THE CITY OF WALTHAM
MASSACHUSETTS

PURCHASING DEPARTMENT

Licensed Site Professional (LSP) Services, Woerd Avenue Landfill Assessment

A D D E N D U M N O. 6 Jan. 30, 2015

CHANGES, CORRECTIONS AND CLARIFICATIONS

The attention of bidders submitting proposals for the above subject project is called to the following addendum to the specifications. The items set forth herein, whether of omission, addition, substitution or clarification are all to be included in and form a part of the proposal submitted.

THE NUMBER OF THIS ADDENDUM (NO. 6) MUST BE ENTERED in PAGE 32 AT THE END OF THE BID PRICE SECTION

ITEM 1: Additional Requested Files

Please see the additional 9 files of requested information

End of Addendum 6

Massachusetts Department of Environmental Protection

Transmittal Form for Application and Payment

For DEP Use Only
Permit No.
Received Date
Reviewer
Permit ☐ Appr. ☐ Denied
Decision Date

102380
Transmittal #

Facility ID (if known)

INSTRUCTIONS

1. Please type or print. Use a separate Transmittal Form for each application.

2. Use an ***original***, 3-part Transmittal Form for each application. Photocopies ***will not*** be accepted for any application or payment. (You may use photocopies for reserve location, where applicable.)

3. Make check payable to ***Commonwealth of Massachusetts***. Please mail check and ***yellow*** copy of Transmittal Form to: Department of Environmental Protection, P.O. Box 4062, Boston, MA, 02211.

4. Both fee exempt and non-exempt applicants ***must mail yellow copy*** of Transmittal Form to: Department of Environmental Protection, P.O. Box 4062, Boston, MA, 02211.

A Application Information

BWPSW12
Permit, Approval or Other Category (seven character code from the from the first page of the directions on How to Apply). Examples: BWPA001, BRPWP01, etc.

Initial Site Assessment and CSA Scope of Work
Category Name

ISA for Woerd Avenue Landfill
Brief Project Description

B Applicant or Legally Responsible Official

City of Waltham | | |
Last Name | *First Name* | *Middle Initial*

610 Main Street
Address

Waltham, MA 02154 | | | (617) 893 - 4040 ext.
City/Town | *State* | *Zip Code* | *Telephone Number (including area code and extension)*

Ronald G. Vokey, Planning Director
Contact

C Facility, Site or Individual Requiring Approval

Woerd Avenue Landfill
Name of Facility, Site or Individual

Woerd Avenue
Address

Waltham, MA 02154 | | | (617) 893 - 4040 ext.
City/Town | *State* | *Zip Code* | *Telephone Number (including area code and extension)*

D Application Prepared By *(if different from section B)*

Camp Dresser & McKee Inc. | | |
Last Name | *First Name* | *Middle Initial*

10 Cambridge Center
Address

Cambridge, MA 02142 | | | (617) 252 - 8000 ext. 8371
City/Town | *State* | *Zip Code* | *Telephone Number (including area code and extension)*

Bruce W. Haskell, P.E. | |
Contact | *LSP Number (for 21E only)*

E Other Related Permits: *If you are applying for other permits related to this application, please list them below.*

Transmittal No.	Category	Description
NA		

F Amount Due

Special Provisions: ☒ **Fee Exempt*** (city, town, district, or municipal housing authority) (state agency if permit fee is $100 or less)
☐ **Hardship Request** (payment extension according to 310 CMR 4.04(3)(c)
☐ **Alternative Schedule Project Request** (according to 310 CMR 4.05 and 4.10)

** There are no fee exemptions for 21E sites, regardless of the applicant's status.*

Check No. _____ Dollar Amount $ _____ Date _____

Make check payable to ***Commonwealth of Massachusetts***. Please mail check and ***yellow*** copy of Transmittal Form to: Department of Environmental Protection, P.O. Box 4062, Boston, MA, 02211

WHITE: must accompany application **YELLOW: must accompany payment** **PINK: retain for your records** Rev 7/94

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Solid Waste Management

BWP SW 12 Initial Site Assessment
BWP SW 23 Comprehensive Site Assessment
BWP SW 24 Corrective Action Alternative Analysis
BWP SW 25 Corrective Action Design

Application for Landfill Assessment and Closure

102380
Transmittal #

Facility ID (if known)

A BWP SW 12 Initial Site Assessment (310 CMR 19.150(4)

DIRECTIONS: Specify the report/ plan and page numbers in which the following information is located.

	Plan/Report #	Page #	DEP USE ONLY
1. Initial Site Assessment (310 CMR 19.150(4))			
a. Background information	Section 2	2-1	
b. Historical Research	Section 3	3-1	
c. Literature/Data Search	Section 4	4-1	
d. Hydrogeological Description	Section 5	5-1	
e. Site Visit	Section 6	6-1	
f. Mapping	Section 7	7-1	
g. Field Screening	NA		
2. Comprehensive Site Assessment Scope of Work	CSA Scope	Entire Rpt.	
3. Funding			
a. Corrective action and/or closure-post closure cost estimate	NA		
b. Funding mechanism and schedule	NA		

B BWP SW 23 Comprehensive Site Assessment (310 CMR 19.150(5))

a. ISA Summary	NA		
b. Mapping			
c. Drilling Program			
d. Determination of Hydraulic Conductivity			
e. Sampling and Analysis Plan			
f. Health and Safety Plan			
g. Project Schedule			
h. Baseline Risk Assessment			
i. Corrective Action Alternative Analysis Scope of Work Outline			

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention – Solid Waste Management

102380
Transmittal #

Facility ID (if known)

BWP SW 12 Initial Site Assessment
BWP SW 23 Comprehensive Site Assessment
BWP SW 24 Corrective Action Alternative Analysis
BWP SW 25 Corrective Action Design

Application for Landfill Assessment and Closure

C BWP SW 24 Corrective Action Alternative Analysis {310 CMR 19.150(6)}

	Plan/Report #	Page #	DEP USE ONLY
a. Corrective Action Objectives	NA		
b. Alternatives Analysis			
c. Recommended Alternative			

D BWP SW 25 Corrective Action Design 310 CMR 19.151(2)(a)

A. Corrective Action Design and/or closure plans	NA		
B. Implementation schedule			

E Post Closure Plans

Note: Part E is only applicable when a closure plan has been submitted and closure is being implemented.

1. Maintenance Plan (310 CMR 19.142(5))	NA		
2. Monitoring Plan (310 CMR 19.142(5))			
3. Post-Closure Use Plans (310 CMR 19.143) if applicable			
4. Record Notice of Landfill Operation (310 CMR 19.141)			

F Certification (310 CMR 19.011)

Any person, required by these regulations or any order issued by the Department, to submit papers shall identify themselves by name, profession, and relationship to the applicant and legal interest in the facility, and make the following certification: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties both civil and criminal for submitting false information including possible fines and imprisonment.

Bruce W. Haskell, P.E.
Print Name

Bruce W. Haskell
Authorized Signature

Project Manager
Position/Title

April 16, 1997
Date

Contents

List of Figures

Section 1
Introduction

Presented here is the Initial Site Assessment (ISA) for the Woerd Avenue landfill in Waltham, Massachusetts. This report was prepared by Camp Dresser & McKee, Inc. (CDM) in accordance with the Massachusetts Department of Environmental Protection (DEP) Landfill Assessment and Closure (LAC) guidelines, revised September 1993. The purpose of the LAC assessment process is to determine the impact of the landfill on groundwater, surface water and air quality by qualitatively and quantitatively characterizing the nature and extent of any contamination, and assessing the associated risks to the public health and the environment. The ISA is the first phase of this three-phase LAC process.

The primary activities during the ISA are to gather and evaluate existing information related to the site, including: physical characteristics, prior environmental analyses performed, and potential receptors surrounding the site. This information is used to develop a conceptual model of the site hydrogeology and to develop a scope of work for the Comprehensive Site Assessment (CSA), the second phase of the LAC program. The CSA is comprised of field investigation and report preparation. The main objectives of the CSA are to:

- Determine if the landfill has had any negative impact on the local environment,
- Determine the need for remediation of the landfill site and the proper type of closure recommended, and
- Identify and characterize the extent of any impact which may be present.

The third phase of the LAC process is the Corrective Actions Alternative Analysis (CAAA) where alternative corrective actions are evaluated as required to remediate any potential impacts from the landfill sensitive receptors.

