-08
Arsenic, Total	4.0E+01	1	7.8E-08	0.03	1.5E-07	1.5E+00	1.2E-07	2.3E-07	3.4E-07
Lead, Total	1.2E+02								
Mercury, Total	1.8E+00								
						SUMMARY CANCER RISK:	9E-07	1E-06	2E-06

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-8
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
2,4,4-Trimethyl-1-pentene	2.8E+00	0.99	8.1E-08	0.11	5.8E-07	2.1E-01	3.9E-07	2.8E-06	3.2E-06
2,4,4-Trimethyl-2-Pentene	1.0E+00	0.99	2.9E-08	0.11	2.1E-07	2.1E-01	1.4E-07	9.9E-07	1.1E-06
Ethylbenzene	2.6E-01	1	7.6E-09	0.2	9.8E-08	1.0E-01	7.6E-08	9.8E-07	1.1E-06
Benzo(a)pyrene	3.4E+00	0.91	9.1E-08	0.04	2.6E-07	3.0E-02	3.0E-06	8.6E-06	1.2E-05
Benzo(g,h,i)perylene	8.4E+00	0.91	2.2E-07	0.04	6.3E-07	3.0E-02	7.5E-06	2.1E-05	2.9E-05
bis(2-EthylHexyl)phthalate	2.5E+04	1	7.3E-04	0.02	9.4E-04	2.0E-02	3.6E-02	4.7E-02	8.3E-02
Chrysene	1.7E+00	0.91	4.5E-08	0.04	1.3E-07	3.0E-02	1.5E-06	4.3E-06	5.8E-06
Fluoranthene	3.4E+01	1	1.0E-06	0.04	2.6E-06	4.0E-02	2.5E-05	6.4E-05	8.9E-05
Indeno (1,2,3-cd) pyrene	1.9E+01	0.91	5.1E-07	0.04	1.4E-06	3.0E-02	1.7E-05	4.8E-05	6.5E-05
Arsenic, Total	4.0E+01	1	1.2E-06	0.03	2.3E-06	3.0E-04	3.9E-03	7.6E-03	1.1E-02
Barium, Total	9.0E+01	0.71	1.9E-06	0.05	8.5E-06	7.0E-02	2.7E-05	1.2E-04	1.5E-04
Chromium, Total	2.1E+04	1	6.2E-04	0.09	3.6E-03	1.5E+00	4.1E-04	2.4E-03	2.8E-03
Hexavalent Chromium, Total	2.8E+01	1	8.2E-07	0.09	4.8E-06	3.0E-03	2.7E-04	1.6E-03	1.9E-03
Lead, Total	1.2E+02	0.5	1.8E-06	0.006	1.4E-06	7.5E-04	2.3E-03	1.8E-03	4.2E-03
Mercury, Total	1.8E+00	1	5.3E-08	0.05	1.7E-07	3.0E-04	1.8E-04	5.7E-04	7.4E-04
C11-C22 Aromatics (FID)	2.1E+04	0.91	5.6E-04	0.18	7.1E-03	3.0E-02	1.9E-02	2.4E-01	2.6E-01
C19-C36 Aliphatics (FID)	1.6E+04	0.91	4.3E-04	0.1	3.0E-03	6.0E+00	7.1E-05	5.0E-04	5.7E-04
C9-C18 Aliphatics (FID)	3.1E+03	0.91	8.3E-05	0.2	1.2E-03	6.0E-01	1.4E-04	2.0E-03	2.1E-03
						SUMMARY HAZARD INDEX:	0.06	0.3	0.4

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-9
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SEDIMENT	[OHM]sed	chemical-specific	mg/kg	
SEDIMENT INGESTION RATE	IR s	50	mg/day	MADEP, 1995
SKIN SURFACE AREA	SA	3900	cm2/day	per MADEP, 1995
ADHERENCE FACTOR	AF	0.51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
AREA WEIGHTING FACTOR	AWF	1	unitless	
BODY WEIGHT	BW	70	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	15	day/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sed} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sed} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

TABLE B-9
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1] (unitless)	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1] (unitless)	INTAKE-DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK DERMAL	TOTAL CANCER RISK
Benzo(a)pyrene	3.4E+00	1	6.7E-09	0.04	1.1E-08	7.3E+00	4.9E-08	7.7E-08	1.3E-07
bis(2-EthylHexyl)phthalate	2.5E+04	1	4.9E-05	0.02	3.9E-05	1.4E-02	6.8E-07	5.4E-07	1.2E-06
Chrysene	1.7E+00	1	3.3E-09	0.04	5.3E-09	7.3E-03	2.4E-11	3.9E-11	6.3E-11
Indeno (1,2,3-cd) pyrene	1.9E+01	1	3.7E-08	0.04	5.9E-08	7.3E-01	2.7E-08	4.3E-08	7.0E-08
Arsenic, Total	4.0E+01	1	7.8E-08	0.03	9.3E-08	1.5E+00	1.2E-07	1.4E-07	2.6E-07
Lead, Total	1.2E+02								
Mercury, Total	1.8E+00								
						SUMMARY CANCER RISK:	9E-07	8E-07	2E-06

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-9
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - MAXIMUM
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
2,4,4-Trimethyl-1-pentene	2.8E+00	0.99	8.1E-08	0.11	3.6E-07	2.1E-01	3.9E-07	1.7E-06	2.1E-06
2,4,4-Trimethyl-2-Pentene	1.0E+00	0.99	2.9E-08	0.11	1.3E-07	2.1E-01	1.4E-07	6.1E-07	7.5E-07
Ethylbenzene	2.6E-01	1	7.6E-09	0.2	6.1E-08	1.0E-01	7.6E-08	6.1E-07	6.8E-07
Benzo(a)pyrene	3.4E+00	0.91	9.1E-08	0.04	1.6E-07	3.0E-02	3.0E-06	5.3E-06	8.3E-06
Benzo(g,h,i)perylene	8.4E+00	0.91	2.2E-07	0.04	3.9E-07	3.0E-02	7.5E-06	1.3E-05	2.1E-05
bis(2-EthylHexyl)phthalate	2.5E+04	1	7.3E-04	0.02	5.8E-04	2.0E-02	3.6E-02	2.9E-02	6.5E-02
Chrysene	1.7E+00	0.91	4.5E-08	0.04	7.9E-08	3.0E-02	1.5E-06	2.6E-06	4.2E-06
Fluoranthene	3.4E+01	1	1.0E-06	0.04	1.6E-06	4.0E-02	2.5E-05	4.0E-05	6.5E-05
Indeno (1,2,3-cd) pyrene	1.9E+01	0.91	5.1E-07	0.04	8.9E-07	3.0E-02	1.7E-05	3.0E-05	4.6E-05
Arsenic, Total	4.0E+01	1	1.2E-06	0.03	1.4E-06	3.0E-04	3.9E-03	4.7E-03	8.6E-03
Barium, Total	9.0E+01	0.71	1.9E-06	0.05	5.3E-06	7.0E-02	2.7E-05	7.5E-05	1.0E-04
Chromium, Total	2.1E+04	1	6.2E-04	0.09	2.2E-03	1.5E+00	4.1E-04	1.5E-03	1.9E-03
Hexavalent Chromium, Total	2.8E+01	1	8.2E-07	0.09	2.9E-06	3.0E-03	2.7E-04	9.8E-04	1.3E-03
Lead, Total	1.2E+02	0.5	1.8E-06	0.006	8.4E-07	7.5E-04	2.3E-03	1.1E-03	3.5E-03
Mercury, Total	1.8E+00	1	5.3E-08	0.05	1.1E-07	3.0E-04	1.8E-04	3.5E-04	5.3E-04
C11-C22 Aromatics (FID)	2.1E+04	0.91	5.6E-04	0.18	4.4E-03	3.0E-02	1.9E-02	1.5E-01	1.7E-01
C19-C36 Aliphatics (FID)	1.6E+04	0.91	4.3E-04	0.1	1.9E-03	6.0E+00	7.1E-05	3.1E-04	3.8E-04
C9-C18 Aliphatics (FID)	3.1E+03	0.91	8.3E-05	0.2	7.2E-04	6.0E-01	1.4E-04	1.2E-03	1.3E-03
						SUMMARY HAZARD INDEX:	0.06	0.2	0.2

Notes:
[1] MADEP, 1994 Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-10
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC PRE-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	6578	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	42	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[OHM]sw \times IRsw \times RAF\text{-}O \times EF \times ED}{BW \times AT \times CF2}$$

$$\text{INTAKE-DERM} = \frac{[OHM]sw \times SA \times Kp \times RAF\text{-}D \times ET \times EF \times ED \times CF1}{BW \times AT \times CF2}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	4.1E-02	1	2.7E-08	0.02	0.033	2.3E-08	1.4E-02	3.7E-10	3.2E-10	6.9E-10
							SUMMARY CANCER RISK:	4E-10	3E-10	7E-10

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-10
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC PRE-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	4.1E-02	1	4.0E-07	0.02	0.033	3.5E-07	2.0E-02	2.0E-05	1.7E-05	3.7E-05
Aluminum, Total	1.1E-01									
Barium, Total	1.8E-02	0.71	1.3E-07	0.05	0.001	1.2E-08	7.0E-02	1.8E-06	1.7E-07	2.0E-06
Calcium, Total	6.4E+01									
Chromium, Total	1.6E-01	1	1.6E-06	0.09	0.001	1.9E-07	1.5E+00	1.1E-06	1.3E-07	1.2E-06
Iron, Total	3.9E-01									
Magnesium, Total	7.7E+00									
Manganese, Total	3.9E-01	1.86	7.1E-06	0.14	0.001	7.0E-07	4.7E-02	1.5E-04	1.5E-05	1.7E-04
Potassium, Total	1.7E+00									
Sodium, Total	9.2E+01									
Strontium, Total	1.3E-01	1.86	2.4E-06	0.14			6.0E-01	3.9E-06		3.9E-06
Chloride	1.2E+02									
Nitrate as N	2.6E+00									
Nitrite as N	1.1E-02									
Nitrogen, Ammonia	7.8E+01	0.71	5.4E-04	0.05			9.7E-01	5.6E-04		5.6E-04
Nitrogen, Total Kjeldahl as N	7.9E+01									
Phosphate, Total as P	8.9E-01									
Sulfate as SO4	4.1E+02									
							SUMMARY HAZARD INDEX:	0.0007	0.00003	0.0008

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	10000	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sw} \times \text{IRsw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

ABLE B-11
)IRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC PRE-INCIDENT
.ECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
VIMINENT HAZARD EVALUATION
I EAMES STREET
VILMINGTON, MA

:ARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR (mg/kg/day)$^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
›is(2-EthylHexyl)phthalate	4.1E-02	1	1.6E-08	0.02	0.033	2.1E-08	1.4E-02	2.2E-10	2.9E-10	5.2E-10
							SUMMARY CANCER RISK:	2E-10	3E-10	5E-10

Notes:
1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-11
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC PRE-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	4.1E-02	1	2.4E-07	0.02	0.033	3.2E-07	2.0E-02	1.2E-05	1.6E-05	2.8E-05
Aluminum, Total	1.1E-01									
Barium, Total	1.8E-02	0.71	7.5E-08	0.05	0.001	1.1E-08	7.0E-02	1.1E-06	1.5E-07	1.2E-06
Calcium, Total	6.4E+01									
Chromium, Total	1.6E-01	1	9.7E-07	0.09	0.001	1.7E-07	1.5E+00	6.5E-07	1.2E-07	7.6E-07
Iron, Total	3.9E-01									
Magnesium, Total	7.7E+00									
Manganese, Total	3.9E-01	1.86	4.3E-06	0.14	0.001	6.4E-07	4.7E-02	9.1E-05	1.4E-05	1.0E-04
Potassium, Total	1.7E+00									
Sodium, Total	9.2E+01									
Strontium, Total	1.3E-01	1.86	1.4E-06	0.14			6.0E-01	2.4E-06		2.4E-06
Chloride	1.2E+02									
Nitrate as N	2.6E+00									
Nitrite as N	1.1E-02									
Nitrogen, Ammonia	7.8E+01	0.71	3.2E-04	0.05			9.7E-01	3.3E-04		3.3E-04
Nitrogen, Total Kjeldahl as N	7.9E+01									
Phosphate, Total as P	8.9E-01									
Sulfate as SO4	4.1E+02									
							SUMMARY HAZARD INDEX:	0.0004	0.00003	0.0005

Notes:
[1] MADEP, 1994 Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-12
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC PRE-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.02	l/day	Assumption (1)
SKIN SURFACE AREA	SA	3900	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	4	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sw} \times \text{IRsw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands and arms.

TABLE B-12
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC PRE-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	4.1E-02	1	3.2E-08	0.02	0.033	1.6E-08	1.4E-02	4.5E-10	2.3E-10	6.8E-10
							SUMMARY CANCER RISK:	4E-10	2E-10	7E-10

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-12
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC PRE-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	4.1E-02	1	4.8E-07	0.02	0.033	2.5E-07	2.0E-02	2.4E-05	1.2E-05	3.6E-05
Aluminum, Total	1.1E-01									
Barium, Total	1.8E-02	0.71	1.5E-07	0.05	0.001	8.2E-09	7.0E-02	2.1E-06	1.2E-07	2.3E-06
Calcium, Total	6.4E+01									
Chromium, Total	1.6E-01	1	1.9E-06	0.09	0.001	1.4E-07	1.5E+00	1.3E-06	9.1E-08	1.4E-06
Iron, Total	3.9E-01									
Magnesium, Total	7.7E+00									
Manganese, Total	3.9E-01	1.86	8.5E-06	0.14	0.001	5.0E-07	4.7E-02	1.8E-04	1.1E-05	1.9E-04
Potassium, Total	1.7E+00									
Sodium, Total	9.2E+01									
Strontium, Total	1.3E-01	1.86	2.8E-06	0.14			6.0E-01	4.7E-06		4.7E-06
Chloride	1.2E+02									
Nitrate as N	2.6E+00									
Nitrite as N	1.1E-02									
Nitrogen, Ammonia	7.8E+01	0.71	6.5E-04	0.05			9.7E-01	6.7E-04		6.7E-04
Nitrogen, Total Kjeldahl as N	7.9E+01									
Phosphate, Total as P	8.9E-01									
Sulfate as SO4	4.1E+02									
							SUMMARY HAZARD INDEX:	0.0009	0.00002	0.0009

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-13
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	6578	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	42	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sw} \times \text{IRsw} \times \text{RAF-O} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sw} \times \text{SA} \times \text{Kp} \times \text{RAF-D} \times \text{ET} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	8.5E-03	1	5.5E-09	0.02	0.033	4.8E-09	1.4E-02	7.7E-11	6.7E-11	1.4E-10
							SUMMARY CANCER RISK:	8E-11	7E-11	1E-10

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-13
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SURFACE WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	8.5E-03	1	8.3E-08	0.02	0.033	7.2E-08	2.0E-02	4.1E-06	3.6E-06	7.7E-06
Fluoranthene	2.5E-04	1	2.4E-09	0.04	0.36	4.6E-08	4.0E-02	6.1E-08	1.2E-06	1.2E-06
Aluminum, Total	6.9E-01									
Chromium, Total	3.2E+00	1	3.1E-05	0.09	0.001	3.7E-06	1.5E+00	2.1E-05	2.5E-06	2.3E-05
Iron, Total	2.3E+00									
Nitrate & Nitrite as N	1.8E+00									
Nitrogen, Ammonia	8.3E+01	0.71	5.8E-04	0.05			9.7E-01	5.9E-04		5.9E-04
							SUMMARY HAZARD INDEX:	0.0006	0.000007	0.0006

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-14
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.01	l/day	Assumption (1)
SKIN SURFACE AREA	SA	10000	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	2	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]_{sw} \times IR_{sw} \times RAF\text{-}O \times EF \times ED}{BW \times AT \times CF2}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]_{sw} \times SA \times Kp \times RAF\text{-}D \times ET \times EF \times ED \times CF1}{BW \times AT \times CF2}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands, forearms, legs, feet

TABLE B-14
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	8.5E-03	1	3.3E-09	0.02	0.033	4.4E-09	1.4E-02	4.6E-11	6.1E-11	1.1E-10
							SUMMARY CANCER RISK:	5E-11	6E-11	1E-10

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-14
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	8.5E-03	1	5.0E-08	0.02	0.033	6.6E-08	2.0E-02	2.5E-06	3.3E-06	5.8E-06
Fluoranthene	2.5E-04	1	1.5E-09	0.04	0.36	4.2E-08	4.0E-02	3.7E-08	1.1E-06	1.1E-06
Aluminum, Total	6.9E-01									
Chromium, Total	3.2E+00	1	1.9E-05	0.09	0.001	3.4E-06	1.5E+00	1.3E-05	2.3E-06	1.5E-05
Iron, Total	2.3E+00									
Nitrate & Nitrite as N	1.8E+00									
Nitrogen, Ammonia	8.3E+01	0.71	3.5E-04	0.05			9.7E-01	3.6E-04		3.6E-04
							SUMMARY HAZARD INDEX:	0.0004	0.000007	0.0004

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-15
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SURFACE WATER	[OHM]sw	chemical-specific	mg/l	
SURFACE WATER INGESTION RATE	IRsw	0.02	l/day	Assumption (1)
SKIN SURFACE AREA	SA	3900	cm2	per MADEP, 1995
PERMEABILITY CONSTANT	Kp	chemical-specific	cm/hr	
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
BODY WEIGHT	BW	70	kg	per MADEP, 1995
EXPOSURE TIME	ET	4	hr/event	Assumption
EXPOSURE FREQUENCY [1]	EF	15	event/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	0.001	l/cm3	
CONVERSION FACTOR 2	CF2	365	day/yr	

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]_{sw} \times IR_{sw} \times RAF\text{-}O \times EF \times ED}{BW \times AT \times CF2}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]_{sw} \times SA \times K_p \times RAF\text{-}D \times ET \times EF \times ED \times CF1}{BW \times AT \times CF2}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

Assumption (1) - 1/10th the value for swimming (50 ml per hour).
MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.
Surface area for hands and arms.

TABLE B-15
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	CARCINOGENIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
bis(2-EthylHexyl)phthalate	8.5E-03	1	6.6E-09	0.02	0.033	3.4E-09	1.4E-02	9.3E-11	4.8E-11	1.4E-10
							SUMMARY CANCER RISK:	9E-11	5E-11	1E-10

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-15
DIRECT CONTACT AND INCIDENTAL INGESTION OF SURFACE WATER - SOUTH DITCH SURFACE WATER - EPC POST-INCIDENT
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	GROUND WATER CONCENTRATION (mg/l)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	PERMEABILITY CONSTANT (cm/hr)	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
bis(2-EthylHexyl)phthalate	8.5E-03	1	1.0E-07	0.02	0.033	5.1E-08	2.0E-02	5.0E-06	2.6E-06	7.5E-06
Fluoranthene	2.5E-04	1	2.9E-09	0.04	0.36	3.3E-08	4.0E-02	7.3E-08	8.2E-07	9.0E-07
Aluminum, Total	6.9E-01									
Chromium, Total	3.2E+00	1	3.8E-05	0.09	0.001	2.6E-06	1.5E+00	2.5E-05	1.8E-06	2.7E-05
Iron, Total	2.3E+00									
Nitrate & Nitrite as N	1.8E+00									
Nitrogen, Ammonia	8.3E+01	0.71	6.9E-04	0.05			9.7E-01	7.1E-04		7.1E-04
							SUMMARY HAZARD INDEX:	0.0007	0.000005	0.0007

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-16
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SEDIMENT	[OHM]sed	chemical-specific	mg/kg	
SEDIMENT INGESTION RATE	IR s	50	mg/day	MADEP, 1995
SKIN SURFACE AREA	SA	4521	cm2/day	per MADEP, 1995
ADHERENCE FACTOR	AF	0.51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
AREA WEIGHTING FACTOR	AWF	1	unitless	
BODY WEIGHT	BW	42	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	15	day/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sed} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sed} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

TABLE B-16
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1] (unitless)	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1] (unitless)	INTAKE-DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK - INGESTION	CANCER RISK - DERMAL	TOTAL CANCER RISK
Benzo(a)pyrene	3.9E+00	1	1.3E-08	0.04	2.4E-08	7.3E+00	9.4E-08	1.7E-07	2.7E-07
bis(2-EthylHexyl)phthalate	2.5E+04	1	8.1E-05	0.02	7.5E-05	1.4E-02	1.1E-06	1.0E-06	2.2E-06
Chrysene	1.7E+00	1	5.5E-09	0.04	1.0E-08	7.3E-03	4.0E-11	7.5E-11	1.2E-10
Indeno (1,2,3-cd) pyrene	5.0E+00	1	1.6E-08	0.04	3.0E-08	7.3E-01	1.2E-08	2.2E-08	3.4E-08
Arsenic, Total	1.1E+01	1	3.7E-08	0.03	5.2E-08	1.5E+00	5.6E-08	7.8E-08	1.3E-07
Lead, Total	3.9E+01								
Mercury, Total	7.1E-01								
						SUMMARY CANCER RISK:	1E-06	1E-06	3E-06

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-16
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: CHILD TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
2,4,4-Trimethyl-1-pentene	3.7E-01	0.99	1.8E-08	0.11	9.2E-08	2.1E-01	8.6E-08	4.4E-07	5.2E-07
2,4,4-Trimethyl-2-Pentene	1.0E+00	0.99	4.8E-08	0.11	2.5E-07	2.1E-01	2.3E-07	1.2E-06	1.4E-06
Ethylbenzene	2.6E-01	1	1.3E-08	0.2	1.2E-07	1.0E-01	1.3E-07	1.2E-06	1.3E-06
Benzo(a)pyrene	3.9E+00	0.91	1.8E-07	0.04	3.5E-07	3.0E-02	5.8E-06	1.2E-05	1.8E-05
Benzo(g,h,i)perylene	4.2E+00	0.91	1.9E-07	0.04	3.8E-07	3.0E-02	6.2E-06	1.3E-05	1.9E-05
bis(2-Ethylhexyl)phthalate	2.5E+04	1	1.2E-03	0.02	1.1E-03	2.0E-02	6.1E-02	5.6E-02	1.2E-01
Chrysene	1.7E+00	0.91	7.6E-08	0.04	1.5E-07	3.0E-02	2.5E-06	5.1E-06	7.6E-06
Fluoranthene	5.3E+00	1	2.6E-07	0.04	4.7E-07	4.0E-02	6.4E-06	1.2E-05	1.8E-05
Indeno (1,2,3-cd) pyrene	5.0E+00	0.91	2.2E-07	0.04	4.5E-07	3.0E-02	7.5E-06	1.5E-05	2.3E-05
Arsenic, Total	1.1E+01	1	5.6E-07	0.03	7.8E-07	3.0E-04	1.9E-03	2.6E-03	4.5E-03
Barium, Total	3.4E+01	0.71	1.2E-06	0.05	3.8E-06	7.0E-02	1.7E-05	5.4E-05	7.1E-05
Chromium, Total	2.1E+04	1	1.0E-03	0.09	4.3E-03	1.5E+00	6.8E-04	2.8E-03	3.5E-03
Hexavalent Chromium, Total	5.4E+00	1	2.7E-07	0.09	1.1E-06	3.0E-03	8.9E-05	3.7E-04	4.6E-04
Lead, Total	3.9E+01	0.5	9.5E-07	0.006	5.3E-07	7.5E-04	1.3E-03	7.0E-04	2.0E-03
Mercury, Total	7.1E-01	1	3.5E-08	0.05	8.0E-08	3.0E-04	1.2E-04	2.7E-04	3.8E-04
C11-C22 Aromatics (FID)	2.1E+04	0.91	9.3E-04	0.18	8.5E-03	3.0E-02	3.1E-02	2.8E-01	3.2E-01
C19-C36 Aliphatics (PID)	1.6E+04	0.91	7.1E-04	0.1	3.6E-03	6.0E+00	1.2E-04	6.0E-04	7.2E-04
C9-C18 Aliphatics (FID)	3.1E+03	0.91	1.4E-04	0.2	1.4E-03	6.0E-01	2.3E-04	2.3E-03	2.6E-03
						SUMMARY HAZARD INDEX:	0.1	0.4	0.4

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-17
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SEDIMENT	[OHM]sed	chemical-specific	mg/kg	
SEDIMENT INGESTION RATE	IR s	50	mg/day	MADEP, 1995
SKIN SURFACE AREA	SA	6305	cm2/day	per MADEP, 1995
ADHERENCE FACTOR	AF	0.51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
AREA WEIGHTING FACTOR	AWF	1	unitless	
BODY WEIGHT	BW	70	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	15	day/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sed} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sed} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

TABLE B-17
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1] (unitless)	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1] (unitless)	INTAKE-DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK DERMAL	TOTAL CANCER RISK
Benzo(a)pyrene	3.9E+00	1	7.7E-09	0.04	2.0E-08	7.3E+00	5.6E-08	1.4E-07	2.0E-07
bis(2-EthylHexyl)phthalate	2.5E+04	1	4.9E-05	0.02	6.2E-05	1.4E-02	6.8E-07	8.7E-07	1.6E-06
Chrysene	1.7E+00	1	3.3E-09	0.04	8.6E-09	7.3E-03	2.4E-11	6.2E-11	8.7E-11
Indeno (1,2,3-cd) pyrene	5.0E+00	1	9.9E-09	0.04	2.5E-08	7.3E-01	7.2E-09	1.9E-08	2.6E-08
Arsenic, Total	1.1E+01	1	2.2E-08	0.03	4.3E-08	1.5E+00	3.4E-08	6.5E-08	9.9E-08
Lead, Total	3.9E+01								
Mercury, Total	7.1E-01								
						SUMMARY CANCER RISK:	8E-07	1E-06	2E-06

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-17
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: ADULT TRESPASSER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
2,4,4-Trimethyl-1-pentene	3.7E-01	0.99	1.1E-08	0.11	7.7E-08	2.1E-01	5.1E-08	3.7E-07	4.2E-07
2,4,4-Trimethyl-2-Pentene	1.0E+00	0.99	2.9E-08	0.11	2.1E-07	2.1E-01	1.4E-07	9.9E-07	1.1E-06
Ethylbenzene	2.6E-01	1	7.6E-09	0.2	9.8E-08	1.0E-01	7.6E-08	9.8E-07	1.1E-06
Benzo(a)pyrene	3.9E+00	0.91	1.1E-07	0.04	3.0E-07	3.0E-02	3.5E-06	9.9E-06	1.3E-05
Benzo(g,h,i)perylene	4.2E+00	0.91	1.1E-07	0.04	3.2E-07	3.0E-02	3.7E-06	1.1E-05	1.4E-05
bis(2-Ethylhexyl)phthalate	2.5E+04	1	7.3E-04	0.02	9.4E-04	2.0E-02	3.6E-02	4.7E-02	8.3E-02
Chrysene	1.7E+00	0.91	4.5E-08	0.04	1.3E-07	3.0E-02	1.5E-06	4.3E-06	5.8E-06
Fluoranthene	5.3E+00	1	1.5E-07	0.04	4.0E-07	4.0E-02	3.9E-06	9.9E-06	1.4E-05
Indeno (1,2,3-cd) pyrene	5.0E+00	0.91	1.3E-07	0.04	3.8E-07	3.0E-02	4.5E-06	1.3E-05	1.7E-05
Arsenic, Total	1.1E+01	1	3.4E-07	0.03	6.5E-07	3.0E-04	1.1E-03	2.2E-03	3.3E-03
Barium, Total	3.4E+01	0.71	7.0E-07	0.05	3.2E-06	7.0E-02	1.0E-05	4.5E-05	5.5E-05
Chromium, Total	2.1E+04	1	6.2E-04	0.09	3.6E-03	1.5E+00	4.1E-04	2.4E-03	2.8E-03
Hexavalent Chromium, Total	5.4E+00	1	1.6E-07	0.09	9.2E-07	3.0E-03	5.3E-05	3.1E-04	3.6E-04
Lead, Total	3.9E+01	0.5	5.7E-07	0.006	4.4E-07	7.5E-04	7.6E-04	5.9E-04	1.4E-03
Mercury, Total	7.1E-01	1	2.1E-08	0.05	6.7E-08	3.0E-04	7.0E-05	2.2E-04	2.9E-04
C11-C22 Aromatics (FID)	2.1E+04	0.91	5.6E-04	0.18	7.1E-03	3.0E-02	1.9E-02	2.4E-01	2.6E-01
C19-C36 Aliphatics (PID)	1.6E+04	0.91	4.3E-04	0.1	3.0E-03	6.0E+00	7.1E-05	5.0E-04	5.7E-04
C9-C18 Aliphatics (FID)	3.1E+03	0.91	8.3E-05	0.2	1.2E-03	6.0E-01	1.4E-04	2.0E-03	2.1E-03
						SUMMARY HAZARD INDEX:	0.06	0.3	0.4

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-18
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION OF CPC IN SEDIMENT	[OHM]sed	chemical-specific	mg/kg	
SEDIMENT INGESTION RATE	IR s	50	mg/day	MADEP, 1995
SKIN SURFACE AREA	SA	3900	cm2/day	per MADEP, 1995
ADHERENCE FACTOR	AF	0.51	mg/cm2	MADEP, 1995
RELATIVE ABSORPTION FACTOR - ORAL	RAF-O	chemical-specific	unitless	
RELATIVE ABSORPTION FACTOR - DERM	RAF-D	chemical-specific	unitless	
AREA WEIGHTING FACTOR	AWF	1	unitless	
BODY WEIGHT	BW	70	kg	MADEP, 1995
EXPOSURE FREQUENCY	EF	15	day/yr	Assumption
EXPOSURE DURATION	ED	5	yr	Assumption
AVERAGING TIME CANCER	AT	75	yr	MADEP, 1995
AVERAGING TIME NONCANCER	AT	5	yr	per MADEP, 1995
CONVERSION FACTOR 1	CF1	1.E-06	kg/mg	
CONVERSION FACTOR 2	CF2	365	day/yr	

MADEP, 1995. Guidance for Disposal Site Risk Characterization. Interim Final Policy WSC/ORS-95-141. July 1995.

EQUATIONS

CANCER RISK = INTAKE x CANCER SLOPE FACTOR

$$\text{HAZARD QUOTIENT} = \frac{\text{INTAKE}}{\text{REFERENCE DOSE}}$$

$$\text{INTAKE-ING} = \frac{[\text{OHM}]\text{sed} \times \text{IR s} \times \text{RAF-O} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

$$\text{INTAKE-DERM} = \frac{[\text{OHM}]\text{sed} \times \text{SA} \times \text{AF} \times \text{RAF-D} \times \text{AWF} \times \text{EF} \times \text{ED} \times \text{CF1}}{\text{BW} \times \text{AT} \times \text{CF2}}$$

NOTE: FOR NONCARCINOGENIC EFFECTS, AT = ED

TABLE B-18
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

CARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	CARCINOGENIC RAF - INGESTION [1] (unitless)	INTAKE - ING (mg/kg/day)	CARCINOGENIC RAF - DERMAL [1] (unitless)	INTAKE-DERM (mg/kg/day)	CANCER SLOPE FACTOR $(mg/kg/day)^{-1}$	CANCER RISK INGESTION	CANCER RISK DERMAL	TOTAL CANCER RISK
Benzo(a)pyrene	3.9E+00	1	7.7E-09	0.04	1.2E-08	7.3E+00	5.6E-08	8.9E-08	1.5E-07
bis(2-Ethylhexyl)phthalate	2.5E+04	1	4.9E-05	0.02	3.9E-05	1.4E-02	6.8E-07	5.4E-07	1.2E-06
Chrysene	1.7E+00	1	3.3E-09	0.04	5.3E-09	7.3E-03	2.4E-11	3.9E-11	6.3E-11
Indeno (1,2,3-cd) pyrene	5.0E+00	1	9.9E-09	0.04	1.6E-08	7.3E-01	7.2E-09	1.1E-08	1.9E-08
Arsenic, Total	1.1E+01	1	2.2E-08	0.03	2.7E-08	1.5E+00	3.4E-08	4.0E-08	7.4E-08
Lead, Total	3.9E+01								
Mercury, Total	7.1E-01								
						SUMMARY CANCER RISK:	8E-07	7E-07	1E-06

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994.
ND = no data available
NA = not applicable

TABLE B-18
DIRECT CONTACT AND INCIDENTAL INGESTION OF SEDIMENT - SOUTH DITCH SEDIMENT - EPC
RECEPTOR: COMMERCIAL/INDUSTRIAL WORKER - CURRENT/FUTURE LAND USE
IMMINENT HAZARD EVALUATION
51 EAMES STREET
WILMINGTON, MA

NONCARCINOGENIC EFFECTS

CHEMICALS OF POTENTIAL CONCERN	SEDIMENT CONCENTRATION (mg/kg)	NONCARCINOGENIC CHRONIC RAF - INGESTION [1]	INTAKE - ING (mg/kg/day)	NONCARCINOGENIC CHRONIC RAF - DERMAL [1]	INTAKE - DERM (mg/kg/day)	CHRONIC REFERENCE DOSE (mg/kg/day)	HAZARD QUOTIENT - INGESTION	HAZARD QUOTIENT - DERMAL	TOTAL HAZARD QUOTIENT
2,4,4-Trimethyl-1-pentene	3.7E-01	0.99	1.1E-08	0.11	4.8E-08	2.1E-01	5.1E-08	2.3E-07	2.8E-07
2,4,4-Trimethyl-2-Pentene	1.0E+00	0.99	2.9E-08	0.11	1.3E-07	2.1E-01	1.4E-07	6.1E-07	7.5E-07
Ethylbenzene	2.6E-01	1	7.6E-09	0.2	6.1E-08	1.0E-01	7.6E-08	6.1E-07	6.8E-07
Benzo(a)pyrene	3.9E+00	0.91	1.1E-07	0.04	1.8E-07	3.0E-02	3.5E-06	6.1E-06	9.6E-06
Benzo(g,h,i)perylene	4.2E+00	0.91	1.1E-07	0.04	2.0E-07	3.0E-02	3.7E-06	6.5E-06	1.0E-05
bis(2-Ethylhexyl)phthalate	2.5E+04	1	7.3E-04	0.02	5.8E-04	2.0E-02	3.6E-02	2.9E-02	6.5E-02
Chrysene	1.7E+00	0.91	4.5E-08	0.04	7.9E-08	3.0E-02	1.5E-06	2.6E-06	4.2E-06
Fluoranthene	5.3E+00	1	1.5E-07	0.04	2.5E-07	4.0E-02	3.9E-06	6.1E-06	1.0E-05
Indeno (1,2,3-cd) pyrene	5.0E+00	0.91	1.3E-07	0.04	2.4E-07	3.0E-02	4.5E-06	7.8E-06	1.2E-05
Arsenic, Total	1.1E+01	1	3.4E-07	0.03	4.0E-07	3.0E-04	1.1E-03	1.3E-03	2.5E-03
Barium, Total	3.4E+01	0.71	7.0E-07	0.05	2.0E-06	7.0E-02	1.0E-05	2.8E-05	3.8E-05
Chromium, Total	2.1E+04	1	6.2E-04	0.09	2.2E-03	1.5E+00	4.1E-04	1.5E-03	1.9E-03
Hexavalent Chromium, Total	5.4E+00	1	1.6E-07	0.09	5.7E-07	3.0E-03	5.3E-05	1.9E-04	2.4E-04
Lead, Total	3.9E+01	0.5	5.7E-07	0.006	2.7E-07	7.5E-04	7.6E-04	3.6E-04	1.1E-03
Mercury, Total	7.1E-01	1	2.1E-08	0.05	4.2E-08	3.0E-04	7.0E-05	1.4E-04	2.1E-04
C11-C22 Aromatics (FID)	2.1E+04	0.91	5.6E-04	0.18	4.4E-03	3.0E-02	1.9E-02	1.5E-01	1.7E-01
C19-C36 Aliphatics (PID)	1.6E+04	0.91	4.3E-04	0.1	1.9E-03	6.0E+00	7.1E-05	3.1E-04	3.8E-04
C9-C18 Aliphatics (FID)	3.1E+03	0.91	8.3E-05	0.2	7.2E-04	6.0E-01	1.4E-04	1.2E-03	1.3E-03
						SUMMARY HAZARD INDEX:	0.06	0.2	0.2

Notes:
[1] MADEP, 1994. Background Documentation for the Development of MCP Numerical Standards. April 1994
ND = no data available
NA = not applicable

Appendix F

Ecological Imminent Hazard Evaluation for
IRA Status Report No. 2 for
South Ditch/Former Weir
Harding ESE, December 5, 2001

Harding ESE
A MACTEC COMPANY

Memorandum

TO: Steve Morrow, Olin Corporation DATE: December 5, 2001

FROM: Michael Murphy

SUBJECT: Ecological Imminent Hazard Evaluation for IRA Status Report No. 2 for the South Ditch/Former Weir

Harding ESE is pleased to submit this Ecological Imminent Hazard Evaluation (EIHE) for near-downstream environments with respect to the October 5, 2000 incident during sediment remedial activities involving the inadvertant over-pumping of surface water and the subsequent release of groundwater to the South Ditch at the 51 Eames Street Site in Wilmington, Massachusetts. The Massachusetts Department of Environmental Protection (MADEP) indicated in its June 8, 2001 Conditional Approval letter for the IRA Plan for the South Ditch/Former Weir that an Ecological Imminent Hazard Evaluation (EIHE) for near-downstream environments must be submitted to MADEP with the IRA Status report No. 2. This evaluation concludes that the October 5, 2000 incident did not result in an Ecological Imminent Hazard. The recent surface water and sediment data have been considered in this EIHE. However, these data have not been used in a quantitative fashion because the Massachusetts Contingency Plan does not erequire quantitative evaluations for an EIHE.

Clarifications with respect to the Conditional Approval Letter

Harding ESE would like to make the following clarifications with respect to the language of the MADEP Conditional Approval Letter (dated June 8, 2001) for the IRA Plan:

1) MADEP statement: "An ecological imminent hazard evaluation for near-downstream environments was not completed, because Harding Lawson determined that the aquatic habitat is depauperate downstream of the Delta Area in the South Ditch and the East Ditch to its confluence with the Landfill Ditch." As a point of clarification, Harding ESE's Imminent Hazard evaluation for downstream receptors was presented as Appendix C of the IRA Assessment and Plan, South Ditch/Former Weir. That evaluation considered the "near-downstream environments" to be comprised of specifically "the East Ditch downstream to the confluence with landfill Ditch" and did not include the South Ditch itself. That previous Imminent Hazard Evaluation focused on the nearest portion of the East Ditch where an exposure to aquatic life exists, immediately above the confluence with Hall's Brook (this area is actually the downstream end of the new Boston Street Drainway).

In that evaluation, it is reported that "the aquatic habitat is depauperate in near-downstream environments (i.e., the East Ditch down to the confluence with the landfill Ditch) (Smith, 1997)". That statement did not suggest that the South Ditch was depauperate. In fact, the 1997 Stage II Environmental Risk Characterization (ERC) evaluates the risks to aquatic and semi-aquatic receptors for the South Ditch. The statement was intended to indicate, as reported in the 1997 Stage II ERC, that the East Ditch was not evaluated because it:"provides minimal cover and contains few prey items to attract foraging wildlife"; and the East Ditch (including sample locations that are now considered to be located in the remediated portion of the New Boston Street Drainway) was not evaluated "because there is no significant habitat in the East Ditch." The South Ditch was included in the ERC biological tissue sampling that contributed to the exposure assessment for foraging wildlife. Three crayfish tissue samples were collected from the South Ditch in the area of the former Central Pond. No frog tissue samples were collected from the South Ditch.

The use of the term depauperate with respect to the near-downstream aquatic environments in the previous Imminent Hazard evaluation was intended to indicate that the East Ditch and remediated section of the New Boston Street Drainway (but not the South Ditch) are low value aquatic habitats that would not be expected to support a wide array of aquatic organisms.

2) MADEP statement, "further investigative work is necessary to determine the extent of contamination from the incident, and to confirm that an Imminent Hazard downstream of the Delta Area has been abated." As a point of clarification, correspondence to date has indicated that no Imminent Hazard existed or exists in downstream areas following the October 5, 2000 incident. Therefore, it cannot be confirmed that an Imminent Hazard has been abated. The Imminent Hazard Evaluation will be conducted to determine if an Imminent Hazard existed or still exists in near-downstream environments (focusing on the South Ditch) with respect to the October 5, 2000 incident.

Focus and Objectives of the Ecological Imminent Hazard Evaluation

The EIHE is focused on the release of OHM associated with the inadvertant pumping of groundwater to the South Ditch on October 5, 2000. The nature of the release and the documentation of conditions in the South Ditch following the October 5 incident are described in detail in the IRA Assessment and Plan – South Ditch/Former Weir (GEI, December 22, 2000) and the IRA Status Report No. 1, South Ditch/Former Weir Area (GEI, June 1, 2001). Sampling and analysis of surface water in the South Ditch before and after the October 5, 2000 incident as reported in those two reports and in the IRA Report No. 2, South Ditch/Former Weir Area (GEI, October 2001) indicate that the following groundwater constituents are most characteristic of the release to surface water: ammonia, chromium, aluminum, iron, sulfate, chloride, barium, nickel, and sodium.

Objectives of this EIHE are to: determine if an Ecological Imminent Hazard existed in the South Ditch and the closest downstream portions of the East Ditch at the time of the October 5 incident; determine if there are any residual effects of the incident that constitute an Ecological Imminent Hazard in the South Ditch at the present time.

The MADEP's Conditional Approval of the IRA Assessment and Plan (June 8, 2001) states that an "imminent hazard evaluation must be completed to determine if there is significant risk to the environment in near-downstream environments." It has previously been determined that a condition of Substantial Release Migration exists in the South Ditch (continuing groundwater discharge not related to the October 5, 2000 incident) and the Phase II ERC previously concluded that a condition of no significant risk of harm to the environment did not exist in the South Ditch because 1995 concentrations of ammonia, aluminum, and iron exceeded corresponding applicable or suitably analogous environmental standards (Massachusetts Surface Water Quality Standards) and because surface water concentrations were above reference toxicity values for amphibians for ammonia, aluminum, and iron. This EIHE does not revisit those previous evaluations and conclusions, but remains focused on the specific issue of whether the October 5, 2000 incident resulted in an Ecological Imminent Hazard.

It should be noted that a previous Imminent Hazard Evaluation was conducted to evaluate impacts of flocculent material on human and ecological receptors and that evaluation concluded that flocculent material did not constitute an Imminent Hazard (HLA, 1998).

Requirements for EIHE

This EIHE has been conducted in a manner consistent with the Massachusetts Contingency Plan at 310 CMR 40.0950 and in particular 310 CMR 40.0955(3) as well as the MADEP guidance with respect to Imminent Hazard Evaluations for the Environment as presented in Section 10.3 of Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORS-95-141, July 1995. Section 9 of the Guidance for Disposal Site Risk Characterization, Interim Final Policy, WSC/ORS-95-141, Method 3 – Environmental Risk Characterization, published in 1996 was also consulted during the preparation of this EIHE. However, the 1996 guidance does not contain any specific guidance with respect to EIHEs.

The MCP criteria for an ecological Imminent Hazard are:

The following conditions shall constitute an imminent hazard to the environment:

(a) evidence of stressed biota attributable to the release at the disposal site, including, without limitation, fish kills or abiotic conditions; or
(b) a release to the environment of oil or hazardous material which produces immediate or acute adverse impacts to freshwater or saltwater fish populations.

The 1999 revisions indicate Imminent Hazards to the environment are clearly observable evidence of stressed biota such as immediate or acute adverse impacts to fish populations or abiotic conditions.

The MADEP's 1995 risk characterization guidance is explicit about the approach to be used in identifying imminent hazards to the environment. With respect to the Imminent Hazard criteria above, the guidance states:

> What is intended in the first criterion is that there must be readily apparent evidence of severe impacts on ecological receptors in order for the site to pose

an Imminent Hazard to the environment. The risk assessor should focus on identifying whether there are visible signs that ecological receptors are being severely impacted. It is not intended that a Stage I Screening, as described in Section 9.0, will be needed to accomplish this. Rather the risk assessor should rely on visual observations and professional judgement. Evidence of an impact such as a fish kill clearly should be *considered visible evidence of stressed biota*.

In the second criterion, conditions at the disposal site must be such that severe or life threatening impacts on ecological receptors are likely. Again, it is not intended that a detailed evaluation will be needed to identify whether such conditions exist at a site. The risk assessor should use simple measures, along with professional judgement to determine whether environmental receptors are seriously threatened. Evidence of abiotic conditions at the site could potentially be a condition that is likely to pose a severe impact on ecological receptors.

In general, quantitative risk assessment procedures do not provide a distinction between an environmental Imminent Hazard and environmental long-term risk. Thus, the MCP provides no numerical criteria for an environmental Imminent Hazard and the guidance is clear that DEP does not intend quantitative risk assessment procedures to be used in determining whether conditions at a site pose an Imminent Hazard to the Environment.

Evaluation of Ecological Imminent Hazard Criteria

Consistent with the MCP and the MADEP risk assessment guidance, the two criteria identified above (evidence of stressed biota attributable to the release and immediate or acute impacts to fish) are the focus of this EIHE.

Evidence of stressed biota attributable to the release.

Observations made in the field by GEI, Olin, and Harding ESE personnel do not include any evidence of stressed biota attributable to the October 5, 2000 incident. No fish kills or abiotic conditions have ever been observed in the South Ditch. The plants on the banks of the South Ditch and those within the South Ditch channel downstream of the Delta area appear to be healthy with no obvious signs of stress. Monthly inspections of the South Ditch have been conducted by Wetlands Preservation, Inc. (WPI) from August 2000 through November 2001. These monthly reports consistently contain numerous observations of frogs, tadpoles, water striders, water boatmen, and ducks in the South Ditch area for the non-winter months following the September 5, 2000 incident. Attachment 1 contains the monthly reports that indicate observations of aquatic organisms, amphibians, and other wildlife in the South Ditch area. Abiotic conditions are not present in the South Ditch.

On October 17, 2001 a Harding ESE ecologist conducted a reconnaissance of the South Ditch conditions. A small green frog (*Rana clamitans*) was observed (even though the onset of the cooler temperatures has resulted in most frogs burrowing into the sediments for the winter) in the South Ditch in the area of the former Central Pond and back swimmers (Notonectidae), damselfly nymphs, an aquatic beetle, and several water mites

were observed in the South Ditch. Mallard ducks *(Anas platyrhynchos)* were observed foraging in the Delta area. An Olin site employee reported observations of frogs throughout the South Ditch in recent months. In summary, evidence of stressed biota has not been observed in the South Ditch since the October 5, 2000 incident. Therefore, the first condition of an Imminent Hazard has not been met.

A release to the environment of oil or hazardous material which produces immediate or acute adverse impacts to freshwater or saltwater fish populations

Observations made in the field by GEI, Olin, and Harding ESE personnel do not include any evidence that the October 5, 2000 release resulted in fish kills. No evidence of any fish kills was observed within the South Ditch or the East Ditch. Therefore, the second condition of an Imminent Hazard has not been met.

Discussion of recent surface water

Trends in surface water quality of the South Ditch have been evaluated by Geomega (November 2001). The actual data are presented in the IRA Assessment and Plan and two IRA Status Reports prepared by GEI Consultants (2000, 2001). Geomega concluded that there are no consistent trends in ammonia surface water concentrations in the South Ditch over the last several years. Ammonia is considered a good indicator of trends in other site-related inorganics in groundwater and surface water. Therefore, previous conclusions about risks to aquatic receptors (ABB, 1997) appear to remain relevant to the South Ditch (i.e., a condition of no significant risk of harm to the environment does not exist because concentrations of some OHM are higher than corresponding applicable environmental standards (ambient water quality criteria).

Conclusions

Because neither of the two conditions that constitute and Ecological Imminent Hazard exists or have existed since the October 5, 2000 incident, the October 5, 2000 incident did not result in an Imminent Hazard condition.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES), 1998. *Imminent Hazard Evaluation for Flocculent in the Ditch System and Evaluation of Groundwater Conditions West of the Weir, Olin Corporation, Wilmington, MA*, August 28.

GEI Consultants, Inc. (GEI), 2000. *IRA Assessment and Plan, South Ditch/Former Weir, Olin Corporation Property, 51 Eames Street, Wilmington, MA, RTN 3-0471*, December 22.

GEI, 2000. *Status Report No. 1, Part 2 Construction Related Release Abatement Measure (RAM), Olin Wilmington Property, 51 Eames Street, Wilmington, MA, Release tracking No. 3-0471*, December 27.

GEI, 2001. *Immediate Response Action (IRA) Status Report, Plant B groundwater Recovery/Treatment Operation and Monitoring Systems, Olin Corporation, 51 Eames Street, Wilmington, MA, Release Tracking No. 3-0471*, July 13.

GEI, 2001. *Status Report No. 2, Part 2 Construction Related Release Abatement Measure (RAM), Olin Wilmington Property, 51 Eames Street, Wilmington, MA, Release tracking No. 3-0471*, August 28.

Geomega, 1998. *Flocculent Geochemistry in the East Ditch.* Prepared for Olin Corporation. March.

Wetlands Preservation Inc. (WPI), 2000-2001. Status reports – Interim Action Plan, Olin Chemical Facility, Wilmington, MA, September 11, 2000 through November 6, 2001.

ATTACHMENT A
SOUTH DITCH MONTHLY INSPECTION REPORTS
AUGUST 2000 - SEPTEMBER 2001

WETLANDS PRESERVATION INC.

November 5, 2001

Mr. Michael Murphy
Harding ESE, A MACTEC Company
107 Audubon Road
Wakefield, MA 01880

Re: Olin – Wilmington, MA
Monthly WEIR Inspection Reports

Dear Mr. Murphy:

Wetlands Preservation, Inc. (WPI) is providing herein, at Margret Hanley's request, our monthly monitoring reports and field summaries for the period of September 2000 to October 2001. I have also attached a copy of the plan indicating the monitoring stations.

I will forward a copy of future reports to your office.

Should you have any questions or require any additional information, please do not hesitate to contact us.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:bsg

Enclosures

cc: Steve Morrow
Margret Hanley

#1523

475 Ipswich Road
Boxford, MA 01921
(978) 352-7903

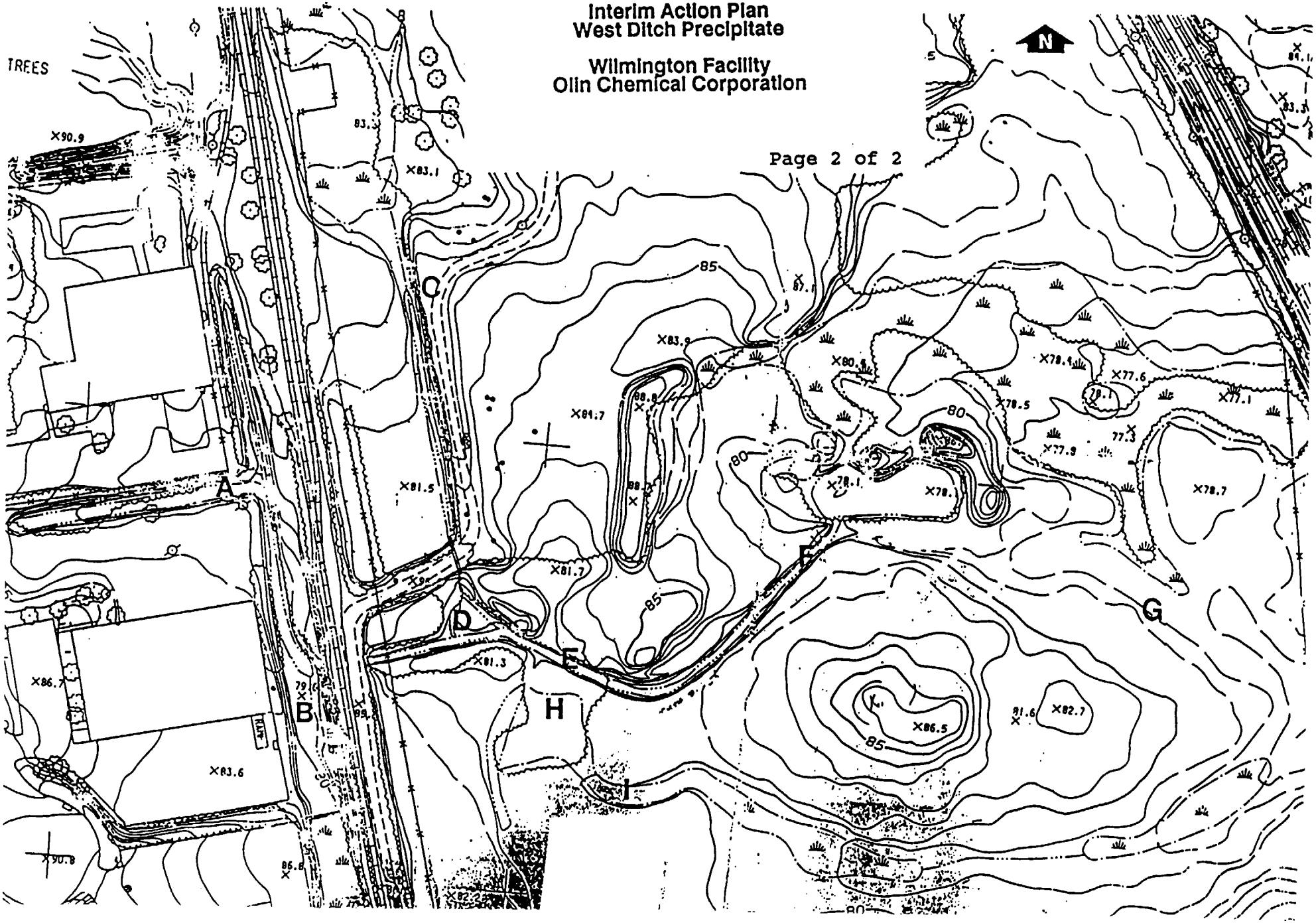
E-mail: wetlandwpi@greennet.net
Fax: (603) 382-3492

47 Newton Road
Plaistow, NH 03865
(603) 382-3435

Sampling Station Locations

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation



WETLANDS PRESERVATION INC.

November 6, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for October 10, 2001 through November 2, 2001.

Water levels have increased slightly since October 17, 2001 following a period of dry conditions in the month of September into early October. The increase in water levels due, in part, to the relocation of the NPDES discharge to its original location in the west ditch wetland. A light flow was observed in the restored portion of the west ditch and within the south ditch below the weir.

Water levels at Stations A and B were low. Clear standing water was observed at Stations A and B with a reddish-brown material on the bottom of the ditch. Station D, behind the weir, contained clear water with a brown material observed on the bottom of the ditch. Several tadpoles were observed at this location. No flow was observed exiting from the outlet pipe of the weir structure. The water downstream of the of the weir structure was turbid with a green algae material observed on the bottom of the ditch. A light flow was discharging from the bottom stop log of the control structure for the west ditch. Stations E, F and G contained clear water with a reddish-brown material observed on the bottom of the ditch. Scattered pockets of green algae were observed on the surface of the water upstream of Station E. Stations H and I were dry. A light flow was observed through the center of the hay bale check dam and water was clear.

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Fax: (603) 382-3492

47 Newton Road
Plaistow, NH 03865
(603) 382-3435

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:dlb

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - DEP
Ms. Margret Hanley
Laurie Burt, Esquire
Mr. Glen Coffman – Law Environmental Consultants
Mr. Michael Murphy – Harding ESE

#1004STAT01October

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 11/2/01 Time 9:50 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2" STANDING WATER; CLEAR RED/ BROWN ON BOTTOM
Station B	✓		6"± STANDING WATER; CLEAR RED/ BROWN ON BOTTOM.
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D		✓	3"± NO OBSERVED FLOW; CLEAR TO BOTTOM.
Weir - Downstream			
Station E	✓		WATER CLEAR LT. FLOW BROWN ON BOTTOM; ALGAE IN POCKETS.
Station F	✓		" " "
Station G	✓		" " "
Unnamed Ditch			
Station H		✓	
Station I		✓	← DRY
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level NOT IN USE

Condition of Weir/Hay Bale Barriers HAY BALE WEIR OK; WATER CLEAR LT. FLOW THROUGH CENTER OF WEIR. DOWNSTREAM OF WEIR STRUCTURE WATER IS TURBID; GREEN ALGAE / BROWN ON BOTTOM. SEVERAL TADPOLES OBSERVED.

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 11-1-01 Time 0830 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		no flow 0 to 2" clear water - bottom brown/re
Station B	✓		Lt. flow 0 to 5" clear water - bottom brown
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D		✓	Very Lt. flow Clear water - bottom brown.
Weir - Downstream			
Station E	✓		Lt. flow green algae in spr water clear - bottom brown
Station F	✓		" " " "
Station G	✓		" " " "
Unnamed Ditch			
Station H		✓	Dried up
Station I			" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level Not in Use.

Condition of Weir/Hay Bale Barriers Weir OK, water clear, bottom brown. Water cloudy downstream of weir. Hay bale barrier OK, no flow or water. Observe 2 frogs, Approx. 8 dozen tadpoles, 1 crayfish, 2 boatman upstream of weir.

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 10-25-01 Time 0800 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		no flow A+B 1-2" clear water - bottom reddish
Station B	✓		2-5" clear water. bottom brown/r
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D		✓	no flow Clear water - bottom lt. brown silt
Weir - Downstream			
Station E	✓		Lt. flow Some green algae Water clear - bottom brown
Station F	✓		Same as E
Station G	✓		Same as E
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in use

Condition of Weir/Hay Bale Barriers Weir AOK, beige material on bottom just down stream of weir. See frog upstream of weir. + 1 bootman Hay bale barrier OK - Lt. flow through middle. 11 mallards + 1 kingfisher in retention pond.

[redacted]

Interim Action Plan
West Ditch Precipitate
[redacted]
Wilmington Facility
Olin Chemical Corporation

Date 10-17-01 Time 0900 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2"to4" clear water - bottom red/brown
Station B	✓		4"to8" " " " brown
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D		✓	Clear water - bottom has lt silt.
Weir - Downstream			
Station E	✓		Clear water - mod. flow - bottom brow
Station F	✓		" " " " " "
Station G	✓		" " " " " "
Unnamed Ditch			
Station H		✓	Clear water in several puddle
Station I		✓	" " " " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in use

Condition of Weir/Hay Bale Barriers Weir AOK (several tadpoles observed)
Hay bale barrier OK - water flowing through center.
Clear water entering s. ditch from retention pond outlet pipe.
There had been 0.86" of rain overnight.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 10-10-01 Time 1300 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		No standing water - reddish mud
Station B	✓		Clear water 2" to 4" - bottom brown
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D		✓	Clear water - bottom brown (silt)
Weir - Downstream			
Station E	✓		Clear water - Moderate flow - bottom brown
Station F	✓		Mostly dry - small puddles bottom brown
Station G	✓		Dried up
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in use

Condition of Weir/Hay Bale Barriers Weir ok - Water murky 6' below weir + next 100'. Outlet: Dozens of tadpoles at station D. 3 frogs downstream from weir. Hay bale barrier ok. No flow Flow at E from NPDES discharge.

Job # 1004

WETLANDS PRESERVATION INC.

MAILED
10-12-01 alk

October 4, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
PO Box 248
Charleston, TN 37310

Re: Status Report – Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for September 11, 2001 through October 3, 2001.

Water levels are low with light flow observed in the portion of the south ditch recently restored for the remedial effort on the property. The NPDES discharge was recently relocated to the restored west ditch location and water was recently released increasing the flow observed in the south ditch.

Water levels at Stations A and B were low. Pockets of standing water were observed at Station A with a reddish-brown material on the surface of the soil Station B contained approximately three inches of standing clear water with a reddish-brown material observed on the bottom. Station D, behind the weir, contained clear water with a brown material observed on the bottom of the ditch. Several tadpoles and frogs were observed at this location. The water at Station E was turbid and contained green algae material on the surface. Flow was discharging from the bottom stop log of the control structure for the west ditch. No flow was observed exiting from the outlet pipe of the weir structure. Station F contained clear water with a reddish-brown material observed on the bottom. Station G contained clear water with a brown material observed on the bottom. No flow was observed at the hay bale check dam or Stations H and I. These areas were dry at the time of the inspection.

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(978) 352-7002

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Fax: (603) 382-3492

47 Newton Road
Plaistow, NH 03865

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:alk

Attachments

cc: Mr. Al Peirce – Olin Wilmington
Mr. John Keeley – Wilmington Conservation Commission
Mr. Chris Pyott – DEP
Ms. Margret Hanley
Laurie Burt, Esquire
Mr. Glen Coffman – Law Environmental Consultants

#1004STAT04October

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 10-3-01 Time 12:30 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		NO FLOW POCKETS OF STANDING WATER REDDISH/BROWN ON BOTTOM.
Station B	✓		3"+ WATER CLEAR LIGHT FLOW, REDDISH BROWN ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D		✓	LIGHT FLOW WATER CLEAR
Weir - Downstream			
Station E	✓		GREEN ALGAE ON SURFACE, WATER TURBID LIGHT FLOW
Station F	✓		WATER CLEAR, LIGHT FLOW; REDDISH BROWN ON BOTTOM
Station G	✓		WATER CLEAR; LIGHT FLOW, BROWN ON BOTTOM.
Unnamed Ditch			
Station H		✓	
Station I		✓	NO STANDING WATER
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level N/A

Condition of Weir/Hay Bale Barriers WEIR FUNCTIONAL; SEVERAL FROGS AND TAD POLES OBSERVED UPSTREAM, HAY BALE ~~EFF~~ WEIR OK NO FLOW OBSERVED.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9-11-01 Time 1100 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			No flow Dry in places
Station A	✓		0 to 1" Clear water - bottom reddish
Station B	✓		1 to 3" Clear water - bottom brown + sed.
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			No flow
Station D	✓		Clear water - bottom brown
Weir - Downstream			no flow
Station E	✓		Clear water - bottom brown
Station F	✓		" " " "
Station G	✓		Dry " "
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in use

Condition of Weir/Hay Bale Barriers Weir ok. Floating reddish material for 50' downstream of weir. Numerous tadpoles + water boatmen observed just upstream of weir. Hay bale barrier ok + dry.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9-20-01 Time 0800 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Dried up - reddish mud
Station B	✓		Dry in places - 1-2" clear water - bottom reddish, near a[illegible]
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓	✓	Clear water - no flow - bottom has silt.
Weir - Downstream			
Station E	✓		Some green algae Murky water - no flow - bottom red/brown
Station F	✓		Clear water - no flow bottom brown
Station G	✓		Dried up - brown mud
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in service

Condition of Weir/Hay Bale Barriers Weir OK - degens of tadpoles + bratmen. Downstream of weir free of floating material except for some green alga. 3 frogs. See great blue heron in Central Pond.