The ISA report has been organized generally as presented in the LAC guidance manual, as follows:

- Section 1.0 is the introduction.
- Section 2.0 presents background information on the site.
- Section 3.0 presents the results of historical research detailing past site users, waste types, waste quantities and past operational practices.
- Section 4.0 discusses the DEP and municipal file reviews, site worker interviews, United States Geological Services (USGS) data and sensitive receptors.
- Section 5.0 presents a summary of hydrogeological information on the site including site and regional hydrogeology and a summary of previous reports.
- Section 6.0 is an inspection report of the site visit performed for the ISA.

- Section 7.0 describes the mapping prepared for the ISA.

The scope of work for the Comprehensive Site Assessment (CSA) is attached to the ISA as a separate document.

Section 2
Background Information

2.1 Owner Information, Site Location, and Universal Transverse Mercator Coordinates

The City of Waltham, Massachusetts, is located immediately west of Boston. The landfill is located off Woerd Avenue near the Waltham/Newton municipal boundary. The location of the landfill is shown on Figure 2-1, Site Locus Plan.

The landfill site is owned by the City of Waltham, Massachusetts, 610 Main Street, Waltham, Massachusetts, 02154.

The Universal Transmercator (UTM) coordinates for the landfill site are 4,691,500 meters North and 331,600 meters East.

2.2 Site Status

The landfill is currently inactive and does not receive any solid waste. The landfill did receive solid waste after April 26, 1971 and is, therefore, regulated as a solid waste landfill under the Solid Waste Management Regulation (310 CMR 19.000).

2.3 Acreage

The landfill site is comprised of an area of 8.69 acres. The area of the Moody Street playground, adjacent to the landfill to the northeast, consists of an additional 2.41 acres.

2.4 Abutting Property Owners and Land Uses

The abutting property owners provided from City records are summarized in Appendix A. The majority of properties within 500 feet of the landfill footprint are residential, with the remaining properties being manufacturing or similar facilities. The land use of adjacent properties is further discussed in Section 6.2 herein.

Woerd Avenue Landfill
Waltham, Massachusetts

Figure 2-1
Site Locus Plan

Section 3
Historic Research

3.1 Site Users

Because the landfill closed in the early 1970's, there is limited data available on site users or operational history. The site was reportedly used for ash residuals from an incinerator in Waltham as well as bypass waste, such as automobiles, that were not accepted at the incinerator.

3.2 Past Operational Practices and History

3.2.1 Operating History

The Woerd Avenue Landfill originally began as a small dump for coal ashes from home heating furnaces in about 1912. By 1935, approximately 35,000 tons of ashes were dumped there annually, as well as old cars. When the Waltham incinerator opened in 1946, the Woerd Avenue Landfill began accepting incinerator residue and other non-combustible waste. As other city dumps were closed down during the 1950's, the Woerd Avenue Landfill became a major acceptor of non-combustible items.

In the early 1970's the City began to receive complaints about the condition of the Landfill. An inspection by the Massachusetts Department of Public Health in March, 1972 found 11 violations of the "Regulations for the Disposal of Solid Waste by Sanitary Landfill."

After reportedly coming into full compliance with the regulations, the City of Waltham closed the Woerd Avenue Landfill on April 21, 1973. The dump was then reportedly completely covered with clean fill in accordance with the requirements of the State Department of Public Health.

3.2.2 Operational Practices

While the site was operated as a landfill for the disposal of incinerator ash and non-combustible waste, the City was cited and received complaints on numerous occasions for operational problems and violations. These included inadequate daily cover, vector problems, improper deposition of refuse, inadequate maintenance and general cleanliness.

Section 4
Literature and Data Search

4.1 Available Reports

The following reports were reviewed as part of the ISA:

- "Municipal Groundwater Supply Study, City of Newton, Massachusetts," prepared by IEP Geoscience, December 1982 (Appendix B)
- "Report to Metropolitan District Commission on Charles River - Purgatory CoveWater Quality Improvement," prepared by Metcalf & Eddy, Inc., February 1975. (Appendix C)
- "Hydrogeologic Investigation Report - Parker Hannifin, Waltham, Massachusetts," prepared by TWM Northeast, January 1990. (Appendix D)
- "Response Action Outcome Statement and Supporting Documentation, Parker Hannifin Corporation," prepared by Handex of New England, August 9, 1996. (Appendix E)
- "Method 3 Risk Characterization and Supporting Documentation, Parker Hannifin Corporation," prepared by Handex of New England, August 9, 1996 (Appendix F)

These reports are included in the appendices to the ISA and their results are summarized in Section 5.

4.2 File Reviews

CDM conducted file reviews of municipal files available for the Woerd Avenue Landfill. There were limited files available at DEP's Northeast Region (Woburn) office on the Woerd Avenue site. CDM reviewed DEP files on the Parker Hannifin Corporation property which abuts the Woerd Avenue Landfill on the northwestern end of the site. DEP files on the both the Rumford Avenue and Pine Street Landfills in Newton were also reviewed due to their close proximity to the Woerd Avenue site. Copes of pertinent correspondence can be found in Appendix G. Information from the file reviews are incorporated throughout this ISA report.

4.2.1 Review of Municipal Files

CDM reviewed files on the Woerd Avenue Landfill obtained from City Hall. The contents of the file contained mostly correspondence between various City and State offices, and is summarized below:

- On August 6, 1970, the Acting Commissioner of Health for the City of Newton sent a letter to the Director of the Waltham Health Department outlining several complaints received regarding roaches emanating from the Waltham City Dump, off Moody Street. The letter stated that an inspection of the landfill revealed improper operation and maintenance and requested that the City of Waltham take necessary steps to eliminate the health nuisance.
- On October 28, 1970 the Massachusetts Water Resources Commission (MWRC) sent a letter to the Mayor of the City of Waltham stating that they had received numerous complaints

concerning pollution of the Charles River caused by the Waltham City Dump. The MWRC ordered Waltham to retain a consulting engineer and have the conditions at the landfill corrected. The order was upheld in an adjudicatory hearing on January 8, 1971.

- On April 5, 1971, in a letter from the MWRC to the Mayor of Waltham, a pollution abatement program was outlined to correct the situation at the Waltham Dump. In this program, the requirement to hire a consulting engineer was waived contingent upon the removal of all debris from Cram's Cove and the submission of final plans and specifications for the closure of the Landfill by May 15, 1971. Also included in the program was the extension of the existing stormdrain (City of Newton's) up to the rear of the Eagle Signal Property.

- On March 14, 1972, the Department of Public Health (DPH) issued a Notice of Violation of the "Regulations for the Disposal of Solid Wastes by Sanitary Landfill". The letter was a summary of an inspection by the DPH at the landfill on March 8, 1972. Violations of code were noted regarding the following regulations: submission of plans, cover material, access roads, signs, deposition of refuse, maintenance and general cleanliness, spreading and compacting of refuse, depths of cover, removal of salvaged materials, vector control, and drainage of surface water.

- A letter dated April 27, 1972 was sent from the Director of Public Works for the City of Waltham to the Mayor of Waltham summarizing various aspects of the solid waste problem in Waltham.

- On May 10, 1973, the MWRC sent a letter to the Director of Public Works of Waltham noting their compliance with the Division Order and requested a letter from the City summarizing the measures that were taken. On May 16, 1973, the City of Waltham responded indicating that they had extended the existing culvert and made a general cleanup of Cram's Cove, removing the accumulated debris of several decades. Waltham also indicated that on April 21, 1973, the gates of the Woerd Avenue Landfill were closed forever.

4.2.2 DEP File Reviews

As discussed above, CDM reviewed files available on the Woerd Avenue landfill at the DEP's Northeast Regional Office in Woburn. DEP files on the Parker Hannifin site were also reviewed.

DEP's files on the Woerd Avenue dump were limited to several older letters and a 1980 newspaper article. According to this article, the landfill was still active for municipal solid waste disposal until March 1972 and was apparently closed in 1980. During its last few years of operation, the site reportedly only accepted street sweepings and brush.