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9-26-01 Time 0930 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1" to 3" slight flow Clear water - bottom brown/red
Station B	✓		2" to 5" clear water - bottom brown
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D		✓	Clear water - Lt. flow - bottom brown
Weir - Downstream			
Station E	✓		Clear water - Lt. flow - bottom bra
Station F	✓		" " " " " "
Station G	✓		" " Very Lt. flow " "
Unnamed Ditch			
Station H		✓	No standing water. Damp
Station I		✓	" " " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level Not in use

Condition of Weir/Hay Bale Barriers Weir ok, see tadpoles + frogs upstream. Water downstream of weir is a little cloudy. Hay bale barrier ok. Clear water, very Lt. flow. See 6 mallards between E+F. See 8" diameter snapping turtle at hay bale barrier.

Pto Certified to Keeley #7001 0360 0001 9402 8405

WETLANDS PRESERVATION INC.

MAILED
9-6-01 alk

September 5, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for August 8, 2001 through September 4, 2001.

Water levels are low and very little flow was observed in the portion of the south ditch recently restored for the remedial effort on the property. No flow was observed south of the limits of work associated with the remedial effort.

Water levels at Stations A and B were low. Pockets of standing water were observed at Station A with a reddish brown material on the surface of the soil. Station A contained approximately three inches of standing, clear water with a reddish brown material observed on the bottom. Station D, behind the weir, contained clear water with a reddish brown material on the bottom of the ditch. Several tadpoles were observed at this location and an oily sheen on the surface of the water. Station E contained red algae-like material on the surface of the water. No flow was observed exiting from the outlet pipe of the weir structure. Station F contained clear water with green algae observed on the surface of the water. Tadpoles and a frog were observed at stations E and F. Station G, H and I were dry at the time of the inspection.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:alk

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01August

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47 Newton Road
Plaistow, NH 03865

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9/4/01 Time 12:00 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		POCKETS OF STANDING WATER; REDDISH BROWN ON BOTTOM.
Station B	✓		3" + OF STANDING WATER; REDDISH BROWN ON BOTTOM,
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D	✓		WATER CLEAR; OILY SHEEN ON SURFACE OF WATER.
Weir - Downstream			
Station E	✓		WATER CLEAR; RED ALGAE MATERIAL ON SURFACE
Station F	✓		WATER CLEAR; GREEN ALGAE ON SURFA RED ON BOTTOM,
Station G	✓		DRY
Unnamed Ditch			
Station H		✓	
Station I		✓	DRY
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers TRIPPLES OBSERVED UPSTREAM OF WEIR. FLOATING RED MATERIAL ON SURFACE OF WATER 100' DOWNSTREAM OF WEIR; GREEN MATERIAL (ALGAE) 100' BELOW THAT MATERIAL ON SURFACE. HAY BALE WEIR OK, COMPLETELY DRY.

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 8-10-01 Time 0845 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2" to 4" clear water - bottom reddish,
Station B	✓		2 to 4" clear water - bottom red near culvert,
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Very lt. flow Water clear - bottom brown/red.
Weir - Downstream			
Station E	✓		Algae on surface - bottom reddish,
Station F	✓		" " " " "
Station G	✓		" " " bottom brownish,
Unnamed Ditch			
Station H		✓	Dried up.
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in use

Condition of Weir/Hay Bale Barriers Brown/red and some beige material at Weir outlet to Station F. Hay bale barrier OK - lt. flow through center - water clear - bottom brown. Saw numerous water striders.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 8-17-01 Time 0800 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Lt. flow 3" to 6" Clear water bottom reddish
Station B	✓		2" to 4" clear water - bottom brown except reddish near outlet.
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Clear water - bottom reddish Lt. flow
Weir - Downstream			
Station E	✓		Clear water - bottom reddish
Station F	✓		" " " "
Station G	✓		" " " " Floating Algae? between Station E and F.
Unnamed Ditch			
Station H		✓	Clear water in small puddles
Station I		✓	" " " " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in use

Condition of Weir/Hay Bale Barriers OK. Some beige material on bottom near outlet from weir. Hay bale barrier ok with lt. flow through middle. Saw 2 frogs + numerous water striders.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 8-24-01 Time 1200 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2" to 4" Clear water - very lt. flow - reddish bott
Station B	✓		2" to 4" " " - brown - red bott
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Clear water - Lt. flow - bottom red
Weir - Downstream			
Station E	✓		Clear water - Lt. flow - bottom reddish
Station F	✓		" " " "
Station G	✓		" " " "
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in service

Condition of Weir/Hay Bale Barriers Weir ok - floating material for 100' downstream of weir - material is red/brown froth (algae?) Hay bale barrier ok with Lt. flow through middle.

See numerous striders, a few bottmen, and 3 frogs.

Certified #7000 1530 0000 8465 4467

Job # 1004

WETLANDS PRESERVATION INC.

MAILED
8-8-01 alh

August 7, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for July 9 through August 2, 2001.

Water levels are low at this time with no flow observed in the south ditch system. Areas of standing water are present in portions of the south ditch behind the weir, upstream of the temporary check dams and in the southern-most portion of the south ditch disturbed for the sediment removal.

Water levels at Stations A and B were low and water was clear with a reddish material on the bottom. Station D behind the weir contained clear water with a reddish brown material on the bottom of the ditch. Stations E, F and G contained water with a reddish brown scum material on the surface. No flow was observed at Stations H and I or below the hay bale check dam.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:bsg

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01July

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Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 8-31-01 Time 1215 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		0-2" Clear water - bottom red - floating red Algae?
Station B	✓		" 2-4" " bottom brown - red near ottle
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Clear water - Very Light flow
Weir - Downstream			
Station E	✓		Clear water - bottom reddish - floating Alg
Station F	✓		" " " " " "
Station G	✓		Dried up -
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level Not in Use

Condition of Weir/Hay Bale Barriers Weir ok - (Saw >24 tadpoles upstream of weir) - floating red material covers surface for 100' downstream of w Hay bale barrier ok - no flow - few puddles left. Saw 4 frogs.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 7-9-01 Time 12:30 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		4-6" WATER CLEAR RED/BROWN ON BOTTOM
Station B	✓		6"-8" WATER CLEAR RED/BROWN ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D	✓		12" WATER CLEAR RED/BROWN ON BOTTOM
Weir - Downstream			
Station E	✓		ALGAE BLOOM; RED/BROWN ON BOTTOM
Station F	✓		MODERATE FLOW; WATER CLEAR RED/BROWN ON BOTTOM
Station G	✓		" "
Unnamed Ditch			
Station H		✓	VERY LIGHT FLOW; WATER CLEAR
Station I		✓	VERY LIGHT FLOW WATER CLEAR
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level NOT IN SERVICE

Condition of Weir/Hay Bale Barriers HAY BALE WEIR FUNCTIONAL; LIGHT FLOW CLEAR. RETENTION POND BEING DRAINED INTO SOUTH DITCH SOME WHITE MATERIAL ON DOWNSTREAM SIDE OF NEW WEIR STRUCTURE. LIGHT FLOW FROM STRUCTURE

1

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 7-19-01 Time 0800 Inspector(s) [illegible]

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		4" clear water Reddish
Station B	✓		material on bottom.
West Ditch Foot Bridge			
Station C			[illegible]
Weir - Upstream			
Station D	✓		1½" clear water Reddish material on bottom
Weir - Downstream			
Station E	✓		Over top material
Station F	✓		in ditch
Station G	✓		
Unnamed Ditch			
Station H		✓	Light rain water clear
Station I		✓	
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level N.I.O.

Condition of Weir/Hay Bale Barriers HAY Bales ok

1

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 7-24-01 Time 0815 Inspector(s) D.W. Cannizzaro

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		
Station B	✓		
West Ditch Foot Bridge			
Station C		✓	N/A
Weir - Upstream			
Station D	✓		10"-12" clear water - Red/brown material in bottom
Weir - Downstream			
Station E	✓		Surface covered with algae
Station F	✓		
Station G	✓		Dark tan material in bottom
Unnamed Ditch			
Station H		✓	Very light flow
Station I		✓	water clear
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level N.E.S

Condition of Weir/Hay Bale Barriers Hay bales working

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 8-2-01 Time 3:00 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1-3" WATER CLEAR; REDDISH
Station B	✓		MATERIAL ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	N/A
Weir - Upstream			
Station D	✓		WATER CLEAR; REDDISH BROWN MATERIAL ON BOTTOM.
Weir - Downstream			
Station E	✓		SURFACE OF WATER CONTAINS
Station F	✓		REDDISH BROWN,
Station G	✓		
Unnamed Ditch			
Station H		✓	NO FLOW
Station I		✓	
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level N/A

Condition of Weir/Hay Bale Barriers HAY BALE WEIR FUNCTIONAL, NO FLOW

Certifieds - Pyott # 7000 1670 0005 1801 9876
Keeley # 7000 1670 0005 1801 9890

WETLANDS PRESERVATION INC.

MAILED
7-13-01 alk

July 13, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for June 15 through July 9, 2001.

Water levels remain high with moderate flows observed in the south ditch system due to the recent rainfall and draining of the detention pond. The temporary check dams remain in the south ditch as a temporary measure to increase the head in the south ditch following an incident, which was discussed in the previous status report. The water behind the weir and throughout the south ditch system was clear. Stations A, B, D, E, F, G contain water with a reddish brown material observed on the bottom. A white material was observed immediately adjacent to the new weir structure, and flow from the outfall of the structure was light and clear. An algae bloom was observed at station E. A light flow was observed at Stations H and I, and water was clear.

The hay bale check dam is in good working order. A reddish-brown material was observed immediately below the hay bale check dam.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:alk

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01April

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Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 7-9-01 Time 12:30 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		4"-6" WATER CLEAR RED/BROWN ON BOTTOM
Station B	✓		6"-8" WATER CLEAR RED/BROWN ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D	✓		12"± WATER CLEAR RED/BROWN ON BOTTOM
Weir - Downstream			
Station E	✓		ALGAE BLOOM; RED/BROWN ON BOTTOM
Station F	✓		MODERATE FLOW; WATER CLEAR RED/BROWN ON BOTTOM
Station G	✓		" "
Unnamed Ditch			
Station H		✓	VERY LIGHT FLOW; WATER CLEAR
Station I		✓	VERY LIGHT FLOW WATER CLEAR
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level NOT IN SERVICE

Condition of Weir/Hay Bale Barriers HAY BALE WEIR FUNCTIONAL; LIGHT FLOW CLEAR. RETENTION POND BEING DRAINED INTO SOUTH DITCH SOME WHITE MATERIAL DOWNSTREAM SIDE OF NEW WEIR STRUCTURE. LIGHT FLOW FROM STRUCTURE.

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 7-6-01 Time 1120 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Lt. flow 4" to 6" clear water - bottom brown/red
Station B	✓		6" to 8" " " " " "
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		18" to 24" clear water. Bottom brown. Moderate flow from weir structure outlet.
Weir - Downstream			
Station E	✓		Clear water - bottom brown/red
Station F	✓		" " " " "
Station G	✓		Clear water - bottom brown
Unnamed Ditch			
Station H		✓	1"-2" clear water.
Station I		✓	" " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level Not in Service

Condition of Weir/Hay Bale Barriers Flow going through center of barrier. Barrier AOK. Numerous water striders + bateman observed. Lt. flow from Retention Pond overflow outlet.

[redacted]

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 6-29-01 Time 0900 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		White froth on surface - no flow 2" to 4" clear water - bottom brownish
Station B	✓		4" to 6" clear water - bottom reddish brown
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		12" clear water - bottom reddish ~~very~~ Lt. flow
Weir - Downstream			
Station E	✓		Clear water - bottom reddish Moderate flow
Station F	✓		" " " "
Station G	✓		" " " "
Unnamed Ditch			
Station H		✓	Dried up.
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in Service

Condition of Weir/Hay Bale Barriers 3 weirs between Station C + F

Retention pond ~~bang~~ being drained into ditch to make room for W/E main. (GE

Algae on surface of Delta area. Hay bale barrier AOK.

[redacted]

Inspection Report

Interim Action Plan

West Ditch Precipitate

Wilmington Facility

Olin Chemical Corporation

Date 6-22-01 Time 0900 Inspector(s) Allan Pierce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		4" to 6" clear water - bottom beige/reddish. Light flow.
Station B	✓		6" to 8" " " - bottom reddish near outl
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Clear water - bottom reddish, Lt. flow
Weir - Downstream			
Station E	✓		Clear water - bottom reddish, Lt. fl
Station F	✓		" " bottom brownish, " "
Station G	✓		" " bottom reddish, " "
Unnamed Ditch			
Station H		✓	1"-2" clear water.
Station I		✓	0-1" clear water.
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in Service

Condition of Weir/Hay Bale Barriers Lt. flow of clear water through center of hay bale barrier, Dam at Station F has been removed.

Saw 3 frogs, numerous water striders, and numerous slugs along stream bank.

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 6-15-01 Time 0815 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Brown froth on surface. 1" to 2" clear water - bottom brownish
Station B	✓		1" to 3" " " - bottom reddish near outlet.
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Lt. flow - clear water - bottom reddish.
Weir - Downstream			
Station E	✓		Greenish tint just downstream of weir.
Station F	✓		Clear water - bottom reddish
Station G	✓		" " " "
Unnamed Ditch			
Station H		✓	Dried up.
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Lt. flow of clear water through center of hay bale barrier. Saw numerous water striders. Dam at "F" is now a weir passing lt. flow of clear water

Certified - Pyott # 7000 1670 0005 1802 1039
Keeley # 7000 1670 0005 1802 1046

WETLANDS PRESERVATION INC.

MAILED
6-28-01 alt

June 28, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the south ditch weir located at the Olin facility in Wilmington, Massachusetts. The new weir has been constructed upstream of the previous temporary weir. Attached are the Weekly Weir Inspections for May 11, 2001 through June 8, 2001.

Water levels have increased due to the recent placement of additional check dams within the south ditch. The check dams were installed as a temporary measure to increase the head in the south ditch following an incident on June 5, 2001 in which the contractor pumped low pH ground water. This occurred during de-watering efforts to lower water levels for final grading in the west portion of the south ditch. Check dams were installed to contain the runoff on the property. The low pH water was then pumped through a treatment tank and discharged into the detention pond. Mr. Chris Pyott of the Department of Environmental Protection was notified of the incident. GEI Consultants, Inc. has prepared and implemented a plan to treat residual low pH water and increase the surface water elevations in the ditch.

In the vicinity of the box culvert structure, the water was light green in color with some white floc material observed on the bottom. The ditch was this color from Stations D through G. At Stations A, B and D, a reddish material was observed on the bottom, with a brown material observed on the surface at stations A and B. Pockets of clear standing water were observed at Stations H and I. The hay bale weir is intact and functional.

475 Ipswich Road
Boxford, MA 01921

E-mail: wetlandwpi@greennet.net
Fax: (603) 382-3492

47 Newton Road
Plaistow, NH 03865

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:alk

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01May

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 6-8-01 Time 0845 Inspector(s) Allan Peirce
6-8-01 12:30 GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Brown froth on surface 2" to 3" clear water - bottom brownish
Station B	✓		Mostly dry - bottom reddish near outlet
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Lt. flow - clear - bottom red/brown.
Weir - Downstream			
Station E	✓		White froth on surface. Water has greenish tint
Station F	✓		Temp dam in place. Water has grey tint.
Station G	✓		No flow - water clear - bottom reddish.
Unnamed Ditch			
Station H		✓	Small puddles - water clear
Station I		✓	Dry -
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Water upstream of Temporary dam at Station F is being pumped through treatment plant and discharged into retention pond. Hay bale barrier is AOK

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 5-11-01 Time 1815 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1" of clear water - brown algae on s
Station B	✓		1-2" clear water - bottom beige/brow
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Clear water - bottom beige/reddish.
Weir - Downstream			
Station E	✓		Water clear to murky - algae
Station F	✓		on bottom + some floating. flow
Station G	✓		very light.
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level Not in Service

Condition of Weir/Hay Bale Barriers Very light flow at hale bale barrier - barrier OK - water clear Bottom reddish

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 5-18-01 Time 1515 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			brown froth on surface
Station A	✓		1 to 2" clear water - bottom brownish
Station B	✓		3 to 4" clear water - bottom brown/red
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		clear water - reddish bottom
Weir - Downstream			
Station E		✓	clear water on top of new
Station F		✓	matting + loam.
Station G	✓		clear water - bottom brown/red
Unnamed Ditch			
Station H		✓	Dried up.
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Weir AOK. Hay bales AOK, Light flow through center. Water clear. Water striders are numerous. South ditch is graded + seeded.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 5-25-01 Time 0830 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			brown froth on surface in middle
Station A	✓		3" to 4" clear water - bottom brownish/re
Station B	✓		4" to 6" clear water - bottom brownish/red.
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D		✓	Area drained for work on new weir
Weir - Downstream			
Station E		✓	Clear water on top of matting.
Station F		✓	" " " " "
Station G		✓	" " " "
Unnamed Ditch			
Station H		✓	Clear water in small puddle
Station I		✓	Dried up
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level Not in use

Condition of Weir/Hay Bale Barriers Hay bale barrier AOK - Light flow through center - bottom reddish/brown - water clear
Saw numerous water striders

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 6-1-01 Time 0930 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		4" to 6" clear water - bottom reddish
Station B	✓		6" to 8" " " " "
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D		✓	Area drained for work on weir
Weir - Downstream			
Station E		✓	Clear water on top of matting
Station F		✓	" " " " "
Station G	✓		Clear water - bottom reddish
Unnamed Ditch			
Station H		✓	Dried up
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Hay bale barrier OK - light flow through center. Numerous water striders.

MAILED
5/2/01
DLB

WETLANDS PRESERVATION INC.

May 1, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the temporary south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for April 12, 2001 through April 30, 2001.

Water levels have fallen since the last inspection with moderate flows observed in the south ditch. In the vicinity of the box culvert structure, the water was light green in color with some white floc material observed on the bottom. The ditch was this color below Stations D through F. At Stations E and F, a reddish material was observed on the bottom and banks below the water surface. Stations A, B and G contained water with a reddish-brown material observed on the bottom. Station B also contained a beige material on the bottom. Pockets of standing water were observed at Stations H and I and the water was clear.

Hay bales were recently replaced at the hay bale weir. Some water was flowing through the east end, and a reddish material was observed on the bottom of the ditch below the weir and water was clear. Additional hay bales will be added to the east end.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:dlb

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01April

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47 Newton Road
Plaistow, NH 03865

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 4-12-01 Time 1315 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2-4" clear water - Lt. flow - bottom reddis
Station B	✓		2-4" " " - " " - bottom beige materia
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Water clear - mod. flow, bottom beige.
Weir - Downstream			
Station E	✓		Water cloudy - Greenish tint, bottom be
Station F	✓		" " " " " gre "
Station G	✓		Water clear - bottom reddish
Unnamed Ditch			
Station H		✓	1-2" clear water, Several
Station I		✓	puddles - very lt. flow
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Weir ok. hay bale barrier ok with flow going through middle. Saw 1 frog, 2 ducks.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 4-20-01 Time 1600 Inspector(s) Allan W Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1" white froth in middle - no flow 2 to 3" clear water - bottom Red/brown
Station B	✓		2 to 3" " " . bottom beige in middle brown in rest.
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Lt. flow - water clear - bottom beige/green.
Weir - Downstream			
Station E	✓		greenish tint water murky - Lt. flow bottom brown/re
Station F	✓		" " " " " " "
Station G	✓		" " " " " " "
Unnamed Ditch			
Station H		✓	1-2" clear water in puddles
Station I		✓	" " " " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of Service

Condition of Weir/Hay Bale Barriers Weir OK - flow light through 1 pipe only. Hay bale barrier OK - flow going through middle.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 4-26-01 Time 1450 Inspector(s) Allan W Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			Brown/white froth on surface Lt. flo
Station A	✓		1-2" clear water - bottom red/brown
Station B	✓		" " " " bottom beige/green on East side Lt.
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Clear water - bottom beige with greenish tint @culver
Weir - Downstream			
Station E	✓		Clear water - bottom reddish brown.
Station F	✓		" " " " "
Station G	✓		" " " " "
Unnamed Ditch			
Station H		✓	1-2" clear water in small pools
Station I		✓	1" or less clear water in small puddles
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in service

Condition of Weir/Hay Bale Barriers Weir is ok, hay bale barrier has flow going through middle. Bottom is reddish. See 4 water striders.

Job File # 1004

WETLANDS PRESERVATION INC.

MAILED
4-12-01 alk

April 6, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the temporary south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for March 13, 2001 through April 5, 2001.

Water levels remain high with moderate flows observed in the south ditch system, due to the recent rainfall and snowmelt. The water behind the weir and throughout the south ditch system was somewhat turbid. Water upstream of the weir and immediately adjacent to the vault structure was cloudy and was green in color. Stations A, B, D, E, F, G contain water with a reddish-brown material observed on the bottom. Station B also contained a beige material on the bottom. A light flow was observed at Stations H and I and the water was clear.

The hay bale check dam is in good working order. A moderate flow was observed through the center of the hay bale check dam, and the water was clear. A reddish-brown material was observed immediately below the hay bale check dam.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:dlb

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01March

475 Ipswich Road
Boxford, MA 01921

E-mail: wetlandwpi@greennet.net
Fax: (603) 382-3492

47 Newton Road
Plaistow, NH 03865

[redacted]

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 4-5-01 Time 11:15 Inspector(s) G. ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		3-5" CLEAR WATER; REDDISH MATERIAL ON BOTTOM.
Station B	✓		3-5" CLEAR WATER REDDISH; BEIGE MATERIAL ON BOTTOM.
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D	✓		MODERATE FLOW REDDISH; BEIGE MATERIAL ON BOTTOM; GREEN CLOUD TO WATER.
Weir - Downstream			
Station E	✓		REDDISH MATERIAL ON BOTTOM WATER CLEAR TO MUKKY.
Station F	✓		"
Station G	✓		"
Unnamed Ditch			
Station H		✓	LIGHT FLOW WATER CLEAR
Station I		✓	"
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level OUT OF SERVICE

Condition of Weir/Hay Bale Barriers WEIR OK; FLOW THROUGH PIPES MODERATE, HAY BALE CHECK DAM OK, FLOW THROUGH CENTER WATER CLEAR REDDISH MATERIAL ON BOTTOM BEHIND HAY BALES.

[redacted]

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 3-13-01 Time 11:50 Inspector(s) G. ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		5" WATER CLEAR; REDDISH ON BOTTOM
Station B	✓		5" WATER CLEAR; REDDISH AND BEIGE ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D	✓		WATER CLEAR; REDDISH ON BOTTOM
Weir - Downstream			
Station E		✓	SNOW AND ICE COVERED
Station F	✓		MODERATE FLOW WATER CLEAR; REDDISH ON BOTTOM, "
Station G	✓		
Unnamed Ditch			
Station H		✓	LIGHT FLOW WATER CLEAR; SNOW COVERED
Station I		✓	SNOW COVERED
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level OUT OF SERVICE

Condition of Weir/Hay Bale Barriers MODERATE FLOW THROUGH CENTER OF HAY BALE WEIR; WATER CLEAR, REDDISH MATERIAL ON BOTTOM BELOW HAY BALE WEIR

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 3-23-01 Time 0800 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			Staff Gauge = 1.28 moderate flow
Station A	✓		10-12" clear water - bottom red/brown
Station B	✓		12-15" clear water - bottom beige in middle
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			Heavy flow Culvert under RR tracks full to top.
Station D	✓		Water Clear - bottom red/brown
Weir - Downstream			
Station E	✓		Heavy flow - clear water - beige material on bottom
Station F		✓	" " " " bottom sand + stones
Station G		✓	" " " "
Unnamed Ditch			
Station H		✓	Still some ice + snow - water clear
Station I		✓	" " " " " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Water flowing over top of weir. Some water flowing around both ends of hay bale barrier

Received .7" of rain on 3-22-01

[redacted]

Inspection Report
Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 3-29-01 Time 1100 Inspector(s) Allen W Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			staff gauge = 0.55 Flow-Mod small area beige mate
Station A	✓		3 to 5" clear water - bottom reddish
Station B	✓		3 to 5" clear water - beige material on bott
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Moderate flow - Clear water - bottom both reddish + beige
Weir - Downstream			
Station E	✓		(a little murky) Clear water - bottom reddish/brown
Station F	✓		Moderate flow - clear water - bottom beige/red
Station G	✓		" " - " " " " "
Unnamed Ditch			
Station H		✓	Snow + Ice covered with some
Station I		✓	open pools of clear water
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of Service

Condition of Weir/Hay Bale Barriers Weir ok with flow Through pipes. Hay bale barrier intact with flow through middle of barrier Counted 8 water boatman at Stations D - E

1004

WETLANDS PRESERVATION INC.

MAILED
3/23/01 DLS

March 15, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the temporary south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for February 16 through March 14, 2001.

Water levels remain high in the south ditch system due to the recent rainfall and snowmelt. Portions of the south ditch remain covered with snow and ice. Pockets of open water were observed at Stations A, B, D and F and G. The water at these locations was clear with a reddish material observed on the bottom. A beige material was also observed on the bottom at Station B. Stations E, H and I were covered with snow and ice. A light flow of clear water was observed entering the south ditch at Station H.

The hay bale check dam is in good working order. A moderate flow was observed through the center of the hay bale check dam, and water was clear. A reddish-brown material was observed immediately below the hay bale check dam, and water was clear.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:bsg

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01January

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47 Newton Road
Plaistow, NH 03865

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 2-16-01 Time 1300 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2" to 3" clear water - Bottom reddish-brown Light flow
Station B	✓		2" to 3" clear water - Bottom beige/greenish
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Clear water - bottom beige/greenish
Weir - Downstream			
Station E	✓		Clear water - Moderate flow - bottom beig
Station F	✓		" " " " bottom reddish/be
Station G	✓		" " " " bottom reddish/brown
Unnamed Ditch			
Station H		✓	Snow + ice covered
Station I		✓	" " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers Water flowing through center of hay bales.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 2-23-01 Time 1100 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1-2" Clear water-flow Lt., bottom reddis
Station B		✓	Ice + Snow covered
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Water Clear, moderate flow bottom beige material.
Weir - Downstream			
Station E		✓	Ice + Snow Covered
Station F	✓		Clear water, moderate flow, bottom beige
Station G	✓		" " " " " "
Unnamed Ditch			
Station H		✓	Ice + Snow Covered
Station I		✓	" " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers Water flowing through center of haybales. Saw one water boatman near weir.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 3-2-01 Time 1100 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1-2" Clear water - Lt. flow - bottom reddis
Station B		✓	Ice + snow covered
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Clear water - Moderate flow - bottom beige/re
Weir - Downstream			
Station E		✓	Ice + snow covered
Station F	✓		Clear water - Moderate flow - bottom beige/re
Station G	✓		" " " " " " "
Unnamed Ditch			
Station H		✓	Ice + snow covered
Station I		✓	" " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in service

Condition of Weir/Hay Bale Barriers Hay bale barrier ok - water flowing through middle - bottom material beige/red

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 3-8-01 Time 3:30 pm Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2" to 3" clear water - bottom reddish.
Station B		✓	Snow covered
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Clear water, Lt. flow, bottom reddish.
Weir - Downstream			
Station E		✓	Snow covered
Station F	✓		clear water, Lt. flow, bottom reddish
Station G	✓		" " " " " "
Unnamed Ditch			
Station H		✓	Snow covered
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Good, water flowing through center of hay bale barrier. Bottom reddish.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 3-13-01 Time 11:50 Inspector(s) G. ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		5" WATER CLEAR; REDDISH ON BOTTOM
Station B	✓		5" WATER CLEAR; REDDISH AND WEIGHT ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D	✓		WATER CLEAR; REDDISH ON BOTTOM
Weir - Downstream			
Station E		✓	SNOW AND ICE COVERED
Station F	✓		MODERATE FLOW WATER CLEAR; REDDISH ON BOTTOM,
Station G	✓		"
Unnamed Ditch			
Station H		✓	LIGHT FLOW WATER CLEAR; SNOW COVERED
Station I		✓	SNOW COVERED
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level OUT OF SERVICE

Condition of Weir/Hay Bale Barriers MODERATE FLOW THROUGH CENTER OF HAY BALE WEIR; WATER CLEAR, REDDISH MATERIAL ON BOTTOM BELOW HAY BALE WEIR

Job File 1004

MAILED
2-28-01 alk

WETLANDS PRESERVATION INC.

February 28, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This letter is intended to provide you with an update on the status of the temporary south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for January 8 through February 8, 2001.

Water levels remain high in the south ditch system; the majority of areas were covered with snow and ice. Pockets of open water were observed at Stations A, B, D and F. The water at these locations was clear with a reddish and beige material observed on the bottom. Stations C, E, and G-I were covered with snow and ice.

The hay bale check dam is in good working order. A light flow was observed through the center of the hay bale check dam, and water was clear. A light, reddish brown material was observed immediately below the hay bale check dam, and water was clear.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:alk

Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Glen Coffman - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT01January

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Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 1-19-01 Time 1345 Inspector(s) Al Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2-3" clear water - bottom reddish
Station B		✓	ice + snow covered
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Water clear - moderate flow bottom beige
Weir - Downstream			
Station E		✓	ice + snow covered
Station F	✓		water clear - moderate flow - beige botto
Station G		✓	ice + snow covered.
Unnamed Ditch			
Station H		✓	Snow covered
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in service

Condition of Weir/Hay Bale Barriers Clear water flowing through center of hay bales. Bottom beige colored

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 1-26-01 Time 1230 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1-3" clear water - no flow - bottom reddish,
Station B		✓	Ice + Snow Covered.
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Clear water - Moderate flow - bottom beige.
Weir - Downstream			
Station E		✓	Ice + Snow Covered
Station F	✓		Clear water - Moderate flow - heavy bottom
Station G		✓	Ice + Snow Covered
Unnamed Ditch			
Station H		✓	Snow Covered
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level Out of Service

Condition of Weir/Hay Bale Barriers Water flowing through middle area of hay bales. Water clear - bottom has beige material. Noted rabbit + coyote tracks in snow along ditch.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 2-2-01 Time 1300 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		2 to 3" Clear Water - Bottom Reddish/brown
Station B	✓		" " " " " " "
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Clear Water - moderate flow Bottom beige + reddish brown.
Weir - Downstream			
Station E		✓	Ice + Snow Covered
Station F	✓		Clear Water - Moderate flow
Station G	✓		Bottom beige + reddish brown.
Unnamed Ditch			
Station H		✓	Snow covered
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level not in use.

Condition of Weir/Hay Bale Barriers Good Water flowing through center of hay bale barrier at Station G. (downstream front)

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 2-3-01 Time 10:00 AM Inspector(s) G. ANDREN

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		3" WATER MEMBRISH MATERIAL ON B.
Station B	✓		3" WATER RIDGE MATERIAL ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	[illegible]
Weir - Upstream			
Station D	✓		MINIMAL FLOW WITH [illegible] RIDGE MATERIAL ON BOTTOM
Weir - Downstream			
Station E		✓	SNOW & ICE COVERED
Station F	✓		DEEP WATER [illegible]
Station G			SNOW COVERED & RIDGE ON BOTTOM
Unnamed Ditch			
Station H		✓	
Station I		✓	← SNOW COVERED
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers WATER [illegible] FLOWING THROUGH CENTER OF HAY BALE BARRIER. REMOVE BROWN MATERIAL ON BOTTOM RIDGE AND INSIDE HAY BALE BARRIER

WETLANDS PRESERVATION INC.

MAILED
1-19-01 ell

January 19, 2001

Mr. Steve Morrow
Olin Environmental Management, Inc.
PO Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility, Wilmington, MA

Dear Mr. Morrow:

This status report is being provided to you as an update to the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for December 15, 2000 through January 10, 2001.

Water levels remain high in the south ditch system; the majority of areas were covered with snow and ice. Pockets of open water were observed at Stations D and F. The water at these locations was clear with a beige material observed on the bottom. Stations A-C, E, and G-I were covered with snow and ice.

The hay bale check dam is in good working order. A light flow was observed through the center of the hay bale check dam and water was clear. A light beige material was observed immediately below the hay bale check dam, and water was clear.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews

Geoffrey C. Andrews
Wetland Scientist

GCA:dlb
Attachments

cc: Mr. Al Peirce - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Keith Hansen - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT00December

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Plaistow, NH 03865
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Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 1-10-01 Time 12:00 Inspector(s) G. ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A		✓	ICE AND SNOW
Station B		✓	
West Ditch Foot Bridge			
Station C		✓	FILLED
Weir - Upstream			
Station D	✓		BEIGE MATERIAL ON BOTTOM MODERATE FLOW CLEAR
Weir - Downstream			
Station E		✓	SNOW AND ICE
Station F	✓		MODERATE FLOW CLEAR BEIGE MATERIAL ON BOTTOM;
Station G		✓	SNOW AND ICE
Unnamed Ditch			
Station H		✓	
Station I		✓	SNOW AND ICE
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level NOT IN SERVICE

Condition of Weir/Hay Bale Barriers MODERATE FLOW THROUGH CENTER OF HAY BALES; BEIGE MATERIAL ON BOTTOM. FLOW IS CLEAR.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 1-4-01 Time 1045 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1-2" clear water - bottom reddish
Station B		✓	ice + snow covered
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		moderate flow water clear bottom beige.
Weir - Downstream			
Station E		✓	ice + snow covered
Station F	✓		moderate flow - water clear, bottom beige
Station G		✓	ice + snow covered
Unnamed Ditch			
Station H		✓	ice + snow covered
Station I		✓	" " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Flow through middle of hay bales - water clear - bottom beige

Noted coyote + rabbit tracks along ditch.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 12-22-00 Time 1100 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		3" clear water - bottom red/brown Lt. flow
Station B	✓		3" " " " red/brown/beige
West Ditch Foot Bridge			
Station C		✓	Filled in.
Weir - Upstream			
Station D	✓		Moderate flow - Clear water - bottom brow
Weir - Downstream			
Station E		✓	Ice covered
Station F	✓		Moderate flow - clear water - bottom red/br
Station G	✓		" " " " " "
Unnamed Ditch			
Station H		✓	ice covered
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level out of service

Condition of Weir/Hay Bale Barriers Hay bales ok - flow through middle
Coyote tracks in snow along S. ditch

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 12-15-00 Time 1300 Inspector(s) Allan Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		ice covered
Station B		✓	" "
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		ice covered
Weir - Downstream			
Station E		✓	ice covered
Station F	✓		Clear water - bottom red/brown
Station G	✓		" " " " "
Unnamed Ditch			
Station H		✓	ice covered
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers Hay bales ok - flow going through. Observed coyote tracks in snow in numerous spots along S. Ditch.

WETLANDS PRESERVATION INC.

MAILED 12-11-00 DLB

December 8, 2000

Mr. Steve Morrow
Olin Environmental Management, Inc.
PO Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility, Wilmington, MA

Dear Mr. Morrow:

This status report is being provided to you as an update to the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for November 11 through November 16 and December 1 through December 6, 2000.

Water levels remain high in the south ditch system due to recent rainfall events, and all stations inspected contained water. The majority of the ditch system is covered with ice. Pockets of open water were observed at Stations D and E. The water at these locations was tea colored. No observation was made at Stations A and B on December 6; however, observations conducted on previous occasions, during the monitoring period, indicated standing water with a reddish brown and beige material present on the bottom. Stations H and I are covered with ice at this time.

The hay bale check dam is in good working order. A light flow was observed through the center of the hay bale check dam and water was clear.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews

Geoffrey C. Andrews
Wetland Scientist

GCA:dlb
Attachments

cc: Mr. Don Cameron - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Keith Hansen - Law Environmental Consultants, Inc.
Ms. Margret Hanley
Laurie Burt, Esquire

#1004STAT00November

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✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 11-16-00 Time 1300 Inspector(s) Allan W Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		3" clear water. Bottom reddish brown
Station B	✓		" " " . Bottom brown beige Light flow
West Ditch Foot Bridge			
Station C			Filled in.
Weir - Upstream			
Station D			Standing water - bottom not visible.
Weir - Downstream			
Station E			" " "
Station F			" " "
Station G			" " "
Unnamed Ditch			
Station H		✓	2" clear water
Station I		✓	" " "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers Water backed up behind barriers. Some flow through + around.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 11/2/00 Time 12:40 Inspector(s) G. ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		REDDISH BROWN MATERIAL ON BOTTOM WATER CLEAR, 3+"
Station B		✓	6" INCHES / WATER CLEAR
West Ditch Foot Bridge			
Station C		✓	FILLED V
Weir - Upstream			
Station D		✓	WATER TEA COLORED
Weir - Downstream			
Station E		✓	WATER TEA COLORED SOME
Station F	✓		MATERIAL ON BOTTOM
Station G	✓		
Unnamed Ditch			
Station H		✓	NO FLOW
Station I		✓	
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers SEVERAL HAY BALE BARRIERS ~~AND~~ PLACED IN SOUTH DITCH TO REDUCE FLOW VELOCITIES AND CONTAIN POTENTIAL SEDIMENT MOVEMENT. LIGHT FLOW WATER CLEAR

✓

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 12-1-00 Time 1330 Inspector(s) Allan W Peirce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		4" Clear Water - Bottom red/brown
Station B	✓		4" " " Bottom beige in middle
West Ditch Foot Bridge			
Station C		✓	Filled in
Weir - Upstream			
Station D	✓		Standing Clear water / bottom beige. Light flow over temporary dam
Weir - Downstream			
Station E	✓		Water opaque - beige material
Station F	✓		on bottom
Station G	✓		Bottom reddish brown - water clear
Unnamed Ditch			
Station H		✓	Ponded clear water 2"
Station I		✓	" " " 1"
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers Hay bales + silt fence holding back water with light flow through barrier.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 12-6-00 Time 2:30 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A			
Station B			NO OBSERVATION MADE
West Ditch Foot Bridge			
Station C		✓	FILLED IN
Weir - Upstream			
Station D	✓		LIGHT FLOW TEA COLORED WATER WITH SOME ORANGE MATERIAL ON BOTTOM.
Weir - Downstream			
Station E	✓		
Station F		✓	ICED OVER
Station G		✓	
Unnamed Ditch			
Station H		✓	
Station I		✓	
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers HAY BALE HOLDING WATER WITH SOME FLOW OBSERVED THROUGH CENTER OF BALES.

WETLANDS PRESERVATION INC.

MAILED

November 17, 2000

Mr. Steve Morrow
Olin Environmental Management, Inc.
PO Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This status report is being provided to you as an update to the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for October 12 and November 2, 2000.

Water levels remain high in the south ditch system due to the removal of contaminated sediment below current groundwater levels. A temporary weir has been constructed in the location of the old weir, which was removed as part of the sediment removal. Installation of the new culvert control weir continues. Several hay bale check dams exist within the south ditch to reduce flow velocities and contain potential sediment movement during the sediment removal effort. A large pond area exists at the end of the south ditch at the current limit of work associated with the sediment removal. The water throughout the ditch system was tea colored. A light flow was observed in the south ditch flowing east. Stations A and B contain slightly turbid water with a reddish-brown material observed on the bottom. Station C no longer exists due to the backfilling of the area to complete construction of the slurry wall. Stations D, E, F, & G contained tea colored water with patches of orange material observed throughout. No standing water or flow was observed at Stations H and I.

The hay bale check dam is in good working order. A light flow was observed through the center of the hay bale check dam and water was clear at this point.

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47 Newton Road
Plaistow, NH 03865

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:alk

Attachments

cc: Mr. Don Cameron - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Keith Hansen - Law Environmental Consultants, Inc.
Ms. Margret Hanley

#1004STAT00November

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 10-12-00 Time 1340 Inspector(s) D. McCauley & Al Pierce

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Reddish-brown material on bottom
Station B	✓		water clear
West Ditch Foot Bridge			
Station C		✓	No bridge, No west ditch
Weir - Upstream			
Station D		✓	very light flow - clear
Weir - Downstream			
Station E		✓	
Station F	✓		material on bottom - water clear
Station G	✓		
Unnamed Ditch			
Station H		✓	No flow
Station I		✓	" "
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level 0 No Gauge

Condition of Weir/Hay Bale Barriers Good - water being pumped around old west ditch

WETLANDS PRESERVATION INC.

MAILED
10-10-00 alk

October 5, 2000

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This status report is being provided to you as an update to the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for September 5 through October 3, 2000.

Removal of the contaminated sediment from the south portion of the west ditch is complete. Standing water was observed in this portion of the west ditch and water was clear. The standing water at this location is primarily groundwater. Water levels have increased in the south ditch system, due to the removal of contaminated sediment below current groundwater levels. The weir has been removed as part of the sediment removal and construction of the new weir is underway. A hay bale check dam was placed in the location of the weir. Several hay bale check dams exist within the south ditch to reduce flow velocities and contain potential sediment movement during the sediment removal effort. A large pond area exists at the end of the south ditch at the current limit of work associated with the sediment removal and the water was clear. A light flow was observed in the south ditch flowing east. A light flow has temporarily been diverted to the west from the hay bale check dam placed in the area of the old weir to a temporary sump. The flow is then diverted farther downstream within the south ditch. All discharge points associated with the dewatering effort were clear. Stations A and B contain clear water with a reddish-brown material observed on the bottom. At Stations F and G, an orange material was observed in patches throughout. No standing water was observed at Stations H and I.

The hay bale check dam is in good working order. An additional line of hay bales wrapped in Geo-Textile fabric. A light flow was observed through the center of the hay bale check dam.

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47 Newton Road
Plaistow, NH 03865

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 11/2/00 Time 10:40 Inspector(s) G. ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		REDDISH BROWN MATERIAL ON BOTTOM WATER CLEAR, 3+"
Station B		✓	6+ INCHES / WATER CLEAR
West Ditch Foot Bridge			
Station C		✓	FILLED V
Weir - Upstream			
Station D		✓	WATER NOT COLORED
Weir - Downstream			
Station E		✓	WATER NOT COLORED SLIME
Station F	✓		MATERIAL ON BOTTOM
Station G	✓		
Unnamed Ditch			
Station H		✓	NO FLOW
Station I		✓	
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level _____

Condition of Weir/Hay Bale Barriers SEVERAL HAY BALE BARRIERS ~~AND~~ PLACED IN SOUTH DITCH TO REDUCE FLOW VELOCITIES AND CONTAIN POTENTIAL SEDIMENT MOVEMENT. LIGHT FLOW WATER CLEAR.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
Wetland Scientist

GCA:dlb

Attachments

cc: Mr. Don Cameron - Olin Wilmington
Mr. John Keeley - Wilmington Conservation Commission
Mr. Chris Pyott - Department of Environmental Protection
Mr. Keith Hansen - Law Environmental Consultants, Inc.
Ms. Margret Hanley

#1004STAT00October

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 10-3-00 Time 11:45 Inspector(s) GEOFFREY ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1"± STANDING WATER
Station B	✓		REDDISH BROWN MATERIAL ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	STANDING WATER CLEAR
Weir - Upstream			
Station D		✓	LIGHT FLOW TOWARD DEWATERING SUMP WATER CLEAR.
Weir - Downstream			
Station E		✓	STANDING WATER AND CLEAR
Station F	✓		ORANGE MATERIAL ON BOTTOM
Station G	✓		IN PATCHES / WATER CLEAR
Unnamed Ditch			
Station H		✓	NO FLOW
Station I		✓	
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level 0

Condition of Weir/Hay Bale Barriers GOOD CONDITION.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9-14-00 Time 1320 Inspector(s) D.W. Cameron

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			Puddles - Reddish-Brown
Station A	✓		Material on Bottom
Station B	✓		
West Ditch Foot Bridge			
Station C		✓	No Flow
Weir - Upstream			
Station D	✓		No Weir - No Flow
Weir - Downstream			
Station E	✓		No Flow
Station F	✓		No Flow
Station G	✓		No Flow
Unnamed Ditch			
Station H		✓	Dry
Station I		✓	Dry
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level No Gauge

Condition of Weir/Hay Bale Barriers Hay Bales intact - No Flow

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9-27-00 Time 1315 Inspector(s) Dill Cameron

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Reddish-brown material on bottom
Station B	✓		½" water clear
West Ditch Foot Bridge			
Station C		✓	material mixed to bio-cell
Weir - Upstream			
Station D		✓	water in ditch to
Weir - Downstream			
Station E		✓	central pond
Station F		✓	
Station G	✓		being dredged on
Unnamed Ditch			
Station H		✓	Dry
Station I		✓	Dry
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level No Change

Condition of Weir/Hay Bale Barriers OK

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9-29-00 Time 1140 Inspector(s) [illegible]

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1" standing water
Station B	✓		
West Ditch Foot Bridge			
Station C		✓	water in ditch - NE bridge
Weir - Upstream			
Station D		✓	very slow flow
Weir - Downstream			
Station E		✓	
Station F		✓	
Station G		✓	
Unnamed Ditch			
Station H		✓	dry
Station I		✓	dry
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level 0

Condition of Weir/Hay Bale Barriers Extra bales added and wrapped in Geo-Textile

#1004

MAILED
9-11-00 BC

WETLANDS PRESERVATION INC.

September 5, 2000

Mr. Steve Morrow
Olin Environmental Management, Inc.
P.O. Box 248
Charleston, TN 37310

Re: Status Report - Interim Action Plan
Olin Chemical Facility
Wilmington, MA

Dear Mr. Morrow:

This status report is being provided to you as an update to the south ditch weir located at the Olin facility in Wilmington, Massachusetts. Attached are the weekly weir inspections for August 23 through September 5, 2000.

Water levels have decreased in the ditch system and behind the weir. The NPDES discharge was relocated to the east end of the south ditch. Some ponding was observed behind the weir system, with light flows observed within the ditch system. Stations A, B, D, E, F and G contain clear water with a reddish brown material observed on the bottom. No standing water was observed at Stations H and I. Station C contained no flow with only isolated pockets of standing water towards the south.

The hay bale check dam is in good working order. No flow was observed below the hay bale dam or within the secondary flow path east of the dam.

I trust this information is sufficient for your review. If you have any questions or require additional information, please feel free to contact me.

Cordially,

Geoffrey C. Andrews
bsg

Geoffrey C. Andrews
Wetland Scientist

GCA:bsg

Attachments

cc: Mr. Don Cameron - Olin Wilmington
Ms. Margret Hanley – Greenfield International
Mr. John Keeley - Wilmington Conservation Commission
Chris Pyott - Department of Environmental Protection
Keith Hansen - Law Environmental Consultants, Inc.

#1004STAT00September

475 Ipswich Road
Boxford, MA 01921

E-mail: wetlandwpi@greennet.net
Fax: (603) 382-3492

47 Newton Road
Plaistow, NH 03865

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 9/5/00 Time 11:20 Inspector(s) G. ANDREWS

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1" STANDING WATER REDDISH BROWN MATERIAL ON BOTTOM.
Station B	✓		1.5" STANDING WATER REDDISH BROWN AND BEIGE MATERIAL ON BOTTOM
West Ditch Foot Bridge			
Station C		✓	DRY
Weir - Upstream			
Station D	✓		LIGHT FLOW. REDDISH BROWN MATERIAL ON BOTTOM.
Weir - Downstream			
Station E	✓		LIGHT FLOW, REDDISH BROWN AND BEIGE MATERIAL ON BOTTOM
Station F	✓		
Station G	✓		WATER CLEAR
Unnamed Ditch			
Station H		✓	DRY
Station I		✓	DRY
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level .52

Condition of Weir/Hay Bale Barriers

STANDING WATER BEHIND HAY BALE CHECK DAM.

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 3-27-00 Time 0 3:46 Inspector(s) [illegible]

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		1/4" Puddle Red/brown material
Station B			1" Puddle in bottom
West Ditch Foot Bridge			
Station C		✓	Dry - Not flow
Weir - Upstream			
Station D	✓		Not flow
Weir - Downstream			
Station E	✓		Standing water
Station F	✓		Red/brown material in bottom
Station G	✓		
Unnamed Ditch			
Station H		✓	Muddy
Station I		✓	Muddy
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level 3.7' Dry

Condition of Weir/Hay Bale Barriers OK No visible discharge released to chain end of earth ditch

Inspection Report

Interim Action Plan
West Ditch Precipitate

Wilmington Facility
Olin Chemical Corporation

Date 8-31-88 Time 1305 Inspector(s) [illegible]

Station Inspection	Precipitate Observation Yes	Precipitate Observation No	Other Observations
Offsite Fenced Ditch System			
Station A	✓		Puddles
Station B	✓		4" water - clear
West Ditch Foot Bridge			
Station C		✓	DRY
Weir - Upstream			
Station D	✓		TRICKLE -
Weir - Downstream			
Station E	✓		No Flow AT
Station F	✓		STATION F + G
Station G	✓		
Unnamed Ditch			
Station H		✓	DRY
Station I		✓	DRY
Supplemental Inspection Locations (designate Station Location on page 2 of 2)			

Staff Gauge Level .73'

Condition of Weir/Hay Bale Barriers HAY DIKES - dry - 2 FRAME

Olin

P. O. BOX 248, 1186 LOWER RIVER ROAD, NW, CHARLESTON, TN 37310-0248

(423) 336-4000 FAX: (423) 336-4166

November 27, 2002

Stephen M. Johnson, Chief
Site Management Section
Bureau of Waste Site Cleanup
Commonwealth of Massachusetts
Department of Environmental Protection
205A Lowell Street
Wilmington, MA 01887

Re: Request for Information; 51 Eames Street; DEP RTN 3-0471

Dear Mr. Johnson:

This responds to the Department's October 18, 2002 Request for Information to Olin concerning raw materials used, products manufactured, and chemical wastes disposed of at the 51 Eames Street facility in Wilmington, Massachusetts.

Before turning to Olin's responses, it is important to register two reservations about the information available to Olin on the subject matter of the requests. The Certification of Submittal attached to this letter is subject to these reservations.

First, the information requested is about events prior to Olin's involvement with the facility, including events that took place more than two decades before Olin's first involvement. Thus, Olin's responses are not based on the personal knowledge of Olin employees. Instead they are based on documents turned over to Olin when Olin purchased the facility, as well as documents, witness interviews and depositions obtained by Olin during a lawsuit against the prior owners

and operators of the facility. While Olin believes that the information provided in this letter and its attachments is generally reliable and complete, Olin can only certify that it is accurate to the extent that those sources were and are accurate.

Second, while Olin believes that its responses fairly represent the body of information available on these subjects, that cannot be guaranteed. Olin has over 900 boxes of documents, containing over two million pages of information, stored in several locations as a result of the lawsuit against prior owners and operators of the facility. The time, manpower and funds have not been available to recover all of those documents from storage and to search through them to supplement Olin's responses to the Commonwealth's requests for information. If the Department wishes to review those documents, Olin will make them available at their storage sites for review and for copying.

Responses to Information Requested

> Request. Please provide a complete list of all raw materials used at the 51 Eames Street facility during operations prior to Olin's ownership at the site. For any raw materials that are comprised of a mixture of chemical compounds, please provide information (such as Material Safety Data Sheets) that identify the components of such materials.

Response. Attachment 1 is a copy of an Appendix to an expert report prepared by Dr. Andy Davis of Geomega, in connection with the lawsuit discussed above. In that Appendix, Dr. Davis presents comprehensive information about six products manufactured at the facility, including information about their raw materials, their chemical composition, and the wastes that were generated as they were manufactured. As explained by Dr. Davis the six products accounted for most of the liquid process wastes that were disposed of to the ground and into the groundwater at

the facility over its life. We understand the Department's purpose in requesting information from Olin is to identify the full range of chemicals that might have contaminated the groundwater below and adjacent to the facility, and the information in Attachment 1, by itself, should go a long way toward meeting that purpose.

Attachment 2 is an environmental disclosure given to Olin by Stepan Chemical Company when Olin bought the facility in 1980. That disclosure lists products then being made and previously made at the facility, as well as the raw materials used and the waste/byproducts generated in the manufacture of those products.

Attachment 3 presents an additional list of raw materials believed by Olin to have been used at the facility during its life. The information in this list was originally assembled by Olin during the lawsuit discussed above for internal purposes, with no expectation that it would subsequently need to be provided to anyone outside the company. Thus, the information was not collected in a way to cross-reference the records or other sources from which it came. Nevertheless, Olin believes the list fairly represents information drawn largely from documents then available to Olin.

> Request. Please provide a complete list of all products manufactured at the 51 Eames Street facility prior to Olin's operations, and the individual chemical components of those products.

Response. Olin again refers the Department to Dr. Davis' study, included in Attachment 1 and to the 1980 environmental disclosure in Attachment 2. Additionally, Attachment 4 contains a list of products believed by Olin to have been manufactured at the 51 Eames Street facility

during operations prior to Olin's ownership at the site, based on a review of technical bulletins published then by the facility's marketing department and provided to customers and potential customers. Olin has had no reason to investigate or determine the individual chemical components of these products.

> Request. Please provide a complete list of all chemical wastes and by-products that are known to have been disposed at the 51 Eames Street facility prior to Olin's operations.

Response. Attachment 1 lists the chemical wastes and by-products that were disposed of at the facility in the manufacture of the six products identified by Dr. Davis as accounting for all but a small amount of the liquid process waste that entered the ground and groundwater at the facility. Attachment 2, the environmental disclosure provided to Olin when it purchased the facility, also identifies chemical wastes associated with specific products. Additionally, Attachment 5, which is a copy of Olin's Supplemental Answers to Interrogatories posed by the Biltrite Corporation during the lawsuit discussed above, lists by location at the facility and time period, known releases of chemical wastes and by-products throughout the operating history of the facility. Further, I refer you to the information Olin submitted by letter to Mr. Pyott on May 16, 2002. The vast majority of potential contaminants of concern listed in Table 1 of that letter were chemicals used in making products both before and after Olin purchased the facility and that list is also thus responsive to your request. The Department should not assume that the chemicals were placed in the environment during the period of Olin's ownership simply because the information about them came from post – 1980 sources. To the extent those contaminants are found at the facility, Olin believes, based on all the evidence available, that, they were most likely disposed of there before Olin arrived on the scene.

Finally, in the interest of fully responding to the Department's requests for information, Olin asked Dr. Davis to go through his facility related records and to identify all chemicals referred to in connection with the facility. Attachment 6 presents the results of Dr. Davis's search.

Please let me know if you have questions regarding the above.

Sincerely,

Thomas P. O'Brien

Thomas P. O'Brien,
Manager Environmental Sites

Attachments

CERTIFICATION OF SUBMITTAL REQUIRED AT 310 CMR 40.0009(1) AND (6)

Re:

REQUEST FOR INFORMATION

I, Thomas P. O'Brien, 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 submittal, (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 person or 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.

Date: November 27, 2002

By: _____

ATTACHMENT 1

Appendix B: Product Formulation, Waste Streams, and Production

B-1 Introduction

Manufacturing and production records, as well as the report from Richard Strauss (1999), were used to calculate the amount of process waste that was sent to pits, ponds, and lagoons at the Wilmington property from 1953 to 1986. Products with liquid waste streams that were included in the analyses for this report were Opex, Kempore, hydrazine, Wytox ADP, OBSC/OBSH, and Wiltrol-N (Boynton, 1973; Ecology and Environment, 1980; Environmental Disclosure, 1980; McBrien, 1983c). Nitropore 5PT and phenolic and urea formaldehyde resins were identified in various documents as also producing liquid waste streams. Because Nitropore 5PT was produced only in small quantities (24,000 lb/yr) from 1973 to 1986, first in the pilot plant and later in Plant D-1, it was not included (Environmental Disclosure, 1980; Landry, 1999; McBrien, 1983b). Resins were produced from 1961 to 1967, first in the pilot plant and later in Plant B (Cantwell, 1997; Environmental Disclosure, 1980; Judd, 1997). Documents suggest that the resin waste products, which included only raw materials (phenol and formaldehyde), may have been removed by lime treatment in a trap pit outside Plant B (Environmental Disclosure, 1980; MIC, 1958; NPI, 1954; Riley, 1997a). Because there was no apparent filtering or washing step in the resin manufacturing process that would have generated significant quantities of waste, resins were not considered further in the analyses for this report (Judd, 1997; Riley, 1997a; Wandell, 1997).

The following sections describe the product formulation, waste stream composition, and production levels for Opex, Kempore, hydrazine, Wytox ADP, OBSC/OBSH, and Wiltrol-N. All chemical reactions in this section are taken from Strauss (1999).

B-2 Opex

Opex, also referred to by other names, such as Product A, RPC, 4X, dinitroso-pentamethylenetetramine (DNPT), was produced in Plant A (Figure B-1) from 1953 to 1986 (Cantwell, 1997; Environmental Disclosure, 1980; Judd, 1997; Swanson, 1997).

Opex is a nitrogen-blowing agent used in the manufacture of shoe soles, mechanical goods, insulation, and athletic equipment (Lasman, 1965).

B-2.1 Opex Product Formulation

The raw materials used in the manufacture of Opex at the Wilmington property included hexamethylenetetramine (hexa), sodium nitrite, and dilute hydrochloric acid (HCl). The manufacturing information summarized in this section is taken from Badger (1969), Strauss (1999), and Swanson (1958). To make a batch of Opex ($C_6H_{12}N_4$), solutions of hexa ($C_6H_{12}N_4$) and a slight excess of sodium nitrite ($NaNO_2$) were charged to a reactor with water. A dilute hydrochloric acid (HCl) solution was slowly added with ice to control the temperature of the reaction, which proceeded according to,

$$C_6H_{12}N_4 + 2NaNO_2 + 2HCl \rightarrow C_5H_{10}O_2N_6 + HCHO + 2NaCl + H_2O \quad . \qquad \text{(B-1)}$$

Formaldehyde (HCHO) and sodium chloride (NaCl) were generated as waste products. A portion of the hexa that was not reacted according to equation B-1 was decomposed by hydrochloric acid to ammonium chloride (NH_4Cl) and formaldehyde, i.e.,

$$C_6H_{12}N_4 + 4HCl + 6H_2O \rightarrow 4NH_4Cl + 6HCHO \quad . \qquad \text{(B-2)}$$

A schematic of the general steps in the process is presented in Figure B-2. As the temperature of the mixture cooled, Opex precipitated out of solution and 598 Oil was added to coat the solid. The oily mixture was pumped to a pan filter and washed with water. The solid Opex was retained on the filter, and the water-soluble products in the filtrate were sent to a drain.

B-2.2 Opex Waste Streams

The composition of the drain liquid included water soluble reaction products (formaldehyde, ammonium chloride, sodium chloride) and unreacted raw materials (sodium nitrite, 598 Oil). In addition, the drain liquid included water from the batch charge, a small amount from ice, and sodium nitrite and hydrochloric acid solutions (Badger 1969; Moorman, 1963; Strauss, 1999; Swanson, 1958). A small loss of water occurred through chemical reaction (equations B-1 and B-2). The oily mixture, that included Opex, was washed and filtered, however, insufficient information was available to calculate this quantity on a batch basis. The filtration water was accounted for indirectly in the calculation of other water streams in the effluent, as discussed in Section B-8.

Figure B-2 illustrates the general steps in the process, with typical quantities of batch reactants and products. The composition of the waste stream is summarized in Table B-1. Opex wastes were sent to Lake Poly from 1953 to 1969, the Acid Pits from 1970 to 1971, and the wastewater treatment plant from 1972 until the plant closure in 1986 (Figure B-1; Badger, 1969; Raytheon, 1970; Riley, 1997a; Willwerth, 1997).

B-2.3 Opex Production

Annual production levels of Opex (Table B-2) were determined from available production records (ABR, 1963; Badger, 1969; NPI Operations Reports, 1965; NPI Operations Reports, 1966; McBrien, 1980b; McBrien, 1983a; McBrien, 1984; NPI Daily Production Summaries for Weeks Ending August to December, 1961; Swanson, 1961). An interpolation between two known values was used for years that information was not available. An interpolation from zero in 1952 to the level of production that was obtained from documents for 1961 was used to determine production from 1953 through 1960. This assumption is consistent with the increase of sales from 1953 to 1958 (ABR Sales Summary, 1959). Production decreased from 1969 to 1984, therefore, the production levels for 1985 and 1986, which were not available, were assumed to be the same as

production levels in 1984. The 1986 production level was scaled down to reflect that production had ceased by September of 1986.

B-3 Kempore

Kempore, also referred to by other names, such as Product K-1, azodicarbonamide or azobisformamide (HDCI), was produced in Plant C-1 (Figure B-1) from 1956 to 1986 (Environmental Disclosure, 1980; Hwozdek, 1997; Judd, 1997). Kempore is a nitrogen-blowing agent used in the manufacture of vinyl-coated upholstery, luggage, garments, handbags, and vinyl flooring (Lasman, 1965).

B-3.1 Kempore Product Formulation

The Kempore manufacturing process was changed several times from 1956 to 1986 (Badger, 1969; D.Y.K., 1974; J.A.M., 1965; McBrien, 1978; Riley, 1964; Riley, 1965; Riley, 1966b; Strauss, 1999; Walker, 1965). The primary changes included the source of hydrazine used as a reactant, and the oxidizer used in the oxidation process. The first source of hydrazine used in the manufacture of Kempore was monohydrazine sulfate (MHS) from 1956 through 1963 (Strauss, 1999). From 1964 through most of 1970, hydrazine was produced in the CCU process at the site, and after that, hydrazine was purchased. Sodium dichromate was used as the oxidizing agent from 1956 until April, 1967, when sodium dichromate was used. The manufacturing information summarized in this section is taken from Badger (1969), NPI Kempore Operating Instructions (1967), NPI Kempore Operating Procedure, McBrien (1978), and Strauss (1999).

B-3.1.1 Sodium Dichromate Oxidation

Hydrazocarbonamide (HDCA, $NH_2CONHNHCONH_2$), an intermediate to Kempore, was produced by reaction of urea (NH_2CONH_2) and MHS ($N_2H_4 \cdot H_2SO_4$) or hydrazine (N_2H_4) in the presence of a sulfuric acid (H_2SO_4) catalyst, i.e.,

$$2NH_2CONH_2 + N_2H_4 \cdot H_2SO_4 \rightarrow NH_2CONHNHCONH_2 + (NH_4)_2SO_4 \quad , \qquad \text{(B-3)}$$

$$2NH_2CONH_2 + N_2H_4 + H_2SO_4 \rightarrow NH_2CONHNHCONH_2 + (NH_4)_2SO_4 \quad . \qquad \text{(B-4)}$$

The HDCA reaction mixture was pumped to a second reactor for oxidation. From 1956 until April 1967, solid sodium dichromate ($Na_2Cr_2O_7 \cdot 2H_2O$) and sulfuric acid were used in the oxidation step, i.e.,

$$NH_2CONHNHCONH_2 + 1/3Na_2Cr_2O_7 \cdot H_2O \ + 1/3H_2SO_4 \rightarrow \qquad \text{(B-5)}$$

$$NH_2CON : NCONH_2 + 1/3Cr_2O_3 + 1/3Na_2SO_4 + 2H_2O.$$

The Kempore ($NH_2CON{:}NCONH_2$) slurry was filtered and washed free of salts. The combined filtrate and washwater, containing urea, sulfuric acid, chrome oxide (Cr_2O_3), sodium sulfate (Na_2SO_4), and ammonium sulfate ($(NH_4)_2SO_4$) were sent to a drain. The wet cake from the filter press was dried, and the dry cake was ground into various particle sizes for sale. A schematic of the general steps in the process using sodium dichromate is presented in Figure B-3.