There were several reports and some correspondence in the Parker Hannifin files obtained from the DEP. The following are the significant findings of CDM's file review on the Parker Hannifin property:

- TWM NORTHEAST/Normandeau, Inc. (TWM) was retained by the Nichols Division of the Parker Hannifin Corporation to perform a hydrogeological site assessment of the 11.5 acre Parker Hannifin site. The Hydrogeologic Investigation Report was submitted to the DEP on

May 21, 1990. The purpose of the investigation was to evaluate the hydrogeological conditions at the site and to evaluate whether petroleum and/or hazardous substances had been released at the property.

- The Parker Hannifin property , located at 48 Woerd Avenue, abuts the Woerd Avenue landfill along the northwestern portion of the landfill property. The Nichols Aircraft Division manufacturing building is located in the northern segment of the property and abuts residential properties consisting of condominiums and apartments. The southern segment of the property is an open space which previously contained a Mica processing building, and engineering building, two storage buildings and a boiler building. All of the facilities on the southern sections of the property were demolished and removed in 1995.

- Five of the six underground storage tanks on the Parker Hannifin property were excavated and removed in 1988. These included two 10,000 gallon heating fuel tanks, two waste machine oil tanks of unknown size and an empty tank of unknown size. According to the Plant Engineer who supervised the tank removal, no subsurface contamination was observed when the tanks were removed.

- The TWM report suggested that the Parker Hannifin site is downgradient from the City of Waltham landfill and that "some groundwater mounding may occur at the former City landfill, with contaminants migrating from the landfill to the subject (Parker Hannifin) site." The results of this report will be discussed further in Section 5.

- The Parker Hannifin site was listed by the DEP as a Location to be Investigated (LTBI) on July 12, 1990, based on the discovery of Volatile Organic Compounds (VOCs) and metals in shallow groundwater and soil in the southwest portion of the property.

- A letter from a Waltham City Solicitor to the DEP, dated July 31, 1990, expressed concern over the implication of the Waltham City Landfill as a source of contamination on the Parker Hannifin site. Subsequently the DEP contacted the City of Waltham and stated that "unless further information is obtained in the future, the City need not take any further action with this regard."

- A Response Action Outcome (RAO) Statement and a Method 3 Risk Characterization Report were prepared for the Parker Hannifin Corporation by Handex of New England (Handex) in August of 1996. Mentioned in the above report was that a Downgradient Property Status (DPS) was filed by Parker Hannifin in June of 1996. The DPS was filed based on concentrations of dissolved silver in groundwater samples collected from monitoring wells located near the southeast property boundary that abuts the Woerd Avenue Landfill. Handex states that the monitoring wells are located upgradient of the historical known release areas at the Parker Hannifin site and downgradient of the former landfill. The actual DPS form was not located in either the City's or the DEP's files.

4.3 Site Worker Interview

(To be completed..)

4.4 Relevant USGS Information

Information from the United States Geological Survey (USGS) was limited for the Woerd Avenue landfill site. CDM has included the USGS map for Waltham (Boston South quadrangle) as the locus plan (Figure 2-1). There are no USGS surficial or bedrock geology maps available for the Waltham area. However, a bedrock map for the vicinity based on the statewide mapping by Zen et al. is included as Figure 4-1.

4.5 Potential Environmental and Public Health Sensitive Receptors

Based on the file reviews and the site walk described in Section 6, CDM has identified the following potential environmental and public health sensitive receptors:

- Drinking Water Supplies - Based on a review of the MASS-GIS system available at CDM, there are no public drinking water supplies (Zone II's or Zone III's; Interim Wellhead Protection Areas; Zone A or a public surface water supply; or aquifer protection zones) within one-half mile of the landfill site. Public water supply through the Massachusetts Water Resources Authority (MWRA) is provided to Waltham and Newton residents.

- Private Wells - There are no known private wells in Newton or Waltham within one-half mile of the site.

- Wetland Resource Areas - The wetland area known as Cram's Cove (and the abutting Charles River) are sensitive environmental receptors. There are no known vernal pools near the landfill site.

- Sensitive Terrestal/Aquatic Habitats - Based upon a review of the "Atlas of Estimated Habitats of Rare Wetland/Upland Wildlife" (DEP, 1993), there are no rare or endangered species identified near the landfill site.

- Coastal and Inland Water Bodies - The landfill is located adjacent to Cram's Cove which is part of the Charles River.

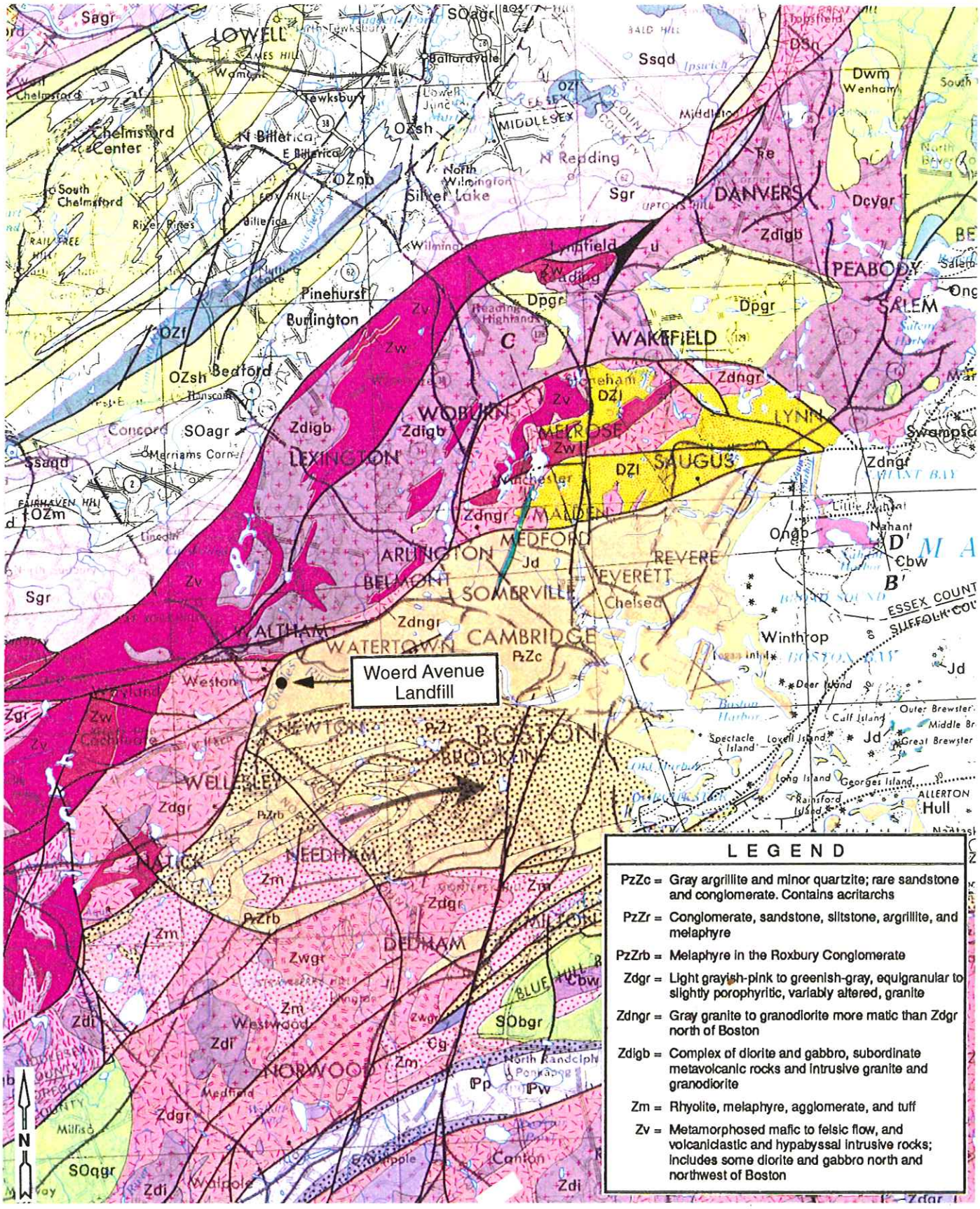
- Schools - The edge of landfilled waste is not located within 1,000 feet of any schools.

- Residential Homes - There are numerous residential homes located within 500 feet of the landfill including several apartment buildings as well as single-family dwellings.

- Day Care Centers and Elderly Housing - There are no known day care centers or elderly housing within 500 feet of the landfill site.