B-3.1.2 Sodium Chlorate Oxidation

From April, 1967 to 1986, hydrazine from the CCU process or purchased hydrazine was used in the HDCA step (equation B-4), and sodium chlorate ($NaClO_3$) was used in the oxidation step to produce Kempore, i.e.,

$$NH_2CONHNHCONH_2 + 1/3NaClO_3 + 1/6H_2SO_4 \rightarrow \qquad \text{(B-6)}$$

$$NH_2CON : NCONH_2 + 1/3HCl + 1/6Na_2SO_4 + H_2O.$$

The HDCA slurry was thickened prior to oxidation, generating a filtrate that was sent to a drain. A small amount of bromine, added as sodium bromide (NaBr), was added as a catalyst in the oxidation step, reacting according to,

$$6NaBr + 3Na_2SO_3 + NaClO_3 + 7/2H_2SO_4 \rightarrow 6HBr + HCl + 13/2Na_2SO_4 \ . \qquad \text{(B-7)}$$

The Kempore slurry was filtered and washed free of salts. The combined filtrate contained urea, sulfuric acid, hydrochloric acid (HCl), sodium sulfate, ammonium sulfate, and hydrogen bromide (HBr). A schematic of the general steps in the process using sodium chlorate is presented in Figure B-4.

B-3.2 Kempore Waste Streams

The drain liquid from 1956 through March of 1967 was composed of the water soluble reaction products chrome oxide, sodium sulfate, and ammonium sulfate, and the unreacted raw materials urea and sulfuric acid (Strauss, 1999). From April, 1967 to 1986, the drain liquid was composed of the water soluble reaction products hydrochloric acid, sodium sulfate, ammonium sulfate, and hydrogen bromide, and the unreacted raw materials urea and sulfuric acid. In addition, the drain liquid included water from the filtration step, batch reactants, and chemical reaction (McBrien, 1978; NPI Kempore Operating Instructions (1967), NPI Kempore Operating Procedure; Strauss, 1999).

Figures B-3 and B-4 illustrate the general steps in the process for the sodium dichromate and sodium chlorate processes, respectively, with typical quantities of batch reactants and products. The composition of the waste stream is summarized in Table B-3 for the sodium dichromate process, and in Table B-4 for the sodium chlorate process. Two numbers are presented for the water added to the HDCA reactor to reflect the difference in water content of the hydrazine source (MHS, CCU hydrazine, and purchased hydrazine) and the batch water added. Liquid wastes were sent to Lake Poly from 1956 to 1957, the East and West Pits from 1958 to 1965, the Acid Pits from 1966 to 1971, and the wastewater treatment plant from 1972 until the plant closure in 1986 (Figure B-1; Badger, 1969; Hwozdek, 1997; Raytheon, 1970; Riley, 1997a; Willwerth, 1997).

B-3.3 Kempore Production

Annual production levels of Kempore (Table B-5) were determined from available production records (ABR, 1963; Badger, 1969; NPI Operations Reports, 1965; NPI

Operations Reports, 1966; McBrien, 1980a; McBrien, 1983a; McBrien, 1984; Production, 1967; NPI Daily Production Summaries for Weeks Ending August to December, 1961; Swanson, 1961). An interpolation between two known values was used for years that information was not available. For 1956 through 1960, an interpolation from zero in 1955 to the level of production identified in documents for 1961 was assumed, which is consistent with the increase in sales from 1953 to 1958 (ABR Sales Summary, 1959). Kempore dispersions (Kempore SD) produced at the property were a mixture of manufactured Kempore with another chemical such as di-octyl phthalate (DOP). It was assumed that in production records, the amount of Kempore reported as a Kempore dispersion was also counted as Kempore, and therefore, Kempore dispersions were not included in production numbers (Strauss, 1999). Production decreased from 1979 to 1984, therefore, production levels for 1985 and 1986, which were not available, were assumed to be the same as production levels in 1984. The 1986 production level was scaled down to reflect that production had ceased by September of 1986.

B-4. Hydrazine

The chlorourea (CCU) process was developed at the Wilmington property to manufacture hydrazine for the production of Kempore. The CCU process was carried out in Plant C-3 (Figure B-1) from 1963 until sometime in 1970 (Environmental Disclosure, 1980; McBrien, 1980a; Papazian, 1967b; Strauss, 1961; Strauss, 1999). After 1970, hydrazine for the Kempore process was purchased.

B-4.1 Hydrazine Product Formulation

The manufacturing procedures and chemical reactions summarized in this section are taken from Strauss (1999). The CCU process was conducted in several steps. The first step was completed in a glass-lined Pfaudler reactor, where liquid chlorine (Cl_2) was mixed with a large excess of urea (NH_2CONH_2) suspended in a small quantity of water. The chlorourea mixture, containing chlorourea, urea hydrochloride complex, and urea, was metered into a pipeline reactor with an excess of sodium hydroxide solution (NaOH). The reaction products from the pipeline reactor were charged to a covered quench tank

containing excess sulfuric acid (H_2SO_4). Carbon dioxide was generated in this step and was vented to a scrubber, where it was absorbed and drained to a floor drain. The overall chemical reaction is

$$NH_2CONH_2 + Cl_2 + 4NaOH + H_2SO_4 \rightarrow N_2H_4 + 2NaCl + Na_2SO_4 + H_2CO_3 + 2H_2O \quad . \tag{B-8}$$

The quenched slurry was pumped into a horizontal filter box to remove precipitated sodium chloride (NaCl) and sodium sulfate (Na_2SO_4) salts. The salts were washed with cold water to remove adhered solution, and the filtrate solution containing the hydrazine (N_2H_4) was transferred to the Kempore process in Plant C-1. The remaining salts on the filter box were dissolved in hot water and discharged to the drain. A schematic of the general steps of the process is presented in Figure B-5.

B-4.2 Hydrazine Waste Streams

The discharges to the drain included the salt solution from the hot water wash (sodium chloride and sodium sulfate) and the scrubber water (Table B-6). At least from 1969 on, water for the hydrazine scrubber (20 gpm) was taken from cooling water (Badger, 1969). Therefore, water for the hydrazine scrubber was not calculated as part of the hydrazine waste stream but was included in the water calculation for the cooling water and other miscellaneous water streams (Section B-8). The amount of hot water added to dissolve the salts was the amount required to produce a 30% salt solution (Strauss, 1999). Wastes were sent to the East and West Pits from 1963 through 1965 and the Acid Pits from 1966 through 1970 (Figure B-1; Papazian, 1997a). Figure B-5 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-4.3 Hydrazine Production

Annual production of hydrazine (Table B-7) was estimated with available production records (Badger, 1969; NPI Operations Reports, 1965; NPI Operations Reports, 1966).

For years that data were not available, hydrazine production was estimated from Kempore production. The ratio of hydrazine to Kempore (0.34) was calculated from the years of available data, averaged, and applied to Kempore production for the years that no hydrazine data were available.

B-5 Wytox ADP

Wytox ADP, also referred to by other names, such as dioctyldiphenylamine (DODPA), Lestane, or Lestane X, is a rubber stabilizer used to protect rubber products from heat deterioration and flex cracking (Environmental Disclosure, 1980; Judd, 1997; Lasman, 1965; McBrien, 1983c). Wytox ADP was manufactured in Plant B (Figure B-1) from 1961 until 1971 (Badger, 1969; Judd, 1997; Riley, 1997a; Strauss, 1999).

B-5.1 Wytox ADP Product Formulation

The manufacturing information summarized in this section is taken from Strauss (1999). Wytox ADP ($C_{23}H_{43}N$) was produced by reacting diphenylamine (DPA, $C_{12}H_{11}N$) and di-isobutylene (DIB, C_8H_{16}) in the presence of an aluminum chloride ($AlCl_3$) catalyst, i.e.,

$$C_{12}H_{11}N + 2C_8H_{16} \xrightarrow{AlCl_3} C_{28}H_{43}N \quad . \qquad \text{(B-9)}$$

The aluminum chloride catalyst was removed from the batch by repeated washing with dilute caustic in water, which reacted to form aluminum hydroxide ($Al(OH)_3$) and sodium chloride (NaCl), i.e.,

$$AlCl_3 + 3NaOH \rightarrow Al(OH)_3 + 3NaCl \quad . \qquad \text{(B-10)}$$

After each water addition, the mixture was allowed to settle and the water layer containing the aluminum hydroxide and sodium chloride drained from the bottom of the reactor. A schematic of the general steps in the process is presented in Figure B-6. The finished product was drained in liquid form into long metal pans equipped with a heavy

chain on the inside of the pan (Wandell, 1997). The pans were placed outside of Plant B to dry. When the product had dried to a solid, the chain in the pan was pulled, breaking up the product into chunks that could be picked up and placed in barrels. The barrels were then removed to the grinding area where the Wytox ADP was ground to a prescribed particle size and packaged for shipping.

B-5.2 Wytox ADP Waste Streams

The drain liquid included aluminum hydroxide, DIB, Wytox ADP, sodium chloride, and sodium hydroxide (Table B-8). In addition, the drain liquid included water (200 gallons) from the dilute caustic wash to remove the catalyst (Strauss, 1999). Liquid wastes were sent to Lake Poly from 1961 to 1969 and to the Acid Pits from 1970 to 1971 (Badger, 1969; Environmental Disclosure, 1980; Riley, 1997a). Figure B-6 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-5.3 Wytox ADP Production

Annual production levels of Wytox ADP (Table B-9) were determined from available production records (Badger, 1969; Papazian and Moorman, 1963; NPI Operations Reports, 1964; NPI Operations Reports, 1965; NPI Operations Reports, 1966; NPI Daily Production Summaries for Weeks Ending August to December, 1961; Swanson, 1961). For years that data were not available, Wytox ADP production was determined by interpolating between available data.

B-6 OBSC/OBSH

OBSH (4,4' oxybisbenzenesulfonylhydrazide) is a rubber blowing agent that was produced in Plant D at the Wilmington property from 1970 until 1975 (Badger, 1969; McBrien, 1974a; McBrien, 1974b; Riley, 1997b; Strauss, 1999). OBSC (4,4' oxybisbenzenesulfonylchloride), an intermediate in producing OBSH, was sold as a wet cake from 1972 until 1975 (McBrien, 1974a; McBrien, 1974b). Liquid wastes were generated both in the production of OBSH and OBSC.

B-6.1 OBSH Product Formulation

The manufacturing information summarized in this section is taken from McBrien (1974b) and Strauss (1999). OBSH was formulated in a two step reaction. In the first step, chlorosulfonic acid (CSA, $HClSO_3$) and diphenyloxide (DPO, $C_{12}H_{10}O$) were reacted to form the intermediate OBSC ($C_{12}H_8O_5S_2Cl_2$), i.e.,

$$C_{12}H_{10}O + 4HClSO_3 \rightarrow C_{12}H_8O_5S_2Cl_2 + 2HCl + 2H_2SO_4 \quad . \qquad \text{(B-11)}$$

The hydrochloric acid (HCl) generated in this reaction was absorbed by water in a scrubber and sold as an impure muriatic acid solution and was therefore not part of the drain liquid (Strauss, 1999). The excess CSA was converted to sodium chlorosulfonate ($ClSO_3Na$) by reaction with sodium chloride (NaCl),

$$HClSO_3 + NaCl \rightarrow ClSO_3Na + HCl \, . \qquad \text{(B-12)}$$

The OBSC batch solution was filtered and washed several times to remove the acidity. When OBSC was also sold as a wet filter cake from 1972 to 1975, the material was additionally washed with a salt solution. Hydrazine (N_2H_4), ammonium hydroxide (NH_4OH), oil, and water were added to the OBSC solution in a second step to formulate OBSH ($C_{12}H_{14}O_5S_2N_4$), i.e.,

$$C_{12}H_8O_5S_2Cl_2 + 2N_2H_4 + 2NH_4OH \rightarrow C_{12}H_{14}O_5S_2N_4 + 2NH_4Cl + 2H_2O \quad . \qquad \text{(B-13)}$$

The reaction solution was then filtered, generating a filtrate containing unreacted CSA, sodium chlorosulfonate, sulfuric acid, hydrochloric acid, and ammonium chloride. A schematic of the general steps in the process is presented in Figure B-7.

B-6.2 OBSC/OBSH Waste Streams

The drain liquid included unreacted CSA, and hydrochloric acid, sulfuric acid, sodium chlorosulfonate, and ammonium chloride produced by reaction (Table B-10). In addition, water added for filtration, added to the OBSH reactor, contained in the hydrazine and ammonium hydroxide solutions, and produced by reaction were included in the drain liquid (McBrien, 1974b). When OBSC was sold as a wet filter cake, an additional washing step was conducted that generated additional liquid wastes. This contribution was calculated indirectly with other miscellaneous waste streams in Section B-8. Wastes were sent to the Acid Pits from 1970 to 1971 and to the wastewater treatment plant from 1972 to 1975 (Environmental Disclosure, 1980; Riley, 1997b). Figure B-7 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-6.3 OBSC/OBSH Production

Annual production levels of OBSC/OBSH (Table B-11) were determined from available production records (Badger, 1969; McBrien, 1974b). Production from 1970 to 1973 did not show a growth trend, therefore, production for 1973 was used for the later years that data were not available (1974 and 1975).

B-7 Wiltrol-N

Wiltrol-N (n-nitrosodiphenylamine), a retarder used to inhibit scorching and enhance the cure of rubber at processing and vulcanizing temperatures (Lasman, 1965), was produced in Plant B (Figure B-1) from mid-1966 to 1967 (Environmental Disclosure, 1980; Papazian, 1997a; Riley, 1997a; Strauss, 1999).

B-7.1 Wiltrol-N Product Formulation

The manufacturing information summarized in this section is taken from Riley (1966a) and Strauss (1999). Wiltrol-N was manufactured by reacting diphenylamine (DPA, $C_{12}H_{11}N$) in a warm solution of sulfuric acid (H_2SO_4) and water in a 1,000 gallon glass-

lined Pfaudler reactor. A 40% sodium nitrite ($NaNO_2$) solution was added over a 2- to 3-hour period. Wiltrol-N ($C_{12}H_{10}N_2O$), was formed according to the chemical reaction,

$$C_{12}H_{11}N + NaNO_2 + \tfrac{1}{2}H_2SO_4 \rightarrow C_{12}H_{10}N_2O + \tfrac{1}{2}Na_2SO_4 + H_2O \quad . \qquad \text{(B-14)}$$

When the reaction was complete, the batch was allowed to separate into two layers and the bottom layer containing water and wastes was drained to the sewer. The remaining product layer was washed with 400 gallons of water, which was also sent to the sewer. The batch was then pumped to a tank containing cold water (prilling tank), where the Wiltrol-N solidified. The "prilled" product was drained on a filter box and dried at low temperature. The prilling liquid, which contained water and a small amount of Witrol-N was also sent to the sewer. A schematic of the general steps in the process is presented in Figure B-8.

B-7.2 Wiltrol-N Waste Streams

The drain liquid included sulfuric acid, Wiltrol-N, and sodium sulfate (Table B-12). In addition, the discharge included water added to the batch, used to wash the batch, produced by chemical reaction (equation B-14), and used during the prilling step (Riley, 1966a; Strauss, 1999). It was calculated from available information that the prilling step was conducted in a 1,000-gal tank, similar to the reaction tank, and that the tank contained 500 gallons water (Riley, 1966a). Liquid wastes from the Wiltrol-N process were sent to Lake Poly from 1967 to 1968 (Riley, 1997a). Figure B-8 illustrates the general steps in the process, with typical quantities of batch reactants and products.

B-7.3 Wiltrol-N Production

Annual production levels of Wiltrol-N (Table B-13) were estimated from available production records (NPI Operations Reports, 1966). No data were available for 1967, therefore, production for the half year of production for 1966 was doubled for 1967.

B-8 Miscellaneous Waste Streams

The previous sections describe the liquid waste streams generated by the Opex, Kempore, hydrazine, Wytox ADP, OBSC/OBSH, and Wiltrol-N processes at various times from 1953 to 1986. In addition to those wastes, other liquid wastes were sent to the sewer from time to time, such as plant upsets, waste product, equipment washes, plant washes, and cooling water (Cantwell, 1997; Knight, 1999; McBrien, 1973; McBrien, 1981; NPI, 1966; Riley, 1997b; Strauss, 1999; Willwerth, 1997). Insufficient information was available to calculate these streams individually, therefore, they were calculated together as the difference between the total amount of process waste described in the previous sections and the total process waste flows reported in available documents (Badger, 1969; Garman, 1967; Raytheon, 1970; Riley, 1973). For years that information was not available, an interpolation was done between known values. For 1952 to 1967, an interpolation from 0 gpm in 1952 to the value reported in documents for 1967 was used (Table B-14).

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Tables

OW 793980

Table B-1. Opex Waste Composition

Compound	Waste Stream (lbs/lbs Opex)
Sodium Nitrite	0.089
598 Oil	*0.037*
Formaldehyde	0.34
Ammonium Chloride	0.21
Sodium Chloride	0.64
Water	6.76

Table B-2. Opex Production

Year	Amount (lbs)	Reference	Notes
1953	76,369		linear increase from 1952 to 1961
1954	152,738		linear increase from 1952 to 1961
1955	229,107		linear increase from 1952 to 1961
1956	305,476		linear increase from 1952 to 1961
1957	381,846		linear increase from 1952 to 1961
1958	458,215		linear increase from 1952 to 1961
1959	534,584		linear increase from 1952 to 1961
1960	610,953		linear increase from 1952 to 1961
1961	687,322	Weekly Production, 1961a; Swanson, 1961	
1962	1,443,661		linear increase between 1961 and 1963
1963	2,200,000	ABR, 1963	
1964	2,200,000	ABR, 1963	
1965	842,575	NPI Operations Reports, 1965	
1966	931,268	NPI Operations Reports, 1966	
1967	1,020,845		linear increase between 1966 and 1969
1968	1,110,423		linear increase between 1966 and 1969
1969	1,200,000	Badger, 1969	
1970	1,146,000		linear decrease between 1969 and 1979
1971	1,092,000		linear decrease between 1969 and 1979
1972	1,038,000		linear decrease between 1969 and 1979
1973	984,000		linear decrease between 1969 and 1979
1974	930,000		linear decrease between 1969 and 1979
1975	876,000		linear decrease between 1969 and 1979
1976	822,000		linear decrease between 1969 and 1979
1977	768,000		linear decrease between 1969 and 1979
1978	714,000		linear decrease between 1969 and 1979
1979	660,000	McBrien, 1980b	
1980	552,220		linear decrease between 1979 and 1982
1981	444,440		linear decrease between 1979 and 1982
1982	336,660	McBrien, 1983a	
1983	387,137		linear increase between 1982 and 1984
1984	437,614	McBrien, 1984	
1985	437,614		same as 1984
1986	285,401		same as 1984 levels, production ceased Sept 1, 1986

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Table B-3. Kempore Waste Composition For Sodium Dichromate Process (1956-3/1967)

Compound	Waste Stream (lbs/lbs Kempore)
Urea	0.74
Sulfuric Acid	1.83
Chrome Oxide	0.56
Sodium Sulfate	0.52
Ammonium Sulfate	1.34
Water (1956-1963)	12.8
Water (1964-3/1967)	16.4

Table B-4. Kempore Waste Composition For Sodium Chlorate Process (4/1967-1986)

Compound	Waste Stream (lbs/lbs Kempore)
Urea	0.74
Sulfuric Acid	0.65
Hydrochloric Acid	0.12
Sodium Sulfate	0.24
Ammonium Sulfate	1.34
Hydrogen Bromide	0.0055
Water (4/1967-1970)	15.0
Water (1971-1986)	10.3

Table B-5. Kempore Production

Year	Amount (lbs)	Reference	Notes
1956	63,241		linear increase from 1955 to 1961
1957	126,482		linear increase from 1955 to 1961
1958	189,724		linear increase from 1955 to 1961
1959	252,965		linear increase from 1955 to 1961
1960	316,206		linear increase from 1955 to 1961
1961	379,447	Weekly Production, 1961a; Swanson, 1961	
1962	739,724		linear increase from 1961 to 1963
1963	1,100,000	ABR, 1963	
1964	1,100,000	ABR, 1963	
1965	815,031	NPI Operations Reports, 1965	
1966	1,743,823	NPI Operations Reports, 1966	
1967	1,279,924	Production, 1967	
1968	1,489,962		linear increase from 1967 to 1969
1969	1,700,000	Badger, 1969	
1970	1,452,960	McBrien, 1980a	
1971	1,982,620	McBrien, 1980a	
1972	2,188,750	McBrien, 1980a	
1973	2,627,929	McBrien, 1980a	
1974	3,281,140	McBrien, 1980a	
1975	1,731,045	McBrien, 1980a	
1976	2,891,903	McBrien, 1980a	
1977	2,662,276	McBrien, 1980a	
1978	3,309,138	McBrien, 1980a	
1979	3,559,821	McBrien, 1980a	
1980	3,198,414		linear decrease from 1979 to 1982 levels
1981	2,837,007		linear decrease from 1979 to 1982 levels
1982	2,475,600	McBrien, 1983a	
1983	2,605,962		linear increase from 1982 to 1984
1984	2,736,324	McBrien, 1984	
1985	2,736,324		same as 1984
1986	1,784,559		same as 1984 levels, production ceased Sept 1, 1986

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Table B-6. Hydrazine Waste Composition

Compound	Waste Stream (lbs/lbs Hydrazine)
Sodium Chloride	5.21
Sodium Sulfate	6.48
Carbonic Acid	2.76
Water	27.3

Table B-7. Hydrazine Production

Year	Amount (lbs)	Reference	Notes
1963	370,700		derived as ratio (0.34) of Kempore production
1964	370,700		derived as ratio (0.34) of Kempore production
1965	279,983	NPI Operations Reports, 1965	
1966	432,766	NPI Operations Reports, 1966	
1967	431,334		derived as ratio (0.34) of Kempore production
1968	502,117		derived as ratio (0.34) of Kempore production
1969	572,900		derived as ratio (0.34) of Kempore production
1970	361,913		derived as ratio (0.34) of Kempore production, production ceased Sept 1, 1986

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Table B-8. Wytox ADP Waste Composition

Compound	Waste Stream (lbs/lbs Wytox ADP)
Diisobutylene (DIB)	0.021
Wytox ADP	0.030
Aluminum Hydroxide	0.050
Sodium Chloride	0.11
Sodium Hydroxide	0.036
Water	0.67

Table B-9. Wytox ADP Production

Year	Amount (lbs)	Reference	Notes
1961	144,601	Weekly Production, 1961a; Swanson, 1961	
1962	157,637		linear increase from 1961 to 1963
1963	170,673	Papazian and Moorman, 1963	
1964	347,561	NPI Operations Reports, 1964	
1965	356,186	NPI Operations Reports, 1965	
1966	456,785	NPI Operations Reports, 1966	
1967	504,523		linear increase from 1966 to 1969
1968	552,262		linear increase from 1966 to 1969
1969	600,000	Badger, 1969	
1970	600,000		same as 1969 levels
1971	600,000		same as 1969 levels

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Table B-10. OBSC/OBSH Waste Composition

Compound	Waste Stream (lbs/lbs OBSH)
Chlorosulfonic Acid (CSA)	0.51
Hydrochloric Acid	0.49
Sodium chlorosulfate	0.61
Sulfuric Acid	0.84
Ammonium Chloride	0.21
Water (OBSH)	10.4
Water (OBSC)	7.7

Table B-11. OBSC/OBSH Production

Year	Amount (lbs OBSH)		Reference	Notes
	OBSH	OBSC		
1970	300,000	0	Badger, 1969	
1971	314,925	0	McBrien, 1974b	
1972	293,828	163,730	McBrien, 1974b	
1973	287,430	230,301	McBrien, 1974b	
1974	287,430	230,301		same as 1973
1975	287,430	230,301		same as 1973

OW 793991

Table B-12. Wiltrol-N Waste Composition

Compound	Waste Stream (lbs/lbs Wiltrol-N)
Sulfuric Acid	0.037
Wiltrol-N	0.087
Sodium Sulfate	0.392
Water	6.1

OW 793992

Table B-13. Wiltrol-N Production

Year	Amount (lbs)	Reference	Notes
1966	108,940	NPI Operations Reports, 1966	production for 5.5 months
1967	227,784		scaled 1966 production to full year for 1967

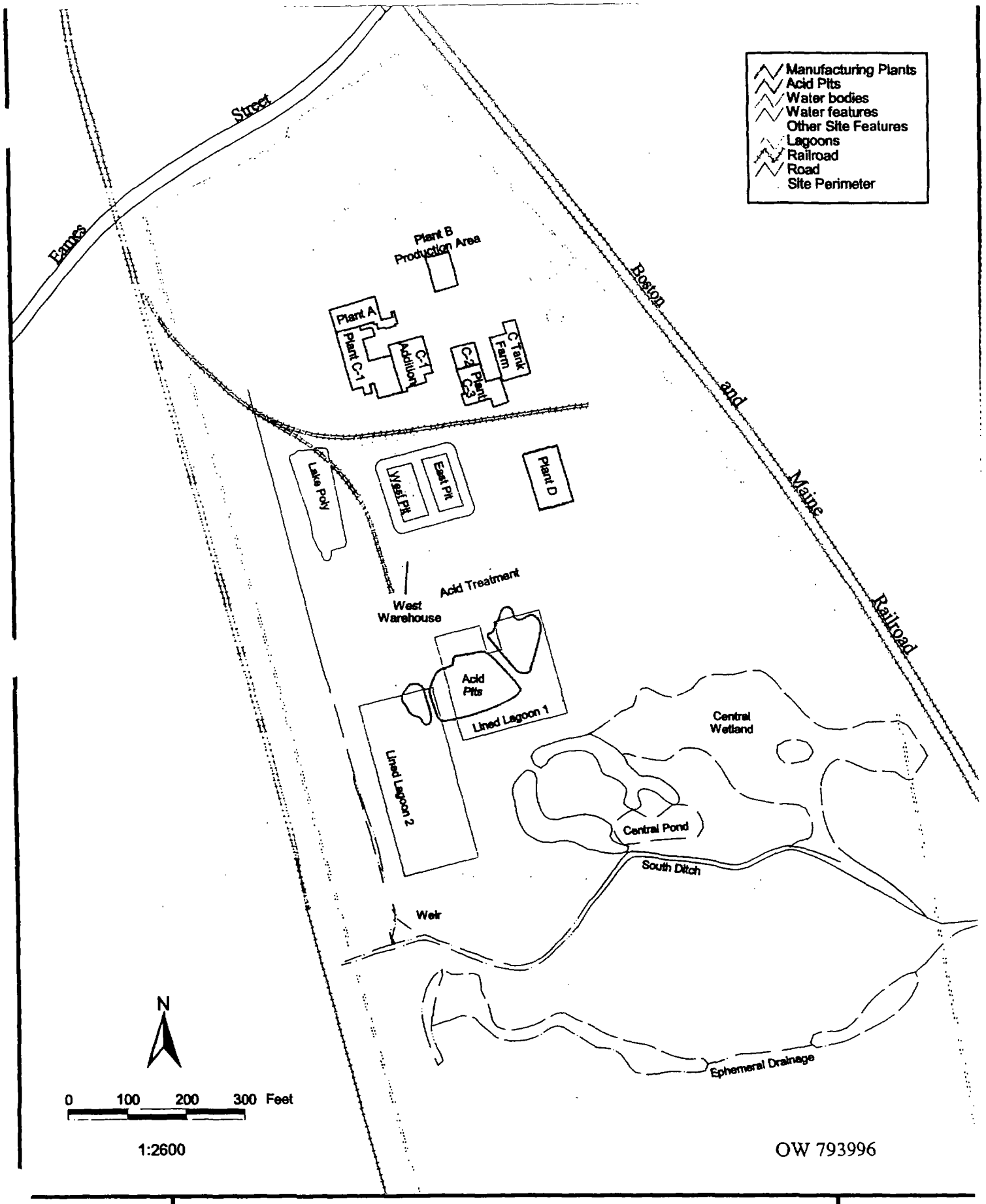
OW 793993

Table B-14. Miscellaneous Liquid Wastes

Year	Miscellaneous Wastes (lb/yr)
1953	44,791,633
1954	89,583,265
1955	134,374,898
1956	178,098,870
1957	221,822,842
1958	265,546,815
1959	309,270,787
1960	352,994,759
1961	396,588,448
1962	401,802,273
1963	537,846,652
1964	591,599,889
1965	665,773,530
1966	772,851,294
1967	842,933,701
1968	1,210,541,851
1969	1,352,700,000
1970	599,845,907
1971	683,224,194

Figures

OW 793995



OW 793996

Generation Date: 7/27/99	Figure B-1. Manufacturing Plants and Pits, Ponds, and Lagoons at the Wilmington Property from 1953 to 1986.	Geomega

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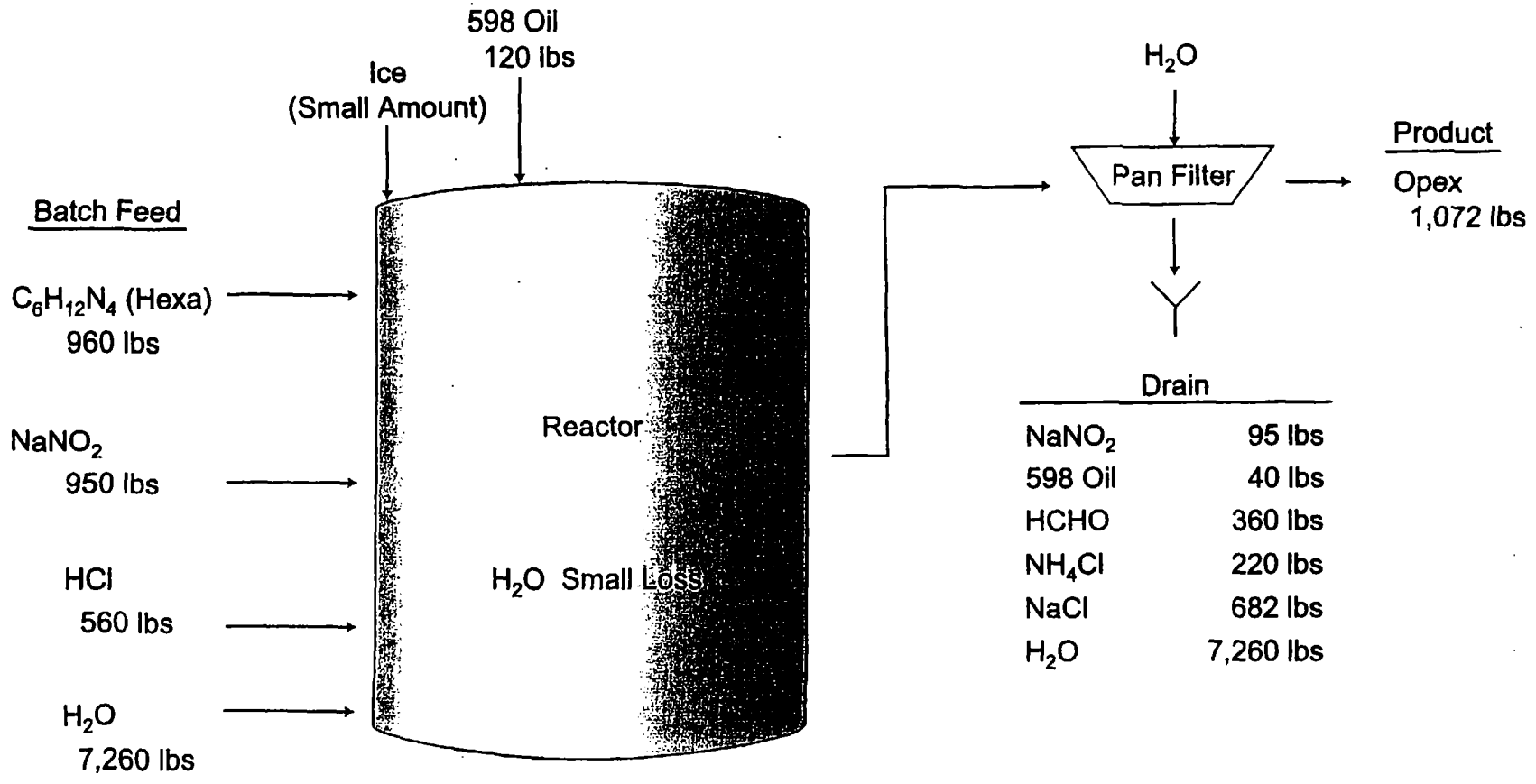
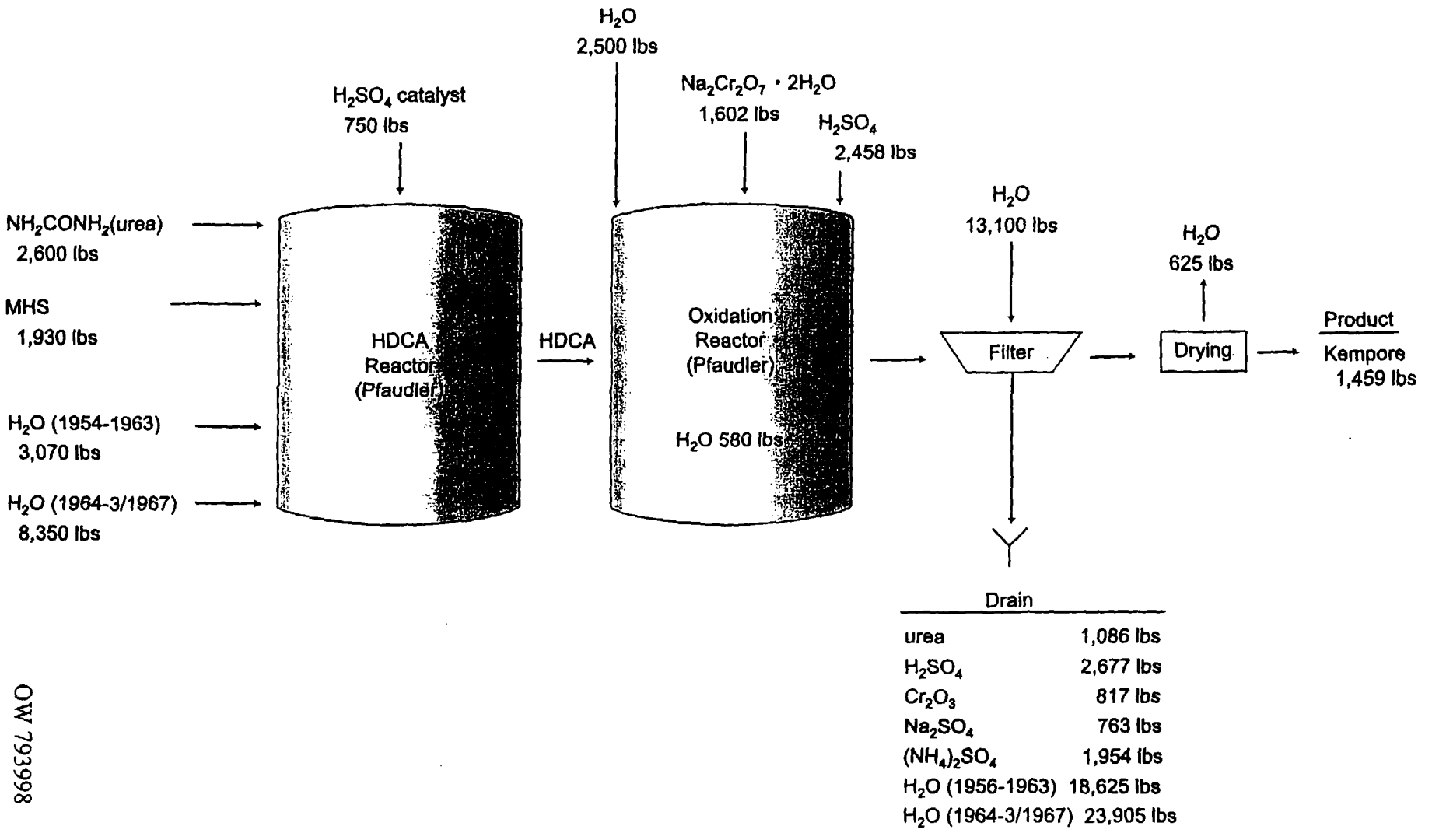


OW 79399 7

Generation Date: 7/28/99	Figure B-2. Opex process diagram (typical batch).	Geomega

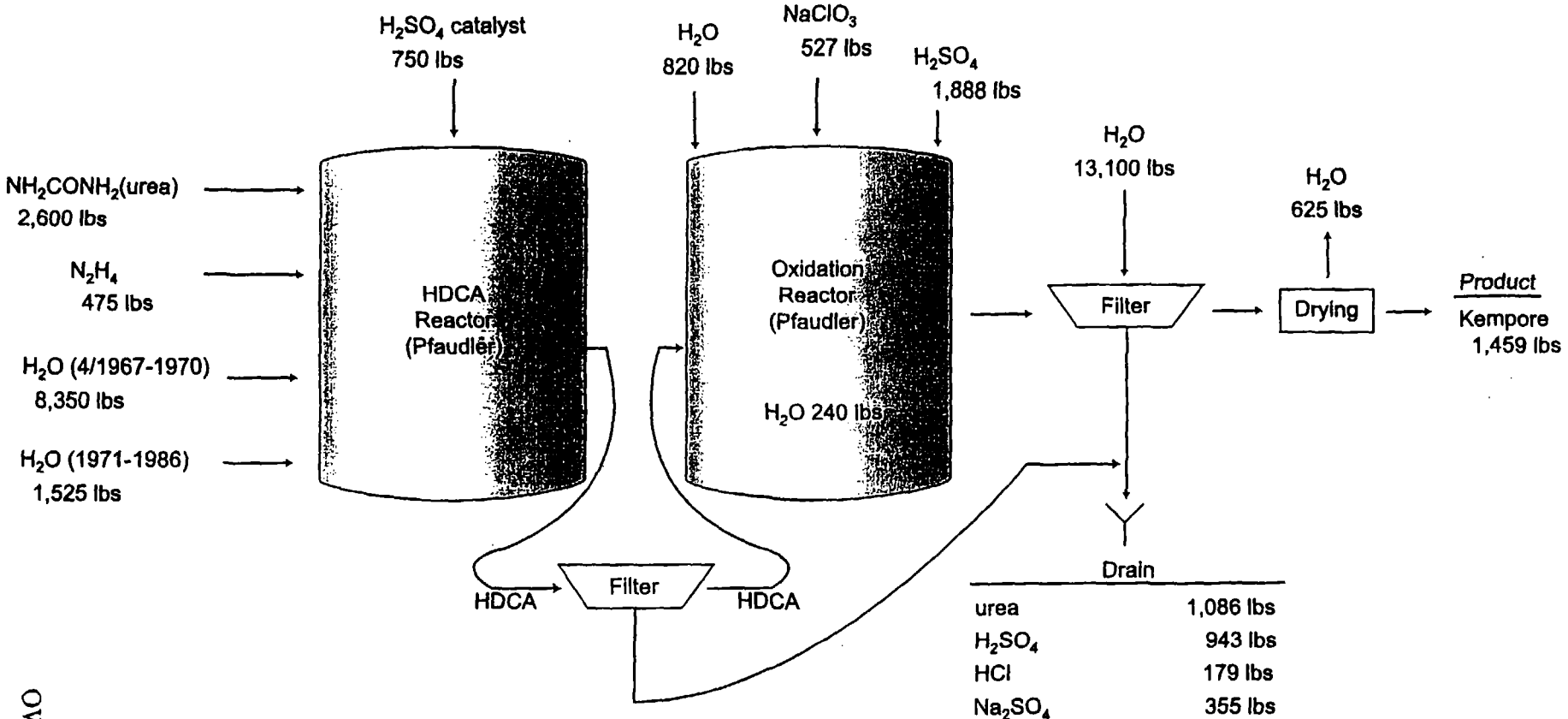


OW 793998

Generation Date: 7/28/99

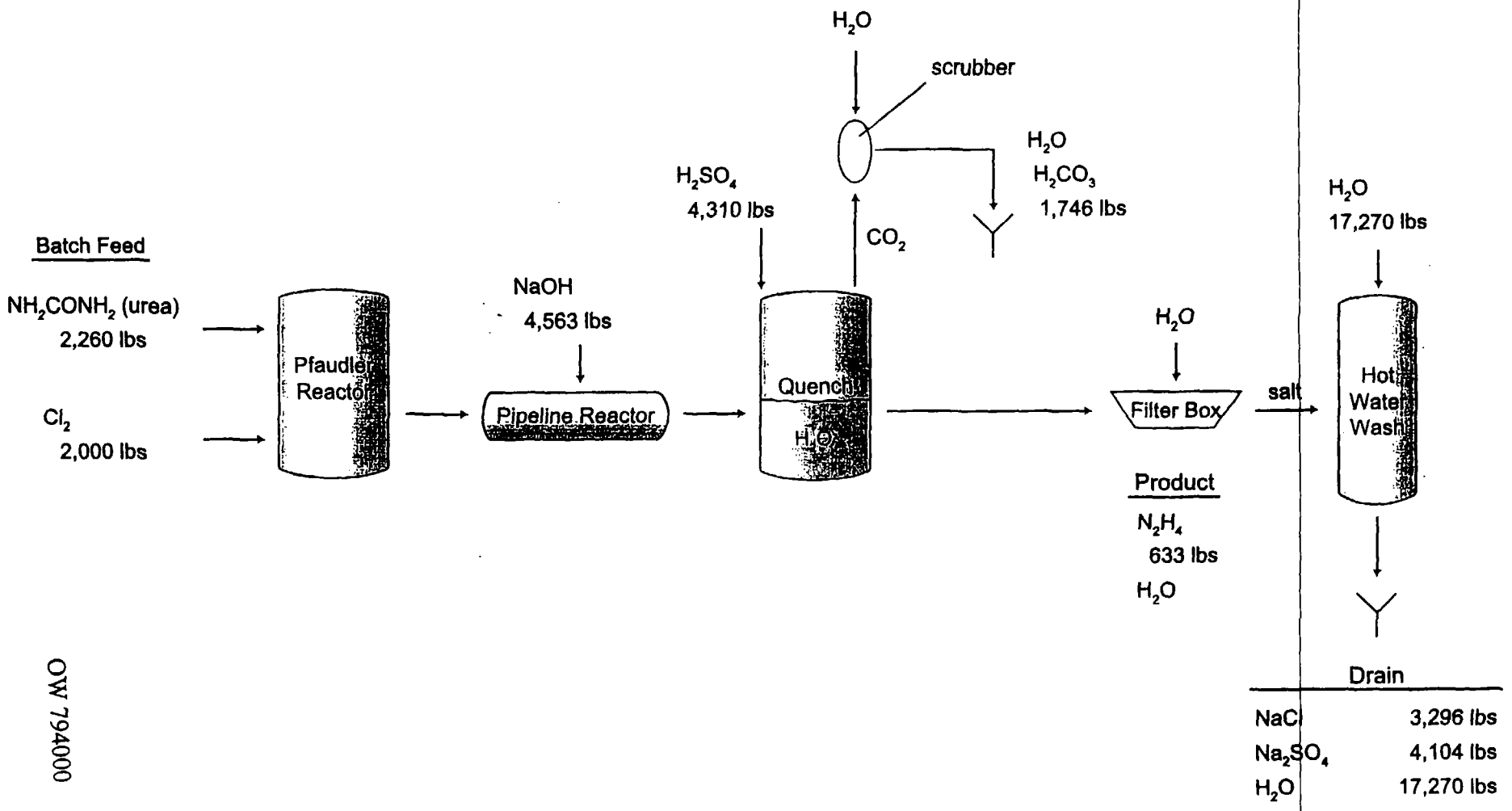
Figure B-3. Kempore process diagram (typical batch) using sodium dichromate from 1956 to March 1967.

Geomega



OW 793999

Generation Date: 7/28/99	Figure B-4. Kempore process diagram (typical batch) using sodium chlorate from April 1967 to 1986.	Geomega

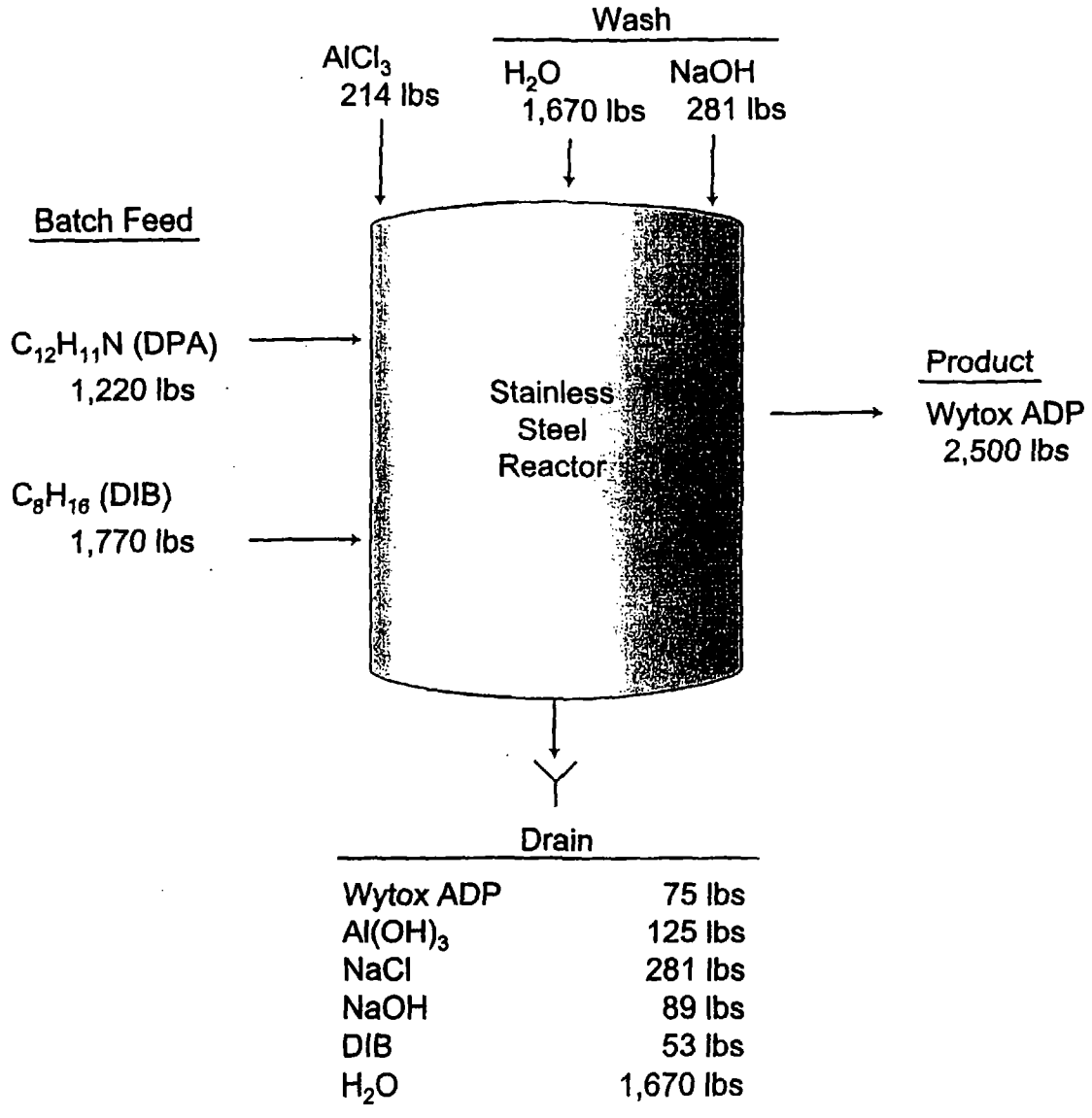


OW 794000

Generation Date: 7/28/99

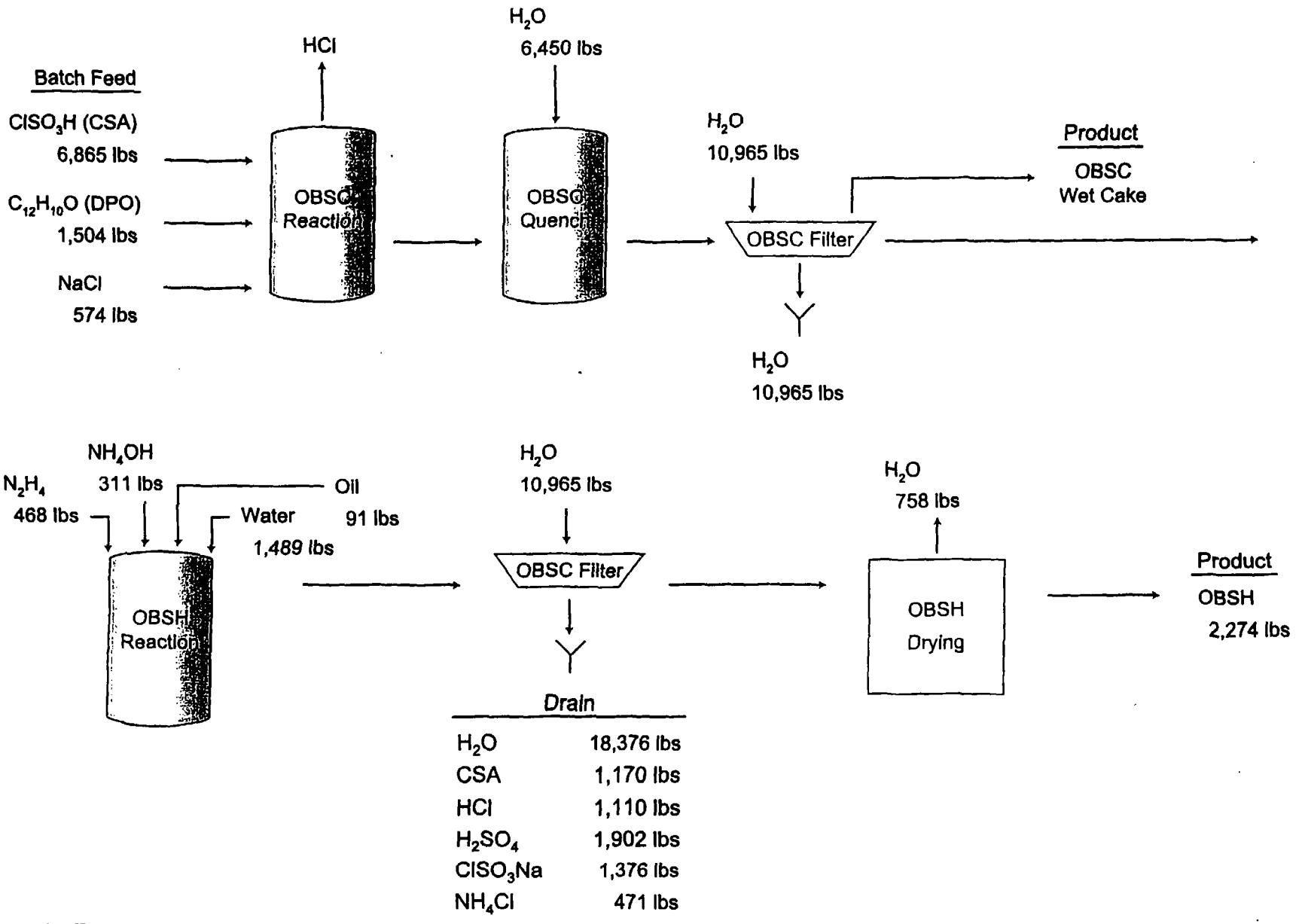
Figure B-5. Hydrazine process diagram (typical batch).

Geomega



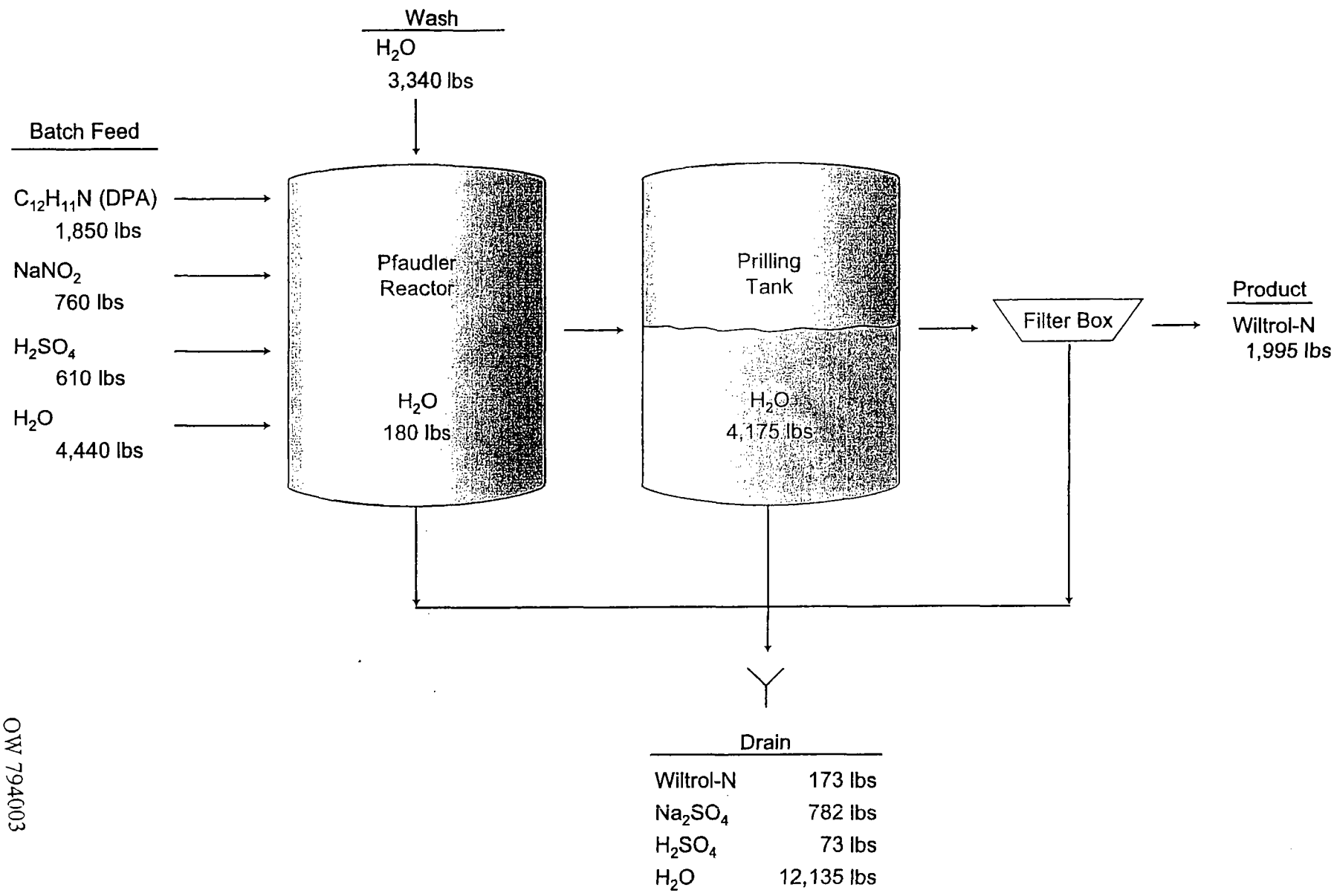
OW 794001

Generation Date: 7/28/99	Figure B-6. Wytox ADP process diagram (typical batch).	Geomega



OW 794002

Generation Date: 7/28/99	Figure B-7. OBSC/OBSH process diagram (typical batch).	Geomega



OW 794003

Generation Date: 7/28/99	Figure B-8. Wiltrol-N process diagram (typical batch).	Geomega

g:\Olin\Litigation\Wiltrol-NProcess799.ai

ATTACHMENT 2

Stepan

Telephone 312 4 500

F. Wilm
1983-Gen
cc 3GN

ENVIRONMENTAL DISCLOSURE

JULY 23, 1980

In accordance with the requirements of Section 3.05 and 3.06 of the Agreement of Purchase and Sale between Olin and Stepan Chemical Company, the attached disclosure sets forth the pollution litigation and administrative proceedings, manufacturing processes and chemical waste disposal with regard to the Polychem (Wilmington) plant which occurred subsequent to Stepan's purchase of the plant late in 1968. In addition, this same type of information with regard to processes and waste disposal practices, which occurred prior to Stepan's ownership, are shown where they are known.

The Corporate and Plant Management personnel who have reviewed these matters and prepared the enclosure are:

Charles P. Riley, Jr.	-	Corporate Director of Manufacturing and Engineering
Ronald J. McBrien	-	Wilmington Plant Manager
Walter Beck	-	Group Leader, Corporate Research and formerly Polychem Technical Manager

WWM:gb

OW 091249

Exhibit 3.06

Environmental Disclosure*

1. Suits

Commonwealth of Massachusetts vs. Stepan Chemical Co., Inc. Suffolk Superior Court (served April 22, 1980) cites violation of the Massachusetts Hazardous Waste Management Act and violation of the Massachusetts Clean Waters Act in the storage and disposal of hazardous wastes.

In a joint meeting on April 30, 1980 at the Boston office of Sullivan and Worcester, representatives of Olin, Stepan, the Attoney General's office, and the Division of Water Pollution Control discussed the disposition of the above court action. It was agreed between the representative of the Attorney General and the representative of the Division of Water Pollution Control that if Olin Corporation purchased the Stepan, Wilmington plant site, the following would apply:

a.) Olin would have 12-18 months for an engineering study to define pollution problems and to suggest remedies.

b.) There would be no prosecution by the State during this period.

c.) Olin could expect to expand operations at the site.

The Attorney General and Stepan's counsel have jointly applied for a two month extension of the court action to accomodate Olin's decision on purchase of the property.

The seller has no knowledge of any other suit, threatened suit, actions, proceedings or claims under any applicable federal, state or local law or other environmental matters.

2. Manufacturing Processes Conducted on Wilmington Site, Sellers' Best Knowledge

a.) Opex - (Dinitrosopentamethylenetetramine)

Raw materials: Hexamethylenetetramine
Sodium ~~nitrate~~ nitrite
Hydrochloric acid
Processing oil - Ammonia

Product: Dinitrosopentamethylenetetramine (solid)

By-products in waste: ✓Sodium chloride
✓Sodium ~~nitrite~~ nitrate
✓Formaldehyde
✓Processing oil - Ammonium Chloride

Process operated: 1953-1980

*All information prior to Stepan's purchase of plant in 1968 is based on knowledge of Ron McBrien and Charles P. Riley, Jr. Stepan has not made any investigation with regard to matters before it acquired the plant in 1968.

Exhibit 3.06
Environmental Disclosure

b.) Kempore - (Azodicarbonamide)

Raw materials: Hydrazine
Urea
Sulfuric acid
Sodium chlorate
Sodium Bromide ~~Bromine~~ (catalyst level)

Product: Azodicarbonamide (solid)

By-products in waste: Sodium sulfate
Sulfuric acid
Urea
Sodium chloride
Ammonium sulfate
Sodium Bromide

Up to 1967, sodium dichromate was used in the process instead of Sodium chlorate. The by-product waste contained chrome sulfate instead of sodium chloride and sodium sulfate.

Process operated: 1956-1980

c.) Hydrazine

Raw materials: Urea
Chlorine
Sodium hydroxide
Sulfuric acid

Product: Hydrazine and Semicarbazide solution

By-products in waste: Sodium sulfate
Sodium chloride
Ammonium Sulfate

Note: This process was shut down in the fall of 1970 with hydrazine then purchased from Olin Corporation. (operated 1963-1970)

d.) Kempore Dispersions

Raw materials: Azodicarbonamide
Dioctyl phthalate

Product: 50 percent dispersion of Azodicarbonamide in Dioctyl Phthalate

By-products in waste: None

Process operated: 1960-1980

e.) Wytox 312 - (trisnonylphenyl phosphite)

Raw materials: Nonyl phenol
Phorphorus trichloride

OW 091251

Product: Trisnonylphenyl phosphite (liquid)

By-products in waste: None (hydrogen chloride scrubbed in water)

Process operated: 1965-1980

Exhibit 3.06
Environmental Disclosure

f.) Actafoam R-3

Raw materials: 2-ethylhexoic acid
Zinc oxide
Dioctyl phthalate
~~Sodium oleate~~ Potassium oleate

Product: Liquid Azodicarbonamide activator

By-products in waste: None

Process operated: 1963-1980

g.) Wytox Pap - (Alkylated phenol)

Raw materials: Nonyl phenol
Dinonyl phenol
Formaldehyde

Product: Liquid Alkylated phenol

By-products in waste: None

Process operated: 1971-1980

h.) Nitropore 5PT - (5-phenyltetrazole)

Raw materials: Benzonitrile
Sodium azide
Sodium nitrite
Ammonium chloride
Hydrochloric acid
Dimethyl Formamide

Product: 5-phenyltetrazole (solid)

By-products in waste: Sodium chloride
Sodium nitrate
Dimethyl Formamide
Benzonitrile

(produced 1973-1980, limited quantities 24,000 lbs./yr.)

i.) Nitropore OT - (4,4' oxybisbenzenedisulfonylhydrazide)

Raw materials: Diphenyl oxide
Chlorosulfonic acid
Hydrazine
Ammonia

Product: 4,4' oxybisbenzenedisulfonylhydrazide

By-products in waste: Sulfuric acid
~~Hydrochloric acid~~ Ammonium Chloride

Process operated: 1969-1975 (Hydrochloric acid scrubbed in water and sold).

j.) Wytox ADP - (Dioctyl Diphenylamine)

Raw materials: Diphenylamine
Diisobutylene
~~Aluminum hydroxide~~
~~Sodium chloride~~
Aluminum chloride
Sodium hydroxide

Exhibit 3.06
Environmental Disclosure

Product: Dioctyldiphenylamine

By-products in waste: Aluminum hydroxide
~~Sodium chloride~~ Sodium hydroxide

Process terminated in 1971. (Operated 1962-1971)

k.) Phenolic and Urea Formaldehyde Resins

Raw Materials: Phenol
Urea
Formaldehyde

Products: Solid and liquid resins

By-products in waste: Phenol
Formaldehyde

Process operated 1961-1967

l.) Phthalate Plasticizers - (dioctyl phthalate, dibutyl phthalate)

Raw materials: Phthalic anhydride
2-ethylhexanol
Butyl alcohol

Products: Liquid plasticizers

By-products in waste: None

Process operated: 1955-1961

m.) Wiltrol N - (N-Nitrosodiphenylamine)

Raw materials: Diphenylamine
Sodium nitrite
Sulfuric acid

Product: N-Nitrosodiphenylamine (solid)

By-products in waste: Sodium nitrite
Sodium sulfate

Process operated: 1965-1967

n.) *

3. Chemical Waste Disposal

To the seller's best knowledge, chemical manufacturing commenced on the Wilmington plant site around 1953. No waste treatment facility or sewer was included in the original plant facilities. The main plant effluents were discharged to a small man-made pond on the west side of the property which flowed to a brook bisecting the property. The brook exited the property at the east side along the railroad right of way.