- Farms - There are no farms within 500 feet of the landfill site.

- Hospitals - There are no hospitals within 500 feet of the landfill site.



Woerd Avenue Landfill
Waltham, Massachusetts

Figure 4-1
Regional Bedrock Geology

4.6 Condition and Installation of Existing Monitoring Wells

There are currently no operating monitoring wells installed for the Woerd Avenue landfill site.

As a part of the hydrogeological investigation performed by TWM on the Parker Hannifin site, a total of 10 groundwater monitoring were installed between November 1987 and August 1988. Four of these monitoring wells, MW-2, MW-3, MW-3A, and MW-4, are adjacent to the Woerd Avenue landfill site.

The monitoring wells were installed in soil borings that were advanced to depths up to 16 feet, using 3.75-inch-diameter (ID) hollow stem augers. The monitoring wells consist of 2.0-inch ID, schedule 40 PVC well screen. The lower 5- to 10-foot section of each well was screened, with the screen positioned to straddle the water table. Details of the monitoring well installation are included in the report in Appendix D.

4.7 Evidence of Landfill Gas Emissions

There was no evidence of landfill gas emissions observed during the site visit. There is currently no landfill gas control system in-place at the landfill. Given the history of the site in accepting ash and DPW wastes, landfill gas is likely not a significant issue.

4.8 Summary of Existing Reports

The existing reports listed above are summarized in Section 5.

Section 5
Hydrogeological Description

5.1 Previous Studies

The following reports were reviewed as part of the ISA:

- "Municipal Groundwater Supply Study, City of Newton, Massachusetts," prepared by IEP Geoscience, December 1982 (Appendix B)
- "Report to Metropolitan District Commission on Charles River - Purgatory Cove Water Quality Improvement," prepared by Metcalf & Eddy, Inc., February 1975. (Appendix C)
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- "Method 3 Risk Characterization and Supporting Documentation, Parker Hannifin Corporation," prepared by Handex of New England, August 9, 1996 (Appendix F)
- "Bedrock Geologic Map of Massachusetts," E-an Zen et al., Dated 1983.

5.2 Regional Surficial Geology

No USGS surficial geology map is available for the Boston South quadrangle where Waltham is located. However, in 1982, the City of Newton contracted with IEP Associates (IEP) to prepare an evaluation of alternative water supplies within Newton. As part of this evaluation, IEP mapped the surficial geology in Newton in accordance with USGS standards. A copy of this report is included in Appendix B.

Based on this mapping, the Woerd Avenue Landfill was mapped as glacial till (defined as compact and generally impervious mixture of clay, silt, gravel, cobbles and boulders deposited by ice).

The area to the west of the landfill, approximately around the Newton Rumford Avenue Landfill, was mapped as an area of stratified drift, defined as well sorted and well stratified sands and gravels with minor amounts of silts and clay deposited by glacial meltwater systems. This was confirmed during the CSA drilling program for the Rumford Avenue landfill site. The area of Flowed Meadow and Cram's Cove was mapped as swamp deposits of muck and peat.

5.3 Regional Bedrock Geology

Based on the statewide mapping performed by Zen et al. For the state of Massachusetts, the vicinity of the landfill is located within the Boston Basin area, specifically in an area of Cambridge Argillite which is a gray argillite and minor quartzite; rare sandstone and conglomerate. A portion of the Zen et al. Bedrock map with the site approximately located is given in Figure 4-1.

According to this mapping, the landfill is located near a deposit of Dedham Granite which is a light-grayish-pink to greenish-gray, equigranular to slightly porphyritic, variably altered, granite. There are no faults mapped in close proximity to the landfill (Zen et al.).

5.4 Groundwater Hydrology

5.4.1 Regional Hydrology

As part of their study of alternative water supplies in Newton, IEP prepared a regional groundwater elevation map for the City. The report and the map are included in Appendix B to the ISA. According to this study, the area around the landfill generally discharges towards the Charles River, which is situated immediately to the north of the site. The Charles River in this area flows to the North.

5.4.2 Historic Site Groundwater and Surface Water Sampling and Analysis

There is no information available on previous groundwater or surface water sampling at the Woerd Avenue landfill. However, there has been extensive groundwater and surface water sampling at the Parker Hannifin property which abuts the landfill along the northwestern property line.

As mentioned previously, TWM prepared a Hydrogeologic Investigation Report for the Parker Hannifin site which is included as Appendix D to the ISA. The report was prepared to evaluate hydrogeologic conditions at the site and to evaluate whether petroleum and/or hazardous substances had been released at the property. A total of ten groundwater monitoring wells were installed at the Parker Hannifin site, four of which abut the Woerd Avenue landfill.

TWM collected three rounds of water quality sampling between November 1987 and September 1988 from the monitoring wells. In addition, TWM collected water quality samples from two locations on Cram's Cove, one upstream (SW-1) towards the landfill and one downstream (SW-2) towards the Charles River, during the first round. The results of these samples can be found in Appendix D.

In summary, the groundwater results indicated concentrations of cadmium, in monitoring wells MW-3 and MW-4, and mercury, in monitoring well MW-3, exceeding recommended drinking water standards. Both monitoring wells MW-3 and MW-4 are adjacent to the Woerd Avenue landfill and in the vicinity of the former scrap metal storage area on the Parker Hannifin property. Both halogenated and aromatic hydrocarbons were detected in the vicinity of monitoring wells MW-3, MW-4 and MW-5, with the highest concentrations detected at MW-3. Organic compounds detected at concentrations exceeding drinking water standards included: 1,2-dichloroethane, trichloroethane and vinyl chloride.

The specific conductance of the surface water samples ranged from 284 umhos/cm (SW-2) to 918 umhos/cm (SW-1) with the specific conductance decreasing towards the Charles River. The concentrations of cadmium, lead and mercury exceeded the recommended drinking water standards at the upstream (SW-1) sampling location. Only the concentration of cadmium exceeded the recommended drinking water standards at the downstream (SW-2) sampling location. There was no detection of Volatile Organic Compounds (VOCs) in the surface water samples taken.

Additional groundwater sampling was performed on March 5, 1996. The results of the sampling is presented in a report by Handex of New England and can be found in Appendix E to the ISA. Dissolved metals detected during this round of groundwater sampling included: arsenic, barium, lead and silver. Monitoring well MW-4 was re-sampled on June 13, 1996 and analyzed for Polycyclic Aromatic Hydrocarbons (PAHs) and dissolved silver. The concentrations of these parameters were below laboratory analytical detection limits. Analysis for VOCs was not performed during this round of sampling, but sampling conducted in 1993 and 1994 indicated VOCs concentrations below Method 1 Risk Characterization Groundwater Category GW-2 and GW-3 standards.

5.4.3 Soil and Sediment Sampling

There is no record that any soil or sediment sampling has taken place on the Woerd Avenue landfill site. TWM collected soil samples from eight locations in the vicinity of the monitoring wells on the Parker Hannifin property. The soil sampling location plan and the results of the soil sampling can be found in Appendix D. VOCs detected during the soil sampling included: Vinyl Chloride, 1,1,1-Trichloroethane, Trichloroethene and Toluene.

Handex of New England collected samples from a total of 45 soil borings taken during July 1994, April 1995 and March 1996. The soil boring location plan and sampling results can be found in Appendix E. The soil samples were analyzed for VOCs, PAHs, Total Petroleum Hydrocarbons (TPH) and metals. TPH concentrations in soil samples GP-7, GP-12, GP-44 and MW-3A exceeded the Upper Concentration Limit (UCL) for soil.

5.5 Surface Water Hydrology - Regional Conditions

A majority of the surface water run-off from the landfill discharges into and existing swale running along the southwestern edge of the property that drains into Cram's Cove. There is an existing stream running along the southeastern edge of the landfill that collects run-off from behind the Rumford Avenue incinerator as well as the landfill.

Section 6
Site Visit

6.1 Introduction

In December 1997, CDM engineers conducted a site walkover of the landfill site and surrounding areas as required for the ISA. Below is a summary of this site visit.

6.2 Summary of Site Visit

Below are the significant observations during the site visit:

Condition of Landfill Surface

The landfill surface is well covered and heavily vegetated with mature trees. Access to many areas was limited by heavy vegetation. There was little exposed waste throughout the site expect debris which appeared to be recently dumped along Cram's Cove.