Strong acid wastes were conducted separately to unlined man-made lagoons on the south side of the operating plant buildings.

* Small quantities of miscellaneous materials were manufactured at various times which had no by-product wastes.

Exhibit 3.06
Environmental Disclosure

In 1969, Stepan Chemical Company, Inc. and the Division of Water Pollution Control of the Commonwealth of Massachusetts entered into a consent order whereby Stepan was to build a waste treatment plant and the effluents from the treatment plant would be discharged to a Metropolitan District Commission sewer which was to be extended to the immediate area of the plant. Stepan was allowed to continue to discharge chemical wastes in the same manner until the treatment plant was completed. In 1970, with the completion of the treatment plant construction, Stepan was requested to operate the plant and discharge the treated wastes through its property until the sewer construction was complete. The sewer was finished in 1972 and approval was granted to Stepan to discharge the effluents from the treatment plant into the sewer by the Metropolitan District Commission.

The Stepan treatment facility neutralizes sulfuric acid and sulfate wastes with a lime system. The resulting calcium sulfate by-product is separated from the effluent by settling in vinyl lined lagoons. The Department of Public Health of the Commonwealth of Massachusetts approved the construction of a landfill on the Stepan property for the disposal of the calcium sulfate by-products.

The seller has no knowledge of chemical or other dumping on the plant site during its ownership by its own personnel or third parties except as described previously with the discharge of operating wastes. The seller has no knowledge of chemical or other dumping on the property in prior periods.

CPR, Jr./lmg

ATTACHMENT 3

RAW MATERIALS

Acetone
Acryloid K-120n
Aluminum chloride
Anhydrous ammonia
Analine HCL salt
Antifoam 60
Aqua ammonia
Aquarex-L
Arquad 25 75
Arquard 2 ht 75 varisoft
Bentone 27
Bentone 38
Boric acid
Butanol
n-butyl aceate
cab-o-cil
Calcium searate
C S A
D i b
Dinonylphenol
D O P
Liquid DPA
DPO
Deoderant 1056
Ethomeen S-12
2-ethylhexoic acid
Ethylene glycol
Santicizer 722
Liquid Nitrogen
Calcium Carbonate
Darvan-L\
Fare rapeseed
Fast spermoil
Liq. Formalin
Glycerine
Aerosil 380
Vikoflex 71710
Nurostabe V144
Potassium Stearate
P-TSA
Benzonitrile
Dimethylformamide
Ammonium Chloride
Sodium Azide

RAW MATERIALS

Calcium Oxide
Hydrogen Peroxide
Calcium Chloride
Barium Chloride
Sodium Dicarbonate
Dimethyl carbonate
Methanol
N-butanol
Benzophenone
Adipic Acit
Heptane
Formamide
Soda Ash
Hydrazine 64%
Hi-sil 233
Nedex lead octate
100% liquid hexa
Maleic anhydride
Mineral spirits
monohydrazine sulfate
Natrosol
Nurosperse 657
Oxalic acid
Paraformaldehyde powder
Phthalic anhydride
999 salt
Satocel FRC
Silica
Sodium chlorate solid
Sodium nitrite
sodium sulfite
7AT soft
Stantone 12PCOL yel
Stantone 90PCOL black
Sun Par 120
Tall oil liqro
Trancoa 375B
#2 Bordens Urea Form
Uformite MM57
Zinc stearate
hexamine granular
ice
Liquid caustic
microcel E

RAW MATERIALS

Mineral oil
mono ethanolmine
Muriatic acid
Nonyl phenol
415 oil
Paraplex G-62
PCL3
potassium oleate
Safe 7MT
Shellflex 212
Sodium bromide
Sodium chlorate liq
Sodium stearate
sodium acetate
Stantone 10PCOL white
Stantone 26PCOL red
Sulfuric acid
Styreene
Toluene
T.I.A. Tr. Isopropalamine
Prilled Urea
Zinc Oxide

ATTACHMENT 4

TECHNICAL BULLETINS

Opex 40
Kempore 125
Kempore
Kempore Dispersions
Kempore SDA-200
Kempore R-125
Kempore SD-125
Cellular Vinyl Coated Fabrics
Pigmentation of Kempore
Actafoam R-3
RIA NC
RIA 66
Antidust
Antidust - 1060
Acetone
FI-Line' Sensitizers
Tetra-Phen S-201
Tetra -Flex Resins
Poly-Cone
Poly-Cone 125X
Poly-Cone Emulsions
Poly-Cone 200X
Poly-Cone 1000
Poly-Zole AZDN
Poly-Sperse AP-2
Poly-Phen
Wiltrol-P
Wiltrol-N
Wytox
Wytox-ADP
Wytox-BHT
Wytox 355
Wytox 438
NPI 201
NPI 222
NPP 202
Dee-Tac NP-27
Dee-Tac 2000
Dee-Tac NP-27
Synthetic Resins

ATTACHMENT 5

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

OLIN CORPORATION, Plaintiff, v. FISONS PLC, et al., Defendants.	C.A. No. 93-11166-MLW

PLAINTIFF OLIN CORPORATION'S SUPPLEMENTAL OBJECTIONS AND ANSWERS TO DEFENDANTS THE BILTRITE CORPORATION AND AMERICAN BILTRITE INC.'S FIRST SET OF INTERROGATORIES

Pursuant to Fed. R. Civ. P. 33 and Local Rule 33.1, Plaintiff Olin Corporation ("Olin") hereby supplements its Objections and Answers to Defendants The Biltrite Corporation and American Biltrite Inc.'s First Set of Interrogatories to Olin Corporation ("Olin's Answers" and "the Biltrite Companies' First Interrogatories"). The General Objections made in Olin's Answers are incorporated by reference in these Supplemental Answers.

SUPPLEMENTAL ANSWERS

Interrogatory No. 7: Identify and state the basis (in accordance with Local Rule 26.5(C)(8)) for each of the "releases" and "threatened releases" of hazardous substances which Olin alleges have occurred at the Wilmington plant from 1952 to the present (including the source of each such release, the date(s) on which each release occurred, the amount of hazardous substances released in each instance, and the location of the release), which "releases", according to the allegations contained in paragraph 65 of the Complaint, "have caused Olin to incur 'necessary costs of response'" and "will continue to cause Olin to incur 'necessary costs of response' within the meaning of [CERCLA]", including:

(a) identify all releases and threatened releases (the source of each such release, the date(s) on which each release occurred, the amount of hazardous substances released in each instance, and the location of the release) of "hazardous substances" (as defined by CERCLA) and "hazardous materials" (as defined by Massachusetts General Laws Chapter 21E) during the period 1952 to January,

1964, which Olin claims caused or may cause the incurrence of response costs by Olin;

(b) identify all releases and threatened releases (the source of each such release, the date(s) on which each release occurred, the amount of hazardous substances released in each instance, and the location of the release) of "hazardous substances" (as defined by CERCLA) and "hazardous materials" (as defined by Massachusetts General Laws Chapter 21E) during the period February, 1964 to August, 1980 which Olin claims caused or may cause the incurrence of response costs by Olin.

Response: Olin incorporates its previous response to this interrogatory by reference. Olin continues to object to this interrogatory on the grounds that it is vague and ambiguous in using undefined terms such as "release," "source of release," "amount of release," and "location of release." Olin also objects to the extent it calls for expert opinions before the date required for such opinions by the Revised Pretrial Schedule. Without waiving its objections, Olin further responds as follows:

(a) Releases from 1952 to January, 1964 that have caused, or may cause, the incurrence of response costs are listed below, by location.

Lake Poly

Pipes from yard drains and drains in Plants A, B and C carried process waters, wash waters, and other flows of liquids to Lake Poly. Lake Poly was unlined. Thus, liquids placed in Lake Poly seeped into the ground. Additionally, overflow from Lake Poly ran over the surface of the ground on the west side of the Plant and also entered the ditch system that ran along the west side of the Plant and cut across the Plant property south of the manufacturing facilities to the East Ditch.

Beginning in around 1954 and continuing through January, 1964, hazardous substances and/or materials used in or generated by the Opex manufacturing process were released into Lake Poly, in at least the following ways. First, effluent from the Opex manufacturing process was piped to Lake Poly. Second, wash water generated in weekly cleanings of Plant A carried hazardous substances and/or material used or created in the Opex manufacturing process to Lake Poly. Third, on at least one occasion, in 1954, a batch of unfinished Opex was piped to Lake Poly. Fourth, off-spec Opex was either dumped into Lake Poly or piped there from Plant A. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials that were released into the environment at Lake Poly by these means included sodium chloride, sodium nitrate, formaldehyde, ammonium chloride, processing oil, hydrochloric acid, hexamethylenetetramine, and Opex (dinitropentamethylenetetramine).

Additionally, beginning in 1956, and continuing until some time after the East-West Ponds were built, as late as July, 1957, an acidic effluent from the Kempore manufacturing process was piped to Lake Poly. From 1957 through January, 1964, wash water generated in daily washing of Plant C's floor and weekly cleanings of all of Plant C, carried hazardous substances and/or material used or created in the Kempore manufacturing process to Lake Poly. On at least one occasion, an off-spec batch of Kempore was flushed down the drain to Lake Poly. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials that were released into the environment at Lake Poly by these means included chromium sulfate, sodium dichromate, sulfuric acid, sodium sulfate, urea, ammonium sulfate and Kempore (azodicarbonamide).

Additional releases to Lake Poly of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials, between 1954 and January, 1964, included:

- Drums of aluminum chloride were dumped into Lake Poly in 1963 or 1964.
- Throughout the period, acetone used for cleaning purposes in the laboratory and the plants was piped to Lake Poly after its use.
- From 1961 through January, 1964, phenol and formaldehyde wastes from the resin manufacturing process were piped to Lake Poly. Wash water from weekly cleanings of Plant B was also piped to Lake Poly containing these wastes, as well as hazardous substances and/or materials used or created in the plasticizer manufacturing process, at least through 1961, which included dioctylphthalate, dibutylphthalate, 2-ethylhexanol and butyl alcohol.
- From 1961 until January, 1964, dioctyldiphenylamine, aluminum chloride, aluminum hydroxide, sodium chloride and diisobutylene were piped to Lake Poly from the Wytox ADP manufacturing process.
- Periodically throughout the period from 1952 to January, 1964, drums containing a variety of hazardous substances and/or materials were dumped into Lake Poly.

<u>East-West Ponds</u>

Beginning in 1957, and continuing through January, 1964, an acidic effluent from the Kempore manufacturing process was piped to and released into the unlined East-West Ponds. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials released to the East-West Ponds in that effluent included chromium sulfate, sulfuric acid, sodium sulfate, urea, ammonium sulfate and Kempore.

Additionally, from 1963 through January, 1964, an acidic effluent containing sodium sulfate and sodium chloride was released into the East-West Ponds from the hydrazine manufacturing process in Plant C-3.

Other Releases

Other releases during the period from 1952 through January, 1964 included at least the following:

- From 1961 through January, 1964, dioctyldiphenylamine (DODPA a/k/a Wytox ADP) was routinely spilled onto the ground outside Plant B as the liquid produced from the reactor was being moved in pans to a drying or hardening area.

- From 1961 through January, 1964, effluent from the DODPA manufacturing process was released directly onto the ground outside Plant B. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials in that effluent included dioctyldiphenylamine, aluminum chloride, sodium chloride and diisobutylene.

- From 1961 through January, 1964, diisobutylene frequently overflowed from a tank in Plant B and ran out of the building onto the ground adjacent to it.

- In 1962 a batch of resin exploded and sprayed on the ground around Plant B. That material contained phenol and/or formaldehyde.

- From 1961 through January, 1964, dust from the resin grinding process escaped Plant B and settled on the ground adjacent to Plant B. This dust contained phenol and/or formaldehyde.

- From 1961 through January, 1964, pans in which resin was dried were cleaned outside Plant B and the residue from the cleaning process was poured onto the ground. The residue contained phenol and/or formaldehyde.

- From 1954 through January, 1964, waste materials of various types, including Opex, were incinerated South of Lake Poly and the residues were left on the ground.

- From 1954 or 1955 through January, 1964, periodic releases in the form of leaks or spills from the above-ground storage tanks located to the East of Plant B occurred. Hazardous substances and/or materials, or compounds containing hazardous substances and/or materials stored in the tanks included 2-ethylhexanol, butanol, oils, caustic, formaldehyde, diisobutylene and dibutylphthalate.

- Sometime between 1952 and 1968, a variety of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials were buried at various locations around the Wilmington site, both in drums and unpackaged. Continued discovery may narrow-down the time period in which these substances and/or materials were buried. The locations of the drum burials and the identification of the hazardous substances and/or materials found at those locations can be found in Olin's Supplemental Phase II Report, June 1997 (at OW450587, et seq.). The burden of obtaining that information through an examination of that document is substantially the same for the Biltrite Companies as for Olin and, therefore, Olin refers the Biltrite Companies to that document, pursuant to Fed. R. Civ. P. 33(d).

(b) Releases from February, 1964 to August, 1980 that have caused, or may cause, the incurrence of response costs, are listed below, by location of release.

Lake Poly

From February, 1964 until September, 1969, the waste streams identified below continued to be sent to Lake Poly. The hazardous substances and/or materials, or compounds containing hazardous substances and/or materials contained in those streams, did not change from those identified in Supplemental Response 7(a), with the exception that, beginning in or around April, 1967, waste water from Plant C no longer contained chromium sulfate and instead contained sodium sulfate and sodium chloride.

- Effluent from the Opex manufacturing process.
- Waste water from the periodic cleanings of Plants A, B and C.
- Until 1966, wastes from the resin manufacturing process.
- Wastes from the Wytox ADP manufacturing process.

Additionally, between 1965 and 1967, process wastes from the Wiltrol-N manufacturing process were piped to Lake Poly, as were hazardous substances and/or materials used or created in the Wiltrol-N manufacturing process, when Plant C was washed down once a week. These included sodium nitrite, sulfuric acid, diphenylamine and N-Nitrosodiphenylamine.

Further, until at least 1967, acetone used for cleaning purposes in the laboratory and the plants was piped to Lake Poly after its use.

East-West Ponds

From February, 1964 until 1965 and/or 1966 when they were replaced, sequentially, with the unlined acid pits, the East-West Ponds continued to receive acidic effluent from the Kempore and hydrazine manufacturing processes. The effluent streams contained the hazardous substances and/or materials, or compounds containing hazardous substances and/or materials identified above in Supplemental Response 7(a), including chromium sulfate. Additionally, drums containing substances and/or materials not yet identified by Olin were placed into the East-West Ponds.

Unlined Acid Pits

From 1965 until December, 1971, when they were replaced by the first lined lagoon, the unlined acid pits received effluents from the Kempore and hydrazine manufacturing processes that had formerly been piped to the East-West Ponds. With the exception of chromium sulfate, which was not present in the Kempore effluent after April, 1967, and the additions of sodium sulfate and sodium chloride to the Kempore effluent after April, 1967, the hazardous substances and/or materials, or compounds containing hazardous substances and/or materials in those effluent streams remained the same. After July, 1971, these effluent streams were neutralized and treated for sulfate content.

Additionally, from the time of the closure of Lake Poly in 1969, the unlined acid pits also received all processing effluent from the Opex manufacturing process (until 1972), all processing effluent from the Wytox ADP manufacturing process (until 1971), and wastewater from periodic cleanings of Plants A, B and C (until 1972). Those waste streams contained the hazardous substances and/or materials, or compounds containing hazardous substances and/or materials, identified in Supplemental Response 7(a), except that after July 1971, these streams were neutralized and treated for sulfate content.

Other Releases

Other releases of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials during the period from February, 1964 through August, 1980 included:

- Liquid dioctyldiphenylamine (DODPA a/k/a Wytox ADP) was routinely spilled onto the ground outside Plant B from February, 1964 until some time between 1967 and 1970.

- Between February, 1964 and 1971, diisobutylene periodically overflowed from a tank in Plant B and ran out of the building onto the adjacent ground.

- From February, 1964 to 1966, dust from the resin grinding process escaped Plant B and settled on the ground adjacent to Plant B. This dust contained phenol and/or formaldehyde.

- From February 1964 through 1966, pans in which resin was dried were cleaned outside Plant B and the residue from the cleaning process was poured onto the ground. The residue contained phenol and/or formaldehyde.

- In 1965 or 1966, two batches of resins exploded and sprayed material on the ground around the exterior of Plant B. That material contained phenol and/or formaldehyde.

- In 1965, a tank of diphenylamine in the Plant B area tank farm ruptured and released its contents to the ground.

- Between 1965 and 1968, dust from the fertilizer plant operated by PATCO in the eastern-most warehouse settled onto the ground outside the warehouse. That dust contained urea.

- From 1965 until 1971, effluent from the Wytox ADP process containing dioctyldiphenylamine, aluminum chloride, aluminum hydroxide, sodium chloride and diisobutylene was released into an open ditch running from Plant B to the East Ditch.

- From 1964 to 1965, on at least five to twelve occasions, azodiisobutyronitrile was spilled to the ground at the warehouse, either from containers being unloaded or from the loading dock. The material was left to the elements.

- Sometime between 1952 and 1968, a variety of hazardous substances and/or materials, or compounds containing hazardous substances and/or materials were buried at various locations around the Wilmington site, both in drums and unpackaged. Continued discovery may reveal the dates on which these substances and/or materials were buried. The locations of the drum burials and the identification of the hazardous substances and/or materials found at those locations can be found in Olin's Supplemental Phase II Report, June 1997 (at OW450587, et seq.), in accordance with Fed. R. Civ. P. 33(d).

- The recent Phase II Investigation of the Wilmington Site has identified the presence of pesticides in several locations around the Site. These locations are identified in Olin's Supplemental Phase II Report, June 1997. That report has been produced to the parties in this action. Documents produced by Fisons plc suggest that pesticides were shipped to Fisons Corporation at the Wilmington site by Fisons Ltd. or a subsidiary in the 1966 to 1970 period.

Olin has no knowledge of releases during the period from 1968 to 1980 other than those identified above. To the extent Olin has information regarding such possible releases, it is from deposition testimony and accompanying exhibits. The Biltrite Companies are as familiar with that deposition testimony and those exhibits as is Olin, and Olin refers the Biltrite Companies to them, pursuant to Fed. R. Civ. P. 33(d). Olin reserves all of its rights with respect to such testimony.

Documents not previously identified in Olin's Answers that provide information regarding the facts presented in Supplemental Responses 7(a) and 7(b) include: The Badger Pollution Control Study (OW017576-618); Site Plot Plan (OW000694); Blueprint, December 6, 1957 (OW001072); Blueprint, February 9, 1960 (OW001160); Blueprint, March 30, 1961 (OW373798); Blueprint, April 13, 1954 (OW373792); Kempore Filter Press, July 12, 1957 (HP00663-671); Operating Procedure - Product A, March 5, 1958 (HP00526-538); Blueprint, November 7, 1952 (OW373805); June 26, 1956 Site Photo (OW104043A); 1958 Insurance Plot Plan (OW1161); 1961 Insurance Plot Plant (OW373804); September 13, 1969 Site Photo (OW104081); 1967 Site Photo (OW014676A; 9/7/72 Letter from R. McBrien to Wilmington Town Manager (OW009629-631); 4/5/73 Letter from R. Williams to District Sanitary Engineer (OW009890-891); 8/17/71 Letter from Water Resources Commission to R. McBrien and Response (OW003015-016); 4/1/65 Letter from J.S. Walker to Osberg (OW008674-687); 9/15/66 Document from CPR to Dave (OW008627-628); Operating Procedure - BIOP, 7/19/58 (HP00615-623); Contract for Sale of Resin Business, 3/9/66 (BDG002427); Drum Burial Questionnaire (OW005317-367); 9/19/67 Herbicide Marketing Proposal (BDG011144-158); 8/23/67 Letter from F.R. Johnson to D.T. Smith (BDG011257); 9/19/67 Agricultural Division Progress Report (BDG011258-260); 9/19/67 Fisons Corp. Annual Board Meeting Minutes (JMW05105-116); 2/3/67 Fisons Corp. Board Minutes (2000107-117); 9/19/67 Fisons Corp. Board Minutes (3001379-389); 11/1/67 Agricultural Chemical Division Progress Report (3001459-461); 8/23/67 Letter to D. Smith from F. Johnson (JMW05024); 9/67 Agricultural Chemical Division Progress Report (JMW05025-027); 12/15/67 Agricultural Chemical Division Progress Report (JMW05365-366); 2/68 Agricultural Chemical Division Progress Report (JMW05443-445); 2/8/68 Agricultural Chemical Division Budget Review (JMW05460-467); 4/68 Agricultural Chemical Division Progress Report (JMW05588-593); 7/22/68 (JMW05782-785). Both these documents and the documents identified in Olin's Answers have been produced to the Biltrite Companies previously. Both sets of documents contain additional information responsive to this interrogatory request. For that information, Olin refers the Biltrite Companies to those documents pursuant to Fed. R. Civ. P. 33(D), because the burden of examining those documents is substantially the same for the Biltrite Companies as for Olin.

Persons who know, or may know, about these facts, including deponents, are identified in Olin's Supplemental Response to Interrogatory No. 8 below.

Discovery is still underway. Olin will identify additional relevant facts, documents and individuals with knowledge when and as required by the Federal Rules of Civil Procedure.

Interrogatory No. 8: Identify all persons with knowledge of:

(a) any fact relied on in your response to each of the foregoing interrogatories;

(b) any fact asserted or alleged in the Complaint filed by Olin in this action;

(c) the environmental condition of the Wilmington plant, including any fact concerning the environmental condition of the Wilmington plant; and

(d) Olin's reports and disclosures to regulatory agencies concerning the environmental condition of the plant.

Response: Olin incorporates its previous response to this interrogatory by reference. Further, Olin continues to object to this interrogatory on the grounds that it is vague and ambiguous in not defining "any fact asserted or alleged," "environmental condition," "fact concerning the environmental condition," "regulatory agencies" and "disclosures." Without waiving its objections, Olin further responds as follows:

(a) and (b) Appendix C has been revised to list persons presently known to Olin with knowledge of facts relied on in both Olin's Answers and these Supplemental Answers, as well as facts asserted or alleged in the complaint filed by Olin in this action.

Appendix D has been revised to list persons presently known to Olin who may have knowledge of facts regarding the plant.

(c) and (d) An additional person who has knowledge of environmental conditions at the Plant and of Olin's reports and disclosures to regulatory agencies is M. Margaret Hanley of GEI Consultants, Inc. Ms. Hanley was recently retained by Olin as a Licensed Site Professional and consultant regarding the Wilmington Plant.

Interrogatory No. 10: State the total amount of damages, including response costs and interest, Olin seeks to recover in this action; identify each response action which you allege Olin has undertaken at the Wilmington plant site, including a description of the nature of the work performed and the identity of the entities or individuals who performed the work; and state the amount of costs you seek to recover for each such response action.

Response: Olin incorporates its previous response to this interrogatory by reference. Further, Olin continues to object to this interrogatory on the grounds that it is vague and ambiguous in not defining "the nature of the work performed" and the "entities or individuals who performed the work." Without waiving its objections, Olin further responds as follows:

With respect to investigation activities, additional firms involved include Groundwater Technology, Gately Construction Co., E.C. Jordan Co., Soil Exploration Corp., and C.E. Environmental Services.

Documents that have been provided to all parties regarding expenditures at the site, in addition to those identified in Olin's Answers, include documents at OW507777-510085; OW520209-520500; OW516652-516915; OW519069-519160; OW519250-519785; OW592851-592981; OW593288-593535; OW607519-610214. The burden of obtaining information from those documents, including those previously identified, is the same for the Biltrite Companies as for Olin and, therefore, Olin refers the Biltrite Companies to those documents, pursuant to Fed. R. Civ. P. 33(d).

As to Objections:

OLIN CORPORATION

By Its Attorneys,

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Date: January 30, 1998

VERIFICATION

I, Thomas P. O'Brien, Manager, Environmental Sites, Olin Corporation, state that I have read the foregoing Supplemental Answers of Olin to the Biltrite Companies' First Interrogatories, that the answers include information not known to me personally, that I have relied on others to obtain such information not known to me personally, and that the answers contained therein are true to the best of my knowledge, information and belief.

Executed under penalty of perjury on this 30th day of January, 1998.

Thomas P. O'Brien

Thomas P. O'Brien

CERTIFICATE OF SERVICE

I hereby certify that on this 30th day of January, 1998, I served a copy of Plaintiff Olin Corporation's Supplemental Objections and Answers to Defendants The Biltrite Corporation and American Biltrite Inc.'s First Set of Interrogatories, by first class mail, postage prepaid, to Defendants' counsel of record, Robert G. Jones, and to all other Counsel of Record.

Charles Swinburn

Charles Swinburn

ATTACHMENT 6

Constituents Found In "Business Records and Correspondence" in Geomega's Files

(Shaded records denote existing PCOCs)

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
#6 oil		Unknown	Unknown	Oils used at Wilmington	N	
1,1'Azobisformamide		Unknown	Unknown	NP Wilmington List	N	
1,2 Dichloroethane		Unknown	Unknown	OW 023181	N	
1,2,4 Triazole		Product	Unknown	Wilmington Finished Goods	N	
1-Nitropropane		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
2,6 di-tert-butylphenol		Unknown	Unknown	OW 797568	N	
2,6,B		Unknown	Unknown	OW 797361	N	
201-C Resin		Product	Pre	OW 373719-M Production Summary	N	
201-F Resin		Product	Pre	Wilmington Finished Goods	N	
202-C Resin		Product	Pre	OW 373719-M Production Summary	N	
202-F Resin	cashew nut oil	Product	Pre	OW 373719-M Production Summary	N	
218-C Resin		Product	Pre	OW 373719-M Production Summary	N	
218-F Resin		Product	Pre	OW 373719-M Production Summary	N	
222-P Resin		Product		OW 1285-1339	N	
2-ethylhexanol		Raw	Pre	Table 2.2 from CSA	Y	104-76-7
2-ethylhexoic acid	Octanoic acid	Raw	Pre	OW 021018 List of Raw materials	Y	00149-57-5
2-MT Lever		Product	Pre	AB 04322 Unit Summary	N	
2-nitrophenol		Unknown	Unknown	OW 023180 Olin memo	N	
3,3-thiodipropionic acid		Raw	Unknown	OW 005215	N	
3-Amino 1,2,4 Triazole		Product	Unknown	OW 797474	N	
4,4'-oxybis(benzenesulfonyl hydrazide)		Product	Pre	Table 2.2 from CSA	Y	
4-Amino-1,2,4 Triazole		Coproduct	Unknown	OW 797464	N	
4-aminourazole		Unknown	Unknown	OW 023366 Olin	N	
598 Oil		Unknown	Unknown	OW 1285-1339	N	
5-Aminotetrazone		Unknown	Unknown	OW 797339	N	
5-Phenyltetrazole	Expandex 5 PT	Product	Pre	Wilmington Finished Goods	Y	18039-42-4
Accel MBTS		Product	Pre	AB 04322 Unit Summary	N	
Acetone	acetone filtrate	Unknown	Unknown	Wilmington Raw Materials sheet 2	Y	00067-64-1
acetone filtrate	acetone				N	
Acetone Semicarbazone		Product	Unknown	Wilmington Finished Goods	N	
Acetonitrile		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
Acrylic Resins		Raw	Unknown	Table 2.2 from CSA	Y	
Acryloid K-120N		Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Actafoam F-2 paste		Product	Unknown	Wilmington Finished Goods	N	
Actafoam F-2 powder		Product	Unknown	Wilmington Finished Goods	N	
Actafoam R-1		Product	Unknown	OW 005211 Olin memo	N	
Actafoam R-10		Product	Unknown	OW 567715 Olin ltr	N	
Actafoam R-3		Product	Unknown	Wilmington Finished Goods	N	
Actafoam R-5		Product	Unknown	OW 005211 Olin memo	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Actafoam XR-16		Product	Unknown	Wilmington Finished Goods	N	
Actafoam XR-34		Product	Unknown	Wilmington Finished Goods	N	
Additive W		Product	Unknown	Wilmington Finished Goods	N	
Adipic Acid	Hexanedioic acid, 1,4-butane-dicarboxylic	Unknown	Unknown	OW 093469 Olin Memo	Y	00124-04-9
Adipic dihydrazide		Product	Unknown	Wilmington Finished Goods	N	
Aerosol M-35		Product	Pre	AB 04322 Unit Summary	N	
Alkyl Phenol					Y	68555-24-8
Alkylated diphenylamine		Unknown	Unknown	NP Wilmington List	N	
Aluminum		Waste/	Unknown	GEO 25377 Deposition Exhibit	Y	7429-90-5
Aluminum Chloride		Raw	Pre	Table 2.2 from CSA	Y	07446-70-0
Aluminum Hydroxide		Waste/Byproduct	Pre	Table 2.2 from CSA	Y	21645-51-2
Aminoguanidine Bicarbonate	AGB	Unknown	Unknown	OW 797339	N	
Ammonia		Raw	Pre	OW 021018 List of Raw materials	Y	7664-41-7
Ammonium Chloride		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	12125-02-9
Ammonium Hydroxide		Raw	Unknown	OW 021018 List of Raw materials	Y	01336-21-6
Ammonium salts of Alkylphosphate	Aquarex L, Anionic surfactant	Raw	Unknown	OW 005200 Olin Memo	Y	
Ammonium Sulfate		Waste/Byproduct	Pre	Table 2.2 from CSA	Y	7783-20-2
Ammonium Thiocyanate	Ammonium sulfocyanate	Unknown	Unknown	OW 797273	Y	01762-95-4
Anhydrous Ammonia	ammonia	Raw	Unknown	OW 005200 Olin Memo	N	
Aniline	aminobenzene	Unknown	Unknown	OW 1285-1339	Y	00062-53-3
Antidust 1060		Product	Unknown	Wilmington Finished Goods	N	
Antidust 1060N		Product	Pre	AB 04322 Unit Summary	N	
Aquard 25;75		Unknown	Unknown	OW 005200 Olin Memo	N	
Asbestos		Waste	Unknown	OW 021839 Annual Report	Y	1332-21-4
AZDN FF		Product	Unknown	Wilmington Finished Goods	N	
AZDN LC dry		Product	Unknown	Wilmington Finished Goods	N	
AZDN Lm dry		Product	Unknown	Wilmington Finished Goods	N	
Azobisisobutyronitrile		Unknown	Unknown	OW 005200 Olin Memo	N	
Azodicarbonamide	Kempore	Raw & Product	Pre	Table 2.2 from CSA	Y	123-77-3
azone		Unknown	Unknown	OW 023366 Olin	N	
Barium azocarbonate	Expandex 177	Product	Unknown	OW 006285 Olin	N	
Barium Chloride		Unknown	Unknown	Wilmington Raw Materials sheet 2	Y	10361-37-2
Barium oxide		Raw	Unknown	OW 022668	N	
Bentone		Raw	Unknown	Table 2.2 from CSA	Y	
Benzaldehyde		Unknown	Unknown	OW 795562	Y	00100-52-7