Direction of Surface Water Run-off

Surface water flow is radial from the site towards Cram's Cove, the unnamed stream along the Newton City line and

Location and Conditions of Monitoring Devices

There are no existing monitoring devices at the landfill site.

Evidence of Leachate Break-outs

There was no evidence of leachate break-outs at the site. However, the unnamed stream along the Newton City line is discolored.

Evidence of Landfill Gas Emissions

There was no evidence of landfill gas emissions observed (e.g., stressed vegetation or odors) at the time of the site visit.

Location and Condition of Surface Water and Wetlands

There is a small stream which drains the south side of the site as well as the Rumford Avenue Incinerator in Waltham.

Landfill Operations Procedures

The landfill is inactive and has not been operated in any capacity since 1980.

Land Use of Adjacent Properties

Adjacent properties are residential and commercial/manufacturing. The Moody Street playground is located immediately to the east of the landfill mound.

Landfill Accessibility

The landfill site is accessible directly from the Moody Street playground. Other sides of the site have limited access due to fences and gates. A perimeter access road provides access to much of the site.

Local Geology

The area around the landfill is well developed and altered. Therefore, it was not possible to observe any natural geologic features. As would be anticipated, there were no bedrock outcrops or other features observed during the site visit.

Section 7
Mapping

7.1 Base Map

Figure 2-2 entitled "City of Waltham, Massachusetts, Woerd Avenue Landfill, ISA Site Plan" dated February 1997 is the current base map for the Initial Site Assessment.

Figure 2-2 includes the following items required in DEP's "Landfill Technical Guidance Manual."

- Site topography;
- Wetlands (including surface water bodies) and existing buildings within 500 feet ot the edge of the landfill. There are no established water supplies, Areas of Critical Environmental Concern (ACECs) or Zone II/Interim Wellhead Protection Areas (IWPAs) within this 500 foot area.

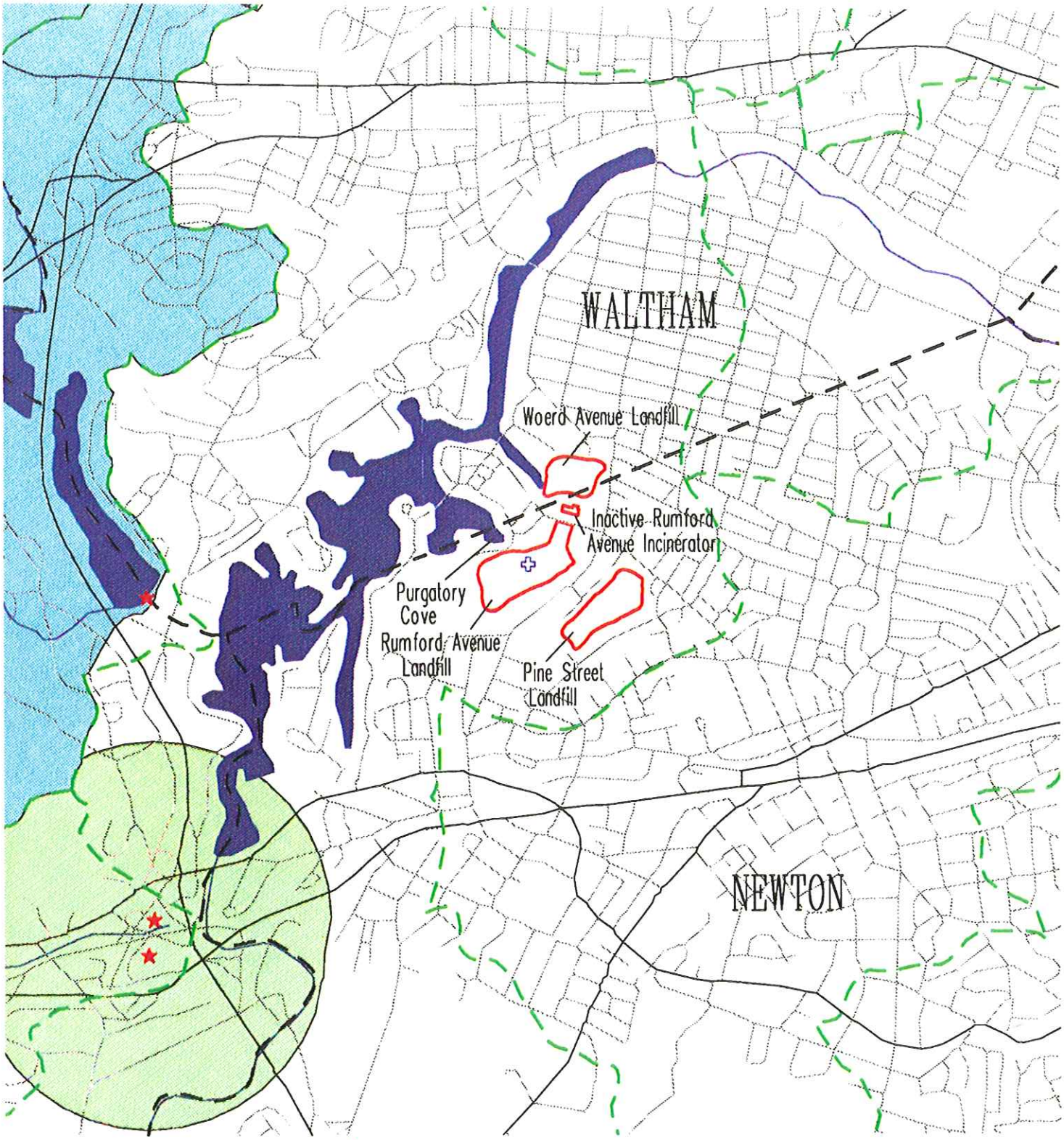
Property lines indicated on Figure 2-2 are approximate.

7.2 Regional Locus Map

In addition to the base map, regional locus maps have been prepared which show the following:

- Public and private water supplies, Zone II and Interim Wellhead Protection Areas (IWPAs): As shown on Figure 7-1, the IWPA of two public drinking water wells located in Wellesley are within one-mile of the Woerd Avenue landfill. However, these wells are upgradient of the landfill. The landfill is also within one-mile of Outstanding Resource Areas associated with the Cambridge Reservoir and Stony Brook.
- Aquifer Protection zones: There are no Aquifer Protection zones within one-mile of the landfill.
- Areas of Critical Environmental Concern (ACECs): There are no ACECs within one-mile of the landfill site.
- Surface Water Bodies: The only surface water body within one-mile of the landfill site is the Charles River and its associated wetlands and floodplains.

  According to mapping performed by the Federal Emergency Agency (FEMA), the area of Purgatory Cove to the west of the landfill and Flowed Meadow are areas of 100-year flood events.
- Surface Water Drainage Areas: The limits of watershed boundaries in the vicinity of the landfill are shown in Figure 7-1. According to the mapping, stormwater run-off from this area discharges to the Charles River, which agrees with CDM's onsite observations.



Woerd Avenue Landfill
Waltham, Massachusetts

Figure 7-1
Map Showing Zone IIs, Public Water Supplies, ORWs and Roads
Source: MassGIS (EOEA Data Center)

Appendix A

List of Abutters to Landfill Property

Woerd Avenue Landfill
ABUTTERS

March 3, 1997

Atlas Address	Owner Address
901 Moody Street	City of Waltham 610 Main Street Waltham, MA 02154
945 Moody Street	Bill Mitchell Family Trust 35 Suffolk Street Wellesley, MA 02181
74 Rumford Avenue	Pantos Family Trust 74 Rumford Avenue Waltham, MA 02154
90 Rumford Avenue	Henry J. & Virginia Riblet & Stanley Berenson, Trs. c/o Richard Ross 90 Rumford Avenue Waltham, MA 02154
44-66 Woerd Avenue	Parker Hannifin Corporation Corporate Tax Department 17325 Euclid Avenue Cleveland, OH 44112
17-18 Norumbega Terrace	MJPB Realty Trust 145 Harrington Road Waltham, MA 02154
5 Norumbega Terrace Unit 5-1F	Antonio Butera & Pasquale Butera 297 Webster Street Auburndale, MA 02166
5 Norumbega Terrace Units 5-2F, 5-2R	Orazio & Teresa Santangelo 266 Derby Street West Newton, MA 02165
5 Norumbega Terrace Unit 5-3R	Dorothy M. Bailey 5 Norumbega Terrace, 3R Waltham, MA 02154
5 Norumbega Terrace Unit 5-3F	Richard E. Paolino 383 River Street Waltham, MA 02154

6 Norumbega Terrace Unit 6-1F	Maria K. & James M. Guyer 39 Patty Lane Northboro, MA 01532
6 Norumbega Terrace, Units 6-2F, 6-2R	Antonio & Rosa Paola 327 Cherry Street W. Newton, MA 02165
6 Norumbega Terrace Unit 6-3F	Leo J. & Kathleen M. Hill c/o Janet M. Williamson 6-3F Norumbega Terrace Waltham, MA 02154
6 Norumbega Terrace Unit 6-1R	N. Edward & Marie A. Fantasia c/o James F. Kiley 5-6 Norumbega Terrace, Unit 4
6 Norumbega Terrace Unit 6-3R	Orazio & Teresa Santangelo 266 Derby Street W. Newton, MA 02165

Appendix B

"Municipal Groundwater Supply Study, City of Newton, Massachusetts," prepared by IEP Geoscience, December 1982.

Geoscience

consulting
geologists
hydrologists
groundwater
scientists

617-358-5156

617-~~899-7660~~
245-9173

MUNICIPAL GROUND-WATER SUPPLY STUDY CITY OF NEWTON, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS

DECEMBER 1982

a division of IEP
534 boston post road
wayland, ma 01778

Geoscience

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1.0 INTRODUCTION

The City of Newton, like most other Metropolitan Boston communities, relies on water furnished by the Metropolitan District Commission (MDC). The MDC water system is one of the finest in the country, but, like any similar system, it draws on limited resources. Continued expansion of the MDC system is not the only way to meet member communities' water needs. Realizing the importance of local water sources, the City of Newton engaged the services of the Geoscience Division of IEP, Inc., to evaluate ground-water resources within its boundaries.

This report is presented in an expanded outline format, so that the reader may quickly find the desired information and easily understand the primary work products. These products include three hydrogeologic maps, cost estimates, recommendations for developing water supplies, and a bibliography of ground-water resource information for the City of Newton. In addition, new data gathered for this study are documented in this report and its appendices.

1.1 Objectives

The following objectives have been accomplished:

1. Extensively verify the location, quantity, quality, and flow characteristics of all existing and potential municipal ground-water resources in the City.

2. Define aquifer properties in key areas through an extensive program of test drilling and seismic refraction studies.
3. Provide a series of concise hydrogeologic maps of the City which delineate significant ground-water resource areas, such as municipal buried valley aquifers, aquifer recharge areas and areas which are highly susceptible to contamination. These maps shall be of an accuracy and have a format which shall make them useful to other City boards, such as the Conservation Commission, Planning Board and the Board of Health.
4. Document all results in a Final Report.

1.2 Methods of Investigation

1.2.1 Office Methods

Existing data considered pertinent to the study were gathered, verified, and compiled by Geoscience staff. These data, together with new data obtained during this study, were reduced to a useful form and plotted on working copies of the three hydrogeologic maps. Sources of these data are given in the attached Bibliography of Hydrogeologic Information for Newton. The data were contoured, where appropriate, and interpretations were made as to the practical applications of the data.

1.1.2 Field Methods

In order to supplement the existing data base in places where the greatest "return on investment" could be realized, we obtained new data by the following means:

1. Geologic reconnaissance - observation of bedrock and soil exposures throughout the City.
2. Seismic Refraction - Graphing of acoustic wave travel through various sub-surface layers to provide information on saturated thickness of water-bearing deposits. Locations of the seismic traverses are shown on Plate 3, and results of the work are given in Appendix 1.
3. Test boring and monitor well installation - drilling and soil sampling at selected locations, followed by installation of permanent wells for monitoring the quality of ground water. Logs of the borings, including diagrams of the monitor wells, are given in Appendix 2.

2.0 WORK PRODUCTS

The primary work products generated for this study are described below:

2.1 Surficial Geologic Map - Figure 1

This map depicts the various geologic materials exposed at the earth's surface. Bedrock underlies all other deposits and crops out at the surface at the indicated localities. Water yields from bedrock wells are generally low, although yields of several

hundred gallons per minute are possible at selected locations. These high-yield zones occur principally at bedrock fracture intersections and can be located by a technique known as "fracture trace analysis." Exploring and developing water in the bedrock is a relatively expensive and unsuccessful task, so the bedrock is not considered as an aquifer (water-bearing) unit for the purposes of this report.

Glacial till overlies bedrock at most locations and is a mixture of clay, silt, sand, and gravel deposited directly by glacial ice, with little or no sorting by running water. Till is dense and nearly impermeable, and, thus, is not an aquifer unit. Most of the till is in the form of "ground moraine" - a few feet to a few tens of feet directly overlying bedrock. In some areas, such as Mt. Ida in Newtonville, the till was deposited by the glacier in streamlined hills ("drumlins") over 100 feet thick. Outstanding examples of Drumlins are indicated on the map by the letter "D."

Stratified drift deposits consist of sand and gravel layers deposited by streams issuing from melting glacial ice. The stratified drift deposits have high porosity and permeability; they store and transmit water more readily than the other categories of deposits and thus constitute the major aquifer unit in Newton. Examples of specific glacial landforms, such as

eskers, kettles, and Kames, are indicated by letter symbols on the map. Eskers are sinuous linear ridges of sand and gravel which were deposited as subglacial, englacial, or superglacial streambeds. Kettles are depressions in the stratified drift landsurface, formed by collapse as sand and gravel deposits slumped when isolated blocks of glacial ice melted. Kames are conical hills of stratified drift formed as glacial streams dumped debris into low spots or holes in the glacial ice.

2.2 Saturated Thickness Map - Figure 2

The primary criterion for judging the most favorable locations for municipal water-supply test wells is saturated thickness. Saturated thickness is defined as the vertical distance from water table down through the saturated zone to some non-aquifer material, such as glacial till or bedrock. Without sufficient saturated thickness in the ground-water reservoir, the water table will have a tendency to drawdown excessively under heavy pumping. For municipal ground-water supplies, a saturated thickness of 30 feet is considered to be a minimal value. For irrigation wells (at ball parks, schools, etc.), a saturated thickness of 15 feet is a minimum value.

Saturated thickness is shown in stratified drift areas by contour of equal thickness at a 10-foot contour interval. Much of the City has at least 15 feet of saturated thickness, and

thickness on the order of 50-70 feet are found in a few areas adjacent to the Charles River. The occurrence of great saturated thickness adjacent to a major source of recharge, such as the Charles River, is a fortunate circumstance for the City in terms of obtaining large supplies of ground water.

2.3 Ground-water Favorability Map - Figure 3

This map takes over where the saturated thickness map leaves off. The transmissivity or total water-transmitting capacity of a column of saturated soil is a function of two factors: saturated thickness (as previously defined), and hydraulic conductivity. Hydraulic conductivity is a measure of the ability of a unit cross-sectional area (square foot, for example) of aquifer material to conduct water. Sum the water-conducting ability of each square foot of aquifer material from the top of the water table to the till or bedrock surface, and you have the "transmissivity" or total water-transmitting capacity of the saturated soil column.

Transmissivity values greater than 2,500 feet squared per day are generally considered adequate for development of municipal ground-water supplies. Several such areas are shown on the maps, and all of these are adjacent to the Charles River. Areas meeting the above criterion for transmissivity, as well as having greater than 30 feet of saturated thickness and adequate setback

distances (400 feet from deleterious land uses and one-half mile from landfills), are indicated by shaded pattern on the map. These areas also have more than adequate annual recharge rates, being adjacent to the Charles River, and acceptable access to potential well house locations.

Small water supplies for irrigation purposes can be obtained where transmissivity is greater than 500 feet squared per day. This contour is shown on the map as the first contour within the stratified drift deposits; any site from the 5 (500 feet squared per day) contour in the direction of increaing transmissivity can be considered as a good prospect for irrigation wells.