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Benzene	Benzol	Waste	Unknown	OW 021839 Annual Report	Y	00071-43-2
Benzene sulfonyl hydrazide	4,4-Oxybis				Y	80-51-3
Benzonitrile	cyanobenzene; phenyl cyanide	Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	100-47-0
Benzophenone	diphenyl ketone	Unknown	Unknown	OW 093469 Olin Memo	Y	00119-61-9
Benzophenone Hydrazone		Product	Unknown	Wilmington Finished Goods	N	
BHC		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Bichromate		Unknown	Unknown	OW 1285-1339	N	
Bis(2-ethylhexyl) phthalate	Dioctyl phthalate; DOP; di(2-ethylhexyl) phthalate	Raw & Product	Pre	Table 2.2 from CSA	Y	00117-81-7
Borden's B-38		Unknown	Unknown	OW 1285-1339	N	
Boric Acid	Boracic acid; orthoboric acid; borofax	Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Butanol	see also butyl alcohol, n-butanol	Raw	Unknown	OW 021018 List of Raw materials	N	
Butyl alcohol	see also butanol, n-butanol	Raw	Pre	Table 2.2 from CSA	Y	00071-36-3
Butylacetate		Raw	Unknown	Table 2.2 from CSA	Y	00105-46-4
Cabosil		Unknown	Unknown	OW 1285-1339	N	
Cadmium octate		Raw	Unknown	OW 005200 Olin Memo	N	
Cadmium oxide		Raw	Unknown	OW 005211 Olin memo	Y	01306-19-0
calcium		Unknown	Unknown	Severn Trent Results 1998	N	
Calcium Carbonate		Unknown	Unknown	OW 009953 NP letter	Y	471-34-1
Calcium Chloride		Unknown	Unknown	OW 009953 NP letter	Y	10043-52-4
Calcium Oxide		Unknown	Unknown	OW 567715 Olin ltr	Y	1305-78-8
Calcium oxybisbenzene sulfonate		Unknown	Unknown	OW 009953 NP letter	N	
Calcium Silicate	Microcel-E	Unknown	Unknown	OW 005200 Olin Memo	Y	1344-95-2
Calcium Stearate		Raw	Unknown	OW 005200 Olin Memo	Y	1592-23-0
Carbohydrazide	1,3-diaminourea, carbazide	Product	Unknown	Wilmington Finished Goods	Y	497-18-7
Carbon Black		Product	Pre	AB 04322 Unit Summary	N	
carbon dioxide		Unknown	Unknown	OW 1285-1339	N	
carbon disulfide		Unknown	Unknown	OW 798061	N	
Carboxymethylcellulose		Unknown	Unknown	OW 005200 Olin Memo	N	
Cashew nut oil		Raw	Unknown	OW 005200 Olin Memo	N	
Caustic soda flake		Unknown	Unknown	OW 1285-1339	N	
Chlordane		Pesticide	Unknown	Sheet on Pesticides used at Olin	N	
Chlorine		Raw	Pre	Table 2.2 from CSA	Y	07782-50-5
Chlorosulfonic acid		Raw	Pre	Table 2.2 from CSA	Y	07790-94-5

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Cho-ox 4	Thibisbenzaldehydepropanyl hydrazone	Unknown	Unknown	OW 797563	N	
chrome sulfate		Waste/Byproduct	Unknown	Table 4-14	N	
Chromium		Unknown	Unknown	Phase I Site Inspection (2nd)	N	
Cirasol oil		Unknown	Unknown	*Oils used at Wilmington*	N	
CNSL		Unknown	Unknown	OW 1285-1339	N	
copper		Unknown	Unknown	OW 023182	N	
COS-60		Product	Unknown	Wilmington Finished Goods	N	
CSA		Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Cumarone Resin		Product	Pre	AB 04322 Unit Summary	N	
cyanide	see hydrogen cyanide	Waste	Unknown	OW 030048 waste report	N	
Cyanox flakes		Product	Unknown	Wilmington Finished Goods	N	
Cyanox powder		Product	Unknown	Wilmington Finished Goods	N	
Cyclohexanol		Waste	Unknown	OW 021839 Annual Report	N	
Darvan-L		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Darvanol		Raw	Unknown	OW 021018 List of Raw materials	N	
Daxad		Unknown	Unknown	OW 1285-1339	N	
DDD		Pesticide	Unknown	*Sheet on Pesticides at Olin*	N	
DDE		Pesticide	Unknown	Sheet on Pesticides at Olin	N	
DDT		Pesticide	Unknown	Sheet on Pesticides at Olin	N	
dedusting oil		Unknown	Unknown	Oils used at Wilmington	N	
Deetac	NP 27	Product	Unknown	Wilmington Finished Goods	N	
Deodorant 1056		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Di(2-ethylhexyl)phthalate	bis(2-ethylhexyl)phthalate, DOP, dioctyl phthalate	Product	Unknown	National Polychemicals, Inc.	N	
Di(C7-9-11-Alkyl) phthalate	1,2-benzenedicarboxylic acid, Santicizer 711	Raw	Unknown	OW 021018 List of Raw materials	Y	39393-37-8
DIB		Unknown	Unknown	OW 005211 Olin memo	N	
dicarboxyhydrazide amide		Unknown	Unknown	OW 023366 Olin	N	
Dihydrazide		Unknown	Unknown	OW 797561	N	
Dihydrazine sulfate		Unknown	Unknown	HP 00654 K-1 operating	N	
Diisobutylene	2,2,4-trimethylpentene	Raw	Pre	Table 2.2 from CSA	Y	25167-70-8
Dimethyl Carbonate		Unknown	Unknown	OW 005200 Olin Memo	Y	616-38-6
Dimethyl Formamide		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	
Dimethylphenol				ltr from Stepan	N	
Di-n-butyl phthalate		Product	Pre	Table 2.2 from CSA	Y	00084-74-2
Dinitrosopentamethylenetetramine	Opex	Product	Pre	Table 2.2 from CSA	Y	101-25-7
Di-nonylphenol	2,4-dinonylphenol 4DVR	Raw	Pre	OW 021018 List of Raw materials	Y	
Dioctyl Diphenylamine		Unknown	Unknown	BDG 000006	Y	
Dioctylphthalate		Unknown	Unknown	OW 210384 Olin Memo		
Diphenylamine		Raw	Pre	Table 2.2 from CSA	Y	00122-39-4

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
diphenyl methanol		Unknown	Unknown	OW 023366 Olin	N	
Diphenyl oxide	DPO??	Raw	Pre	Table 2.2 from CSA	Y	
diphenyl-4-4'disulfonyl		Unknown	Unknown	OW 797589	N	
diphenyl-4-4'disulfonyl		Unknown	Unknown	OW 797589	N	
DMTDH		Unknown	Unknown	OW 797562	N	
DMTDP	Dimethyl thiodipropionate	Unknown	Unknown	OW 797562	N	
DOEMEGAN		Unknown	Unknown	OW 797605	N	
Drakeol #35 oil		Unknown	Unknown	OW 005200 Olin Memo	N	
Elten		Product	Pre	AB 04322 Unit Summary	N	
Endosulfan		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Endrin		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Endrin Ketone		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Ethemeen		Unknown	Unknown	OW 005200 Olin Memo	N	
Ether		Unknown	Unknown	OW 797581	N	
Ethyl acetate	Ethyl Ethanoate, Acetic Ester	Unknown	Unknown	OW 030048 waste report	Y	00141-78-6
Ethyl Acetoacetate		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
Ethylene glycol	1,2-Thanediol	Unknown	Unknown	OW 005200 Olin Memo	N	
Ethylene oxide		Unknown	Unknown	OW 797613	N	
Fast Spermoil		Raw	Unknown	Oils used at Wilmington	N	
Fatty amines		Raw	Unknown	Table 2.2 from CSA	Y	
Ficel AC3F		Product	Unknown	Wilmington Finished Goods	N	
Ficel CRA		Product	Unknown	Wilmington Finished Goods	N	
FI-Guard		Unknown	Unknown	3000105 1964 ltr	N	
Fisons DNPT 80		Unknown	Unknown	Technical News FL-13085	N	
Formaldehyde		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	00050-00-0
Formamide	Methanamide, carbamaldehyde	Unknown	Unknown	OW 005200 Olin Memo	N	
Formic acid		Unknown	Unknown	OW 1285-1339	N	
Fransil 251		Product	Pre	AB 04322 Unit Summary	N	
Glycerine	Glycerol, 1,2,3-propanetriol	Raw	Unknown	OW 021018 List of Raw materials	Y	00056-81-5
Glycol Ethers	glycol monethyl ether	Unknown	Unknown	OW 005200 Olin Memo	Y	00110-80-5
Hardener	S-7087	Product	Unknown	Wilmington Finished Goods	N	
HBr	Anhydrous hydrobromic acid??	Unknown	Unknown	OW 005211 Olin memo	N	
HCL AQ		Waste/Byproduct	Unknown	Table 4-14	N	
Heavy White Oil		Raw	Unknown	OW 021018 List of Raw materials	N	
Heptachlor		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Heptachlor epoxide		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Hexamethylenetetramine	Hexamine, Methenamine	Raw	Pre	Table 2.2 from SCA	Y	100-97-0
Hexane		Raw	Unknown	OW 021018 List of Raw materials	N	
Hexylene Glycol		Raw	Unknown	OW 021018 List of Raw materials	Y	00107-41-5

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown. By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Hisil 233		Unknown	Unknown	OW 567715 Olin ltr	N	
Hydrazine	see hydrazine hydrate	Raw & Product	Pre	OW 021018 List of Raw materials	Y	00302-01-2
hydrazine hydrate	see hydrazine	Unknown	Unknown	OW 797586	N	
Hydrazodicarbonamide	Urazole,1,2,4-triazolidine 3,5-dione, bicarbaminide				Y	3232-84-6
Hydrochloric acid		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	07647-01-0
Hydrogen Cyanide in Aq. Solution	Cyanide	Waste	Unknown	OW 030048 waste report	Y	00057-12-5
Hydrogen Peroxide		Unknown	Unknown	Wilmington Raw Materials sheet 2	Y	07722-84-1
Indupol H-100		Unknown	Unknown	OW 1285-1339	N	
Indusoil		Unknown	Unknown	HP 00548	N	
Inks		Unknown	Unknown	OW 005200 Olin Memo	N	
Iron		Unknown	Unknown	Severn Trent Results 1998	N	
Isooctyl alcohol		Raw	Unknown	BIOP HP 00615	N	
Isophthalic acid	1,3-Benzenedicarboxylic acid				Y	121-91-5
Kempore "B"		Product	Unknown	OW 1285-1339	N	
Kempore 117		Product	Unknown	OW 1285-1339	N	
Kempore 125		Product	Pre	AB 04322 Unit Summary	N	
Kempore 125A		Product	Unknown	OW 009047	N	
Kempore 125FF		Product	Unknown	Wilmington Finished Goods	N	
Kempore 125HS		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 125LP		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 125-MC		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 150		Product	Pre	AB 04322 Unit Summary	N	
Kempore 200		Product	Pre	Wilmington Finished Goods	N	
Kempore 200FF		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 200MC		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 60		Product	Unknown	Wilmington Finished Goods	N	
Kempore 60/14		Product	Unknown	Wilmington Finished Goods	N	
Kempore 60/14 MC		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 60/14 XL		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 60/14FF		Product	Unknown	OW 567715 Olin ltr	N	
Kempore 80					N	
Kempore BA-101		Product	Unknown	OW 1285-1339	N	
Kempore HDCA		Product	Unknown	OW 567715 Olin ltr	N	
Kempore HDCI		Product	Unknown	OW 025792	N	
Kempore K-1		Product	Unknown	HP00653 Operating procedure	N	
Kempore R-125		Product	Unknown	AB 04322 Unit Summary	N	
Kempore SD-125		Product	Pre	Wilmington Finished Goods	N	
Kempore SD-150		Product	Pre	OW 373719-M Production Summary	N	
Kempore SD-200		Product	Pre	Wilmington Finished Goods	N	
Kempore SD-200/EPO		Product	Unknown	Wilmington Finished Goods	N	
Kempore SD-60		Product	Pre	Wilmington Finished Goods	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Kempore SDA-200		Product	Unknown	Wilmington Finished Goods	N	
Kempore UD					N	
KSP		Unknown	Unknown	OW 1285-1339	N	
K-tert-butoxide		Unknown	Unknown	OW 797580	N	
L-115 Resin		Product	Unknown	OW 1285-1339	N	
L-118-A Resin		Product	Unknown	OW 1285-1339	N	
L-119 Resin		Product	Unknown	OW 1285-1339	N	
L-303 Resin		Unknown	Unknown	OW 1285-1339	N	
lauryl alcohol		Byproduct	Unknown	OW 006285 Olin	N	
Lead octate		Raw	Unknown	OW 005200 Olin Memo	N	
LiH		Raw	Unknown	OW 797361	N	
Lime slurry	Lime	Raw	Unknown	OW 021018 List of Raw materials	N	
Ligro		Unknown	Unknown	Olin 1983 Aug. 30 memo	N	
Liquid DPA		Raw	Unknown	OW 1285-1339	N	
Magnesia 30-C		Product	Pre	AB 04322 Unit Summary	N	
Magnesia 5		Product	Pre	AB 04322 Unit Summary	N	
Magnesium		Unknown	Unknown	Severn Trent Results 1998	N	
Maleic anhydride		Raw	Unknown	Table 2-2 from CSA	Y	00108-31-6
Manganese		Unknown	Unknown	Severn Trent Results 1998	N	
Maple Resin		Product	Pre	AB 04322 Unit Summary	N	
MEA		Raw	Unknown	OW 005211 Olin memo	N	
melathane		Product	Unknown	Wilmington Finished Goods	N	
Mercury		Unknown	Unknown	OW 023181	Y	07439-97-6
Methanol	alcohol	Raw	Unknown	OW 021018 List of Raw materials	Y	00067-56-1
Methoxychlor		Pesticide	Unknown	Sheet on Pesticides at Olin (in 2nd big box)	N	
Methyl acrylate		Unknown	Unknown	OW 797578	N	
methyl carbazate		Unknown	Unknown	OW 797586	N	
Methyl Ethyl Ketone	2-Butanone	Unknown	Unknown	OW 373720 Stepan Technical Information	Y	00078-93-3
methyl glucoside		Unknown	Unknown	OW 797579	N	
Mineral Oil, Mineral Seal Oil		Raw	Unknown	OW 021018 List of Raw materials	Y	
Mineral Spirits		Raw	Unknown	OW 021018 List of Raw materials	Y	08030-30-6
Mixture of Silicone and Emulsions	CNC Antifoam 100	Raw	Unknown	OW 021018 List of Raw materials	Y	
Monochlorourea		Unknown	Unknown	OW 793233	N	
Monoethanolamine	2-aminoethanol	Raw	Unknown	OW 021018 List of Raw materials	Y	00141-43-5
Monohydrazine		Unknown	Unknown	OW 1285-1339	N	
monohydrazine sulfate	MHS	Unknown	Unknown	HP 00654 K-1 operating	N	
Morpholine		Unknown	Unknown	OW 373720 Stepan Technical Information	Y	00110-91-8
Muriatic acid		Raw	Unknown	OW 005200 Olin Memo	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
N,N-Dimethylformamide	DMF	Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	00068-12-2
Napol		Product	Unknown	Wilmington Finished Goods	N	
Natrasol		Unknown	Unknown	OW 005200 Olin Memo	N	
NBA		Raw	Unknown	OW 797361	N	
n-butanol	see also butanol, butyl alcohol	Unknown	Unknown	OW 093469 Olin Memo	N	
NC 1978		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 3363		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 4676		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 4780		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 5016		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 5651		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 6583		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NC 6627		Unknown	Unknown	BDG 011360 Fisons Corporations	N	
NEV Paradine #2 Resin		Product	Pre	AB 04322 Unit Summary	N	
NEV R-16 Resin		Product	Pre	AB 04322 Unit Summary	N	
NEV R-29 Resin		Product	Pre	AB 04322 Unit Summary	N	
N-Heptane	Heptane	Raw	Unknown	OW 005200 Olin Memo	Y	00142-82-5
Nitric Acid					Y	07697-37-2
Nitrogen		Unknown	Unknown	OW 009680	Y	7727-37-9
nitrogen trichloride		Unknown	Unknown	B06000004 Fisons Limited	N	
Nitropore ATA		Product	Unknown	Wilmington Finished Goods	N	
Nitropore OT		Product	Pre	Table 2.2 from CSA	N	
Nitropore RP-10		Product	Unknown	OW 567715 Olin ltr	N	
N-Nitrosodiphenylamine	Wilfron N	Product	Pre	Table 2.2 from CSA	Y	00086-30-6
Nonylphenol		Raw	Pre	OW 021018 List of Raw materials	Y	25154-52-3
Nopco 1444-B		Unknown	Unknown	Deposition Exhibit 1979 date	Y	25154-52-3
NP061 Resin		Product	Unknown	OW 1285-1339	N	
NPH-15		Unknown	Unknown	OW 1285-1339	N	
NPI-11		Product	Unknown	Wilmington Finished Goods	N	
NPS-201C		Product	Unknown	Wilmington Finished Goods	N	
NP-SAL-1		Raw	Unknown	HP 00527	N	
Nuostabe V1444		Raw	Unknown	OW 021018 List of Raw materials	N	
Nurothane		Unknown	Unknown	OW 1285-1339	N	
OBSA		Unknown	Unknown	OW 797589	N	
OBSH	4-4'oxybisbenzenedisulfonyl hydrazide; Nitropore OBSH	Product	Unknown	Wilmington Finished Goods	N	
Octadecanol		Raw	Unknown	OW 797361	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Oleic acid		Raw	Unknown	Poly Brite HP 00562	N	
Opex	Product A; dinitrosopentamethylene tetramine	Product	Pre	OW 373719-M Production Summary	N	
Opex 100		Product	Unknown	Wilmington Finished Goods	N	
Opex 40		Product	Pre	AB 04322 Unit Summary	N	
Opex 42		Product	Unknown	Wilmington Finished Goods	N	
Opex 80		Product	Unknown	Wilmington Finished Goods	N	
Opex 93		Product	Unknown	Wilmington Finished Goods	N	
Opex PL-80		Product	Pre	AB 04322 Unit Summary	N	
Opex SBA		Product	Unknown	OW 1285-1339	N	
Opex-4X		Product	Unknown	HP 00527	N	
Opex-RPC		Product	Unknown	AB 04322 Unit Summary	N	
Opex-XBA		Product	Unknown	AB 04322 Unit Summary	N	
Oxalic acid	Ethanedioic acid	Raw	Unknown	OW 005200 Olin Memo	N	
Oxalic Dihydrazide	Semioxamazide, Aminooxoacetic acid hydrazide, oxamic acid hydrazide				Y	515-96-8
Oxybisbenzenesulfonyl chloride	OBSC	Product	Unknown	Wilmington Finished Goods	N	
Para Toluene Sulfonic Acid water	PTSA	Raw	Unknown	OW 005200 Olin Memo	Y	6192-52-5
Paraformaldehyde	Paraform	Raw	Unknown	OW 005200 Olin Memo	Y	30525-89-4
Paraplex		Unknown	Unknown	Deposition Exhibit 1979 date	N	
PBNA	NP-20; 20-N	Product	PRe	AB 04322 Unit Summary	N	
PC oil		Unknown	Unknown	Oils used at Wilmington	N	
Phenol		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	00108-95-2
Phenol formaldehyde Resin		Product	Pre	Table 2.2 from CSA	N	
Phosphorus Trichloride		Raw	Pre	OW 021018 List of Raw materials	Y	07719-12-2
Phthalate Ester		Unknown	Unknown	OW 567719	N	
Phthalic Anhydride	Phthalandione, Wilfroll P	Unknown	Unknown	OW 005200 Olin Memo	Y	00085-44-9
Poly brite 600		Product	PRe	AB 04322 Unit Summary	N	
Poly Brite PE 20		Product	Pre	AB 04322 Unit Summary	N	
Poly Brite W10		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse AP-2		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse AP-300		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse LC-20		Product	Pre	AB 04322 Unit Summary	N	
Poly Sperse R-100		Product	Pre	AB 04322 Unit Summary	N	
Poly-BUT 66-6		Unknown	Unknown	OW 1285-1339	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
polychlorinated biphenyls		Waste	Unknown	OW 030047	N	
Polycone 1000		Product	Pre	AB 04322 Unit Summary	N	
Polycone 100X		Product	Pre	AB 04322 Unit Summary	N	
Polycone 125X		Product	Pre	AB 04322 Unit Summary	N	
Polycone 2000		Product	Pre	AB 04322 Unit Summary	N	
Polycone 500		Product	Pre	AB 04322 Unit Summary	N	
Polycone 5000		Product	Pre	OW 373719-M Production Summary	N	
Polycone Le 46 150x		Product	Unknown	Wilmington Finished Goods		
Polycone M-35 oil		Product	Pre	AB 04322 Unit Summary	N	
Polycone ORG 22		Product	Pre	AB 04322 Unit Summary	N	
Polycone XSP		Product	Pre	AB 04322 Unit Summary	N	
Polyethylene		Waste	Unknown	OW 021839 Annual Report	N	
Poly-Lube		Product	Unknown	Unit Summary???	N	
Polymag 500		Product	Pre	AB 04322 Unit Summary	N	
polymeric alkylated phenol		Waste	Unknown	OW 030046 Waste Report	N	
Polymyke		Product	Pre	AB 04322 Unit Summary	N	
PolyPeg E		Product	Unknown	Wilmington Finished Goods	N	
Polyphen 188					N	
Polyphen L-305		Product	Unknown	OW 1285-1339	N	
Polyphen S-201-C		Product	Pre	AB 04322 Unit Summary	N	
Polyphen S-202-C		Product	Pre	AB 04322 Unit Summary	N	
Polyphen S-202-F		Product	Pre	AB 04322 Unit Summary	N	
Polyurethane		Unknown	Unknown	OW 1285-1339	N	
Polyzole		Product	Unknown	Wilmington Finished Goods	N	
potassium		Unknown	Unknown	Severn Trent Results 1998	N	
Potassium bromate		Reagent	Unknown	OW 798168	N	
Potassium bromide		Reagent	Unknown	OW 798168	N	
Potassium F-80		Unknown	Unknown	ltr from Stepan	N	
Potassium hexoate		Raw	Unknown	OW 005200 Olin Memo	N	
Potassium Hydroxide		Raw	Unknown	OW 005211 Olin memo	Y	01310-58-3
Potassium octate		Raw	Unknown	OW 005200 Olin Memo	N	
Potassium oleate		Raw	Pre	OW 021018 List of Raw materials	Y	
Potassium Stearate		Raw	Unknown	OW 005200 Olin Memo	Y	593-29-3
Processing oil		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	N	
propionic hydrazine		Unknown	Unknown	OW 797564	N	
PVC		Unknown	Unknown	OW 1285-1339	N	
Pyridine		Unknown	Unknown	OW 373720 Stepan Technical Information	N	
Rapeseed oil		Unknown	Unknown	Wilmington Raw Materials sheet 2	N	
Reclaim oil NEV-LX-859		Product	Pre	AB 04322 Unit Summary	N	
RIA CS		Product	Unknown	Wilmington Finished Goods	N	
RIA G-62		Product	Unknown	OW 1285-1339	N	
RIA NC		Product	Pre	Wilmington Finished Goods	N	
RIA PL-66		Product	Pre	AB 04322 Unit Summary	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
RIA X-66		Product	Pre	AB 04322 Unit Summary	N	
Rilsan		Unknown	Unknown	Miscellaneous Paper	N	
RP-3		Product	Unknown	Wilmington Finished Goods	N	
RPC		Unknown	Unknown	Written sheet 1997	N	
Rubber Process Oil #415		Raw	Unknown	OW 021018 List of Raw materials	N	
S 6150		Product	Unknown	Wilmington Finished Goods	N	
S 7554		Product	Unknown	Wilmington Finished Goods	N	
S 7613		Product	Unknown	Wilmington Finished Goods	N	
S 7614		Product	Unknown	Wilmington Finished Goods	N	
S 7615		Product	Unknown	Wilmington Finished Goods	N	
S 7707		Product	Unknown	Wilmington Finished Goods	N	
S 7708		Product	Unknown	Wilmington Finished Goods	N	
S 7842		Product	Unknown	Wilmington Finished Goods	N	
Santicizer 722		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Santocel	Silica aerogel	Raw	Unknown	Table 2.2 from CSA	Y	63231-67-4
Sebacic dihydrazide		Product	Unknown	Wilmington Finished Goods	Y	925-83-7
Semicarbazide hydrochloride		Unknown	Unknown	OW 023366 Olin	N	
Semicarbazide solution		Product	Pre	Table 2.2 from CSA	N	
Semi-gloss	S-7268	Product	Unknown	Wilmington Finished Goods	N	
Silica		Raw	Unknown	OW 005200 Olin Memo	N	
Silicon Dioxide	Sand, Aerosil 380	Unknown	Unknown	OW 567715 Olin ltr	Y	7631-86-9
Silicone	Polycone	Raw	Unknown	Table 2.2 from CSA	Y	
Soda ash		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
sodium		Unknown	Unknown	Severn Trent Results 1998	N	
Sodium acetate		Raw	Unknown	OW 005200 Olin Memo	N	
Sodium Azide		Raw	Pre	Table 2.2 from CSA	Y	26628-22-8
Sodium Bicarbonate/Sodium Carbonate		Raw	Unknown	OW 005200 Olin Memo	Y	144-55-8/497-19-8
sodium bichromate		Unknown	Unknown	HP 00269	N	
Sodium Bromide		Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	7647-15-5
Sodium Chlorate	Soda Chlorate	Raw	Pre	OW 021018 List of Raw materials	Y	07775-09-9
Sodium Chloride		Waste/By-product	Pre	Table 2.2 from CSA	Y	7647-14-5
Sodium dicarbonate		Raw	Unknown	Wilmington Raw Materials sheet 2	N	
Sodium Dichromate		Unknown	Unknown	HP 00653 Product K-1 operating procedure	Y	10588-01-9
Sodium Hydroxide Liquid/Flake	Soda Lye Solution	Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	1310-73-2
Sodium Hypochlorite		Raw	Unknown	OW 006285 Olin	Y	07681-52-9
sodium lauryl sulfate		Unknown	Unknown	OW 797561	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Sodium Nitrate		Waste/Byproduct	Pre	Table 2.2 from CSA	Y	7631-99-4
Sodium Nitrite		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	07632-00-0
Sodium Stearate		Raw		OW 005200 Olin Memo	Y	822-16-2
Sodium Sulfite/Sulfate		Waste/By-product	Pre	Table 2.2 from CSA	Y	7757-83-7/7757-82-6
Soybean Oil Epoxide	Vikoflex	Unknown	Unknown	OW 021018 List of Raw materials	Y	
Stearate		Unknown	Unknown	OW 1285-1339	N	
Styrene	Ethylbenzene, styro, styrolene, cinnamene, cinnamol, phenylethylen, vinyl benzene	Unknown	Unknown	OW 1285-1339	N	
Styrene butadiene rubber	SBR	Unknown	Unknown	Excerpt from Riley Deposition	N	
Sulfuric Acid		Raw & Waste/Byproduct	Pre	OW 021018 List of Raw materials	Y	07664-93-9
Sunpar 120		Raw	Unknown	OW 021018 List of Raw materials	N	
Sunthen 410 oil		Unknown	Unknown	Oils used at Wilmington	N	
SWS 233	silicon emulsion	Raw	Unknown	OW 021018 List of Raw materials	N	
Sytox ADP	DODPA, Lestane, dioctyldiphenylamine, ADP-F	Product	Pre	Wilmington Finished Goods	N	
Tall oil	Liqrene	Unknown	Unknown	Oils used at Wilmington	N	
TBA		Unknown	Unknown	OW 797580	N	
TBR		Unknown	Unknown	OW 1285-1339	N	
Tetraflex DBP		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex DIDP		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex DOP		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex R-122		Product	Pre	AB 04322 Unit Summary	N	
Tetraflex RS-10		Product	Pre	AB 04322 Unit Summary	N	
Tetraphen 201-C		Unknown	Unknown	AB03289 NP	N	
Tetraphen 201-P		Unknown	Unknown	AB03289 NP	N	
Tetraphen 218 I		Unknown	Unknown	AB03295 NP	N	
Tetraphen 218 P		Unknown	Unknown	AB03295 NP	N	
Tetraphen S-201-F		Unknown	Unknown	AB03289 NP	N	
Tetrphen 218 C		Unknown	Unknown	AB03295 NP	N	
Thiosemicarbizide		Unknown	Unknown	OW 797273	N	
Titanium Dioxide	R-66	Product	Pre	AB 04322 Unit Summary	N	
TMTD		Product	Pre	AB 04322 Unit Summary	N	
Toluene		Raw	Unknown	Table 2.2 from CSA	Y	00108-88-3
Toluene Diisocyanate		Unknown	Unknown	Lab Record Book H57701	N	
Toluol		Unknown	Unknown	OW 005200 Olin Memo	N	
Trancoa 375 B		Unknown	Unknown	OW 1285-1339	N	
Trichloroethylene		Unknown	Unknown	Severn Trent Results 1998	N	

Potential Contaminant of Concern	Common Names	Raw, Product, Waste, Unknown, By-product	Pre- or Post-Olin	Reference	On existing PCOC List	CAS#
Triethanolamine		Raw	Unknown	OW 373732	Y	102-71-6
Triisopropanolamine		Unknown	Unknown	OW 005211 Olin memo	N	
Triphenyl phosphite		Unknown	Unknown	BDG 000007, Fisons limited	N	
Trivalent chromium		Unknown	Unknown	OW 373643	N	
Ucon 50 HB5100		Unknown	Unknown	OW 373732	N	
Ufamite MM 67		Raw	Unknown	Table 2.2 from CSA	Y	
Urea	Carbamide	Raw & Waste/Byproduct	Pre	Table 2.2 from CSA	Y	00057-13-6
Urea formaldehyde Resin		Product	Pre	Table 2.2 from CSA	N	
vanadium		Unknown	Unknown	Phase I Site Inspection (2nd)	N	
Wiltrol N	N-NDPA; n-nitrosodiphylamine	Product	Unknown	Wilmington Finished Goods	N	
Wiltrol P	phthalic anhydride	Product	Pre	AB 04322 Unit Summary	N	
Wytox 312	TNPP; trisnonylphenylphosphite	Product	Pre	Wilmington Finished Goods	Y	26523-78-4
Wytox 312-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox 320	alkaryl phosphite	Product	Unknown	OW 567716	N	
Wytox 345/355/438	Polymeric phosphite	Product	Unknown	Wilmington Finished Goods	N	
Wytox 438-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox 540		Product	Unknown	Wilmington Finished Goods	N	
Wytox 604		Product	Unknown	Wilmington Finished Goods	N	
Wytox 604IMS		Product	Unknown	OW 567715 Olin ltr	N	
Wytox ADP		Product	Unknown	Location of Acid Pits Figure	N	
Wytox BHT	butylated hydroxytoluene	Product	Unknown	JMW03455 Minutes	N	
Wytox LT	Diaurylthipropionate	Product	Unknown	JMW03455 Minutes	N	
Wytox NPD-J-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox PAP	alkylated phenol	Product	Pre	Wilmington Finished Goods	N	
Wytox PAP-S		Product	Unknown	OW 567715 Olin ltr	N	
Wytox PAPSE	self-emulsifying polmeric hindered phenol	Product	Unknown	OW 567715 Olin ltr	N	
Wytox PDA	polmeric hindered phenol	Product	Unknown	Wilmington Finished Goods	N	
Wytox PMW		Product	Unknown	Wilmington Finished Goods	N	
Xylene	dimethylbenzene	Solvent	Unknown	OW 797611	Y	01330-20-7
Zinc hexoate		Raw	Unknown	OW 005200 Olin Memo	N	
Zinc octate		Raw	Unknown	OW 005200 Olin Memo	N	
Zinc Oxide		Raw	Pre	Table 2.2 from CSA	Y	1314-13-2
Zinc Stearate		Raw	Unknown	OW 005200 Olin Memo	Y	557-0501