2.4 Water Supply Cost Estimates - Appendix 4

The appended estimates were developed to provide a basis for decision making. They can be refined for each individual site if a decision is made to proceed with water development. The costs for municipal well development are exclusive of land-taking, since most sites are already publically owned. Costs of treatment works are included, although treatment (for iron, manganese, and color) may not be necessary. The estimates include costs of exploring for and developing water supplies, as well as some of the major operating costs.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 Municipal Supplies Outlook

The ground-water favorability map indicates several areas where large supplies could be obtained. Of these, the best is the immediately surrounding B-1. This site has quite high saturated thickness and transmissivity values. Additionally, it is in an excellent position to receive recharge from the Charles River. As a preliminary estimate, one or more wells at this site could yield about 2 million gallons per day.

The quality of water at this site would be largely a function of the quality of water in the Charles River. Our review of available data indicates that the quality of water would probably be satisfactory. Travel through the sand and gravel would purify the water to a great degree and filter out pathogens. The site has a large area of open space and wetland surrounding it, and these land-use categories would provide an excellent buffer zone to help protect water quality.

Another site which is highly favorable for municipal ground-water supply development is the area surrounding B-2. This site is located on City-owned land and could probably sustain withdrawals of somewhat over one-half million gallons per day. As with the other potential municipal well sites, wells in this area would receive recharge from the Charles River.

Two other sites indicated on the Ground-water Favorability Map deserve to be mentioned also. Boring B-3 was placed next to the Charles River on the City-owned conservation land north of Commonwealth Avenue and adjacent to the Marriott Hotel parking lot. The boring was located near the river, so that less dry soil would have to be drilled than if it had been located at a higher elevation on the conservation land. However, an actual production well would have to be drilled near the center of the conservation land in order to have a 400-foot radius setback from deleterious land uses. Our data from boring B-3 was somewhat less definitive than data from B-1 and B-2, but it appears likely that this site also could yield approximately one-half million gallons per day.

A fourth site which budget limitations did not allow us to test drill is located on MDC Charles River Reservation land, north of Pine Grove Avenue, west of Route 128, and south of the Charles River. Regional data indicate that this site could also provide approximately one-half million gallons per day.

In summary, four sites appear to have significant promise for large-scale municipal ground-water development. It appears quite likely that 2-3 million gallons per day could be obtained from these areas. This represents about 17-25% of the City's requirements and would significantly reduce the amount of water purchased from the MDC.

Transmissivity estimates and potential well yields are summarized in Appendix 3. Costs to develop water can be estimated only roughly at this point, and these rough estimates are given in Appendix 4. Costs would total approximately $226,000 for a well and pumping station and an additional $4,000,000 if a treatment plant is needed. Operating costs would be approximately $1,500-1,800 per month for a puming station and $1 per 1000 gallons if a treatment plant is needed. Costs associated with connecting to the distribution system would be additional.

3.2 Irrigation Supplies Outlook

The cost to develop an irrigation well system would be much lower - approximately $8000 per site. This estimate includes exploration, pump testing, supervision and installation of pumping equipment.

Two sites in the City were drilled with the expectation of finding sufficient water for irrigation purposes rather than for municipal supplies. Seismic traverses were made at each site in order to confirm the availability of sufficient saturated thickness.

Borings B-4 and B-5 were drilled at Albermarle Park. Two drilling methods were tried at this location in order to determine the most economical and effective method of well construction. Well B-4 was drilled by augering and inserting slotted well screen.

Well B-5 was installed by driving 4-inch diameter casing, washing out the native soil, inserting slotted well screen, backfilling with a pure silica filter sand, and withdrawing the 4-inch diameter casing. The procedure used in B-5 produced a much more efficient well. Apparently, silt and fine sand can slump against the well screen if a filter sand pack is not emplaced before the well casing is withdrawn. B-5 was pumped at 1.1 gallons per minute with a submersible pump (the pump's capacity). Drawdown while pumping that quantity of water was only 0.24 feet after ten minutes. The well was also pumped at approximately 5 gallons per minute with a boat pump and the drawdown was approximately one foot. It appears that an irrigation well at this site could yield approximately 50 gallons per minute for a short time. Additional testing would be needed to establish the number and spacing of wells which would provide an adequate flow of water for irrigation purposes.

Well B-6 was drilled at Cabot Park. This well pumped 1.27 gallons per minute with 0.33 feet of drawdown - a slightly lower specific capacity than for the Albermarle site. Both sites have the same usable saturated thickness - approximately 15 feet. It appears that an irrigation well system could be successful at this park also.

Based on these two sites, it appears that most of the City park land within the 500 foot squared per day contours on Figure 3

could be irrigated with locally derived water from shallow well systems. Two other park sites were investigated with seismic traverses. At the Oak Hill Playground east of the track, the seismic method revealed approximately 17 feet of saturated thickness. Thus the water supply situation here may be similar to that at the other two parks where wells were drilled. At Cold Spring Playground, however, seismic traverse T-5 indicated 4-13 feet of dry sand overlying glacial till with no significant saturated layer. Borings for proposed improvements in the northern potion of this playground indicated very fine sand and silt which would not be sufficiently permeable for irrigation wells.

3.3 Recommendations

This report has documented the potential for both municipal drinking water supplies and local irrigation water supplies. If the City wishes to tap these water sources for its use, we would recommend the following initial stages:

1. Negotiate with the M.D.C. concerning further testing in the vicinity of B-1.
2. Drill and develop a 4-inch diameter well at this site and pump at capacity with a submersible pump for 24 hours. Analyze drawdown and recovery data utilizing existing well as an observation point. Sample water at end of pumping period and have D.E.Q.E. test for standard drinking water parameters.

3. Follow above step at site surrounding B-2. Determine whether one or both sites should be subjected to a prolonged (5 day) pumping test.
4. Complete an irrigation well system at Albermarle playground as a demonstration project. The two wells already in place here will save some of the preliminary work. The City will then know the exact procedure and costs for similar irrigation well systems at other locations.
5. Encourage private institutions such as golf courses to obtain irrigation water in this way.
6. Protect existing open space surrounding sites found suitable for municipal ground-water supplies. Acquire additional open space in these areas if possible and critically review plans of development if any are proposed in or near these areas. Review any projects in Newton or upstream which might impact adversely the quality of water in the Charles River.

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APPENDIX 1

SEISMIC SURVEY RESULTS

1. Report of Weston Geophysical dated 10/21/82
2. Seismic Data Summary

Weston Geophysical
CORPORATION

October 21, 1982
WGC R-434-1

IEP, Inc.
534 Boston Post Road
Post Office Box 438
Wayland, Massachusetts 01778

Attention: Mr. Andrew Miller

Subject: Results of Seismic Refraction Survey
Newton, Massachusetts

Gentlemen:

In accordance with your letter of authorization dated August 11, 1982, Weston Geophysical conducted seismic refraction measurements at three (3) locations in the City of Newton on Tuesday, October 12, 1982. These investigations were part of the hydrogeologic study for a municipal groundwater supply for the City of Newton, Massachusetts Department of Public Works.

The locations for the seismic refraction survey were selected by IEP and are shown on the enclosed plan maps (Figures 1 and 2). The results of the seismic refraction survey are shown in profile form on Figure 3 and are discussed below.

SITE 1

Site 1 is located on the Saw Mill Brook Reservation of the MDC (see Figure 1). Due to an MDC imposed restriction on use of explosives for seismic energy generation at this site, seismic energy was generated with a non-explosive energy source. A minimum depth to dense glacial till of 75 feet and a probable depth to bedrock of 125 feet are shown on the seismic profile for this site (see Figure 3). These horizons cannot be profiled with certainty due to the somewhat diminished quality of the seismic refraction data using a non-explosive energy source. However, the minimum thickness of 65 feet for water saturated overburden material evidenced by the seismic velocity of 5,000 ft/sec indicates that this site is desirable for further exploration by test drilling.

SITE 2

Site 2 is located in the Auburndale Park recreation area (see Figure 2). Depths to bedrock at this site range from 38 to 73 feet (see profile, Figure 3). The overburden velocity of 6,400 ft/sec is indicative of dense glacial till; accordingly, no additional exploration is recommended at this location.

SITE 3

Site 3 is located adjacent to St. Josephs Noviate (see Figure 1). Depths to bedrock at this location range from 23 to 33 feet (see profile, Figure 3). The overburden velocity of 5,000 ft/sec is indicative of water saturated overburden material, however, this material may not be of sufficient thickness to support development of a municipal groundwater supply.

It has been our experience that municipal groundwater supplies are obtained from those areas where there is a sufficient thickness (usually 40 feet or greater) of material with a seismic velocity in the range of 4,800 to 5,300 ft/sec. Site 1 located at the Saw Mill Brook Reservation of the MDC meets these criteria and may warrant further exploration by test drilling.

We are pleased to provide these services and look forward to working with you on future projects.

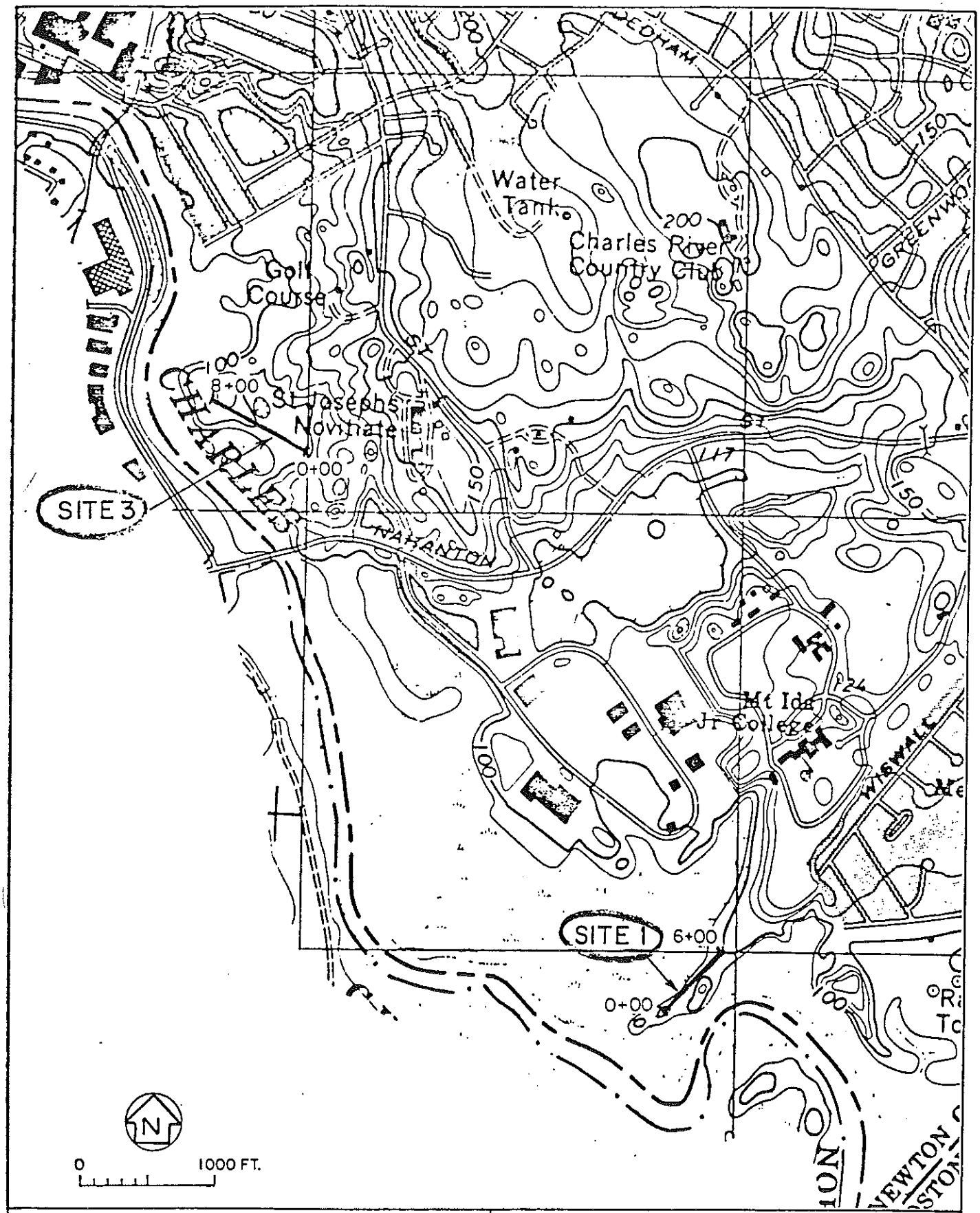
Sincerely,

WESTON GEOPHYSICAL CORPORATION

Edward N. Levine

ENL:eag

Enclosure



SEISMIC SURVEY

MUNICIPAL GROUNDWATER SUPPLY STUDY
NEWTON, MASSACHUSETTS

for

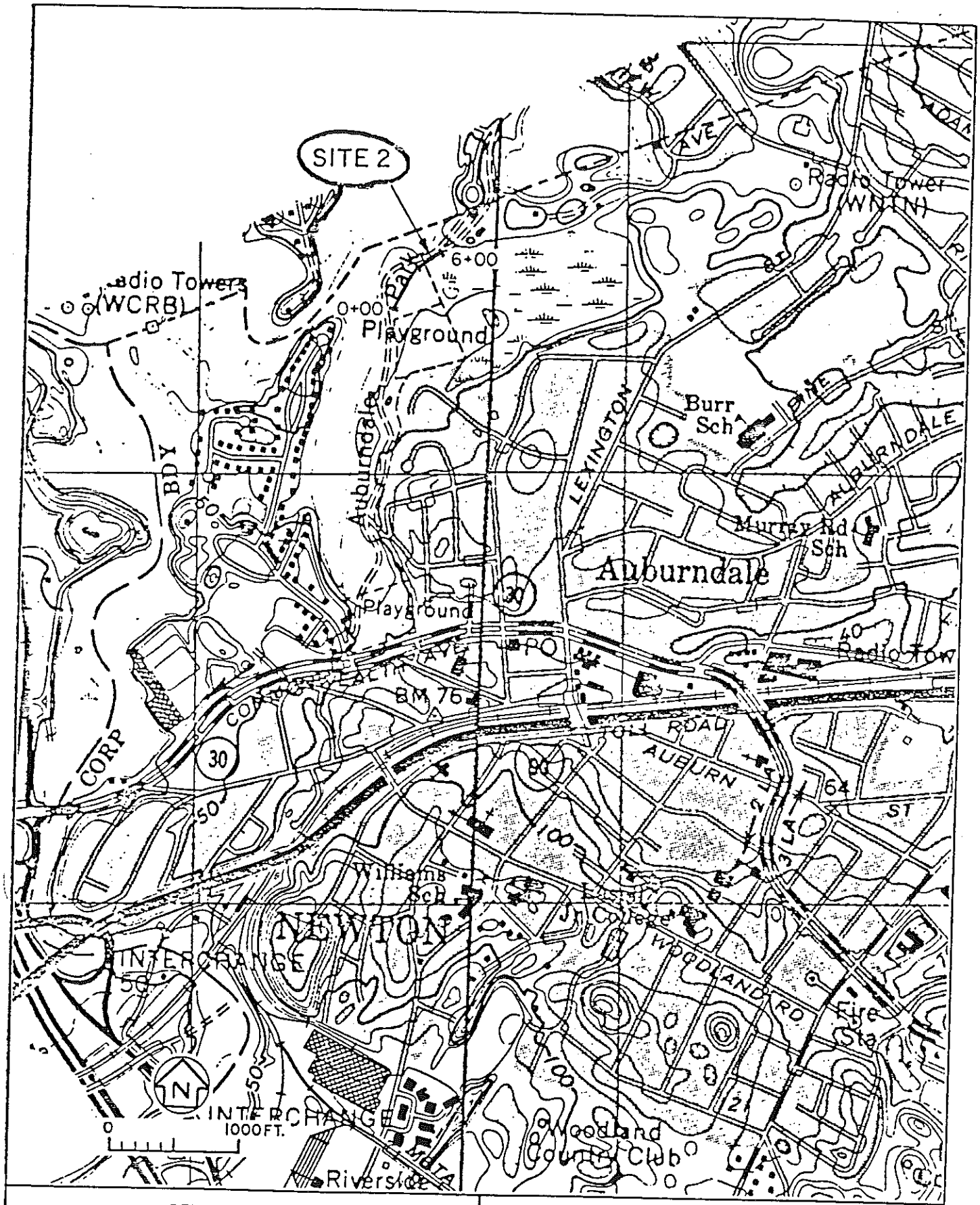
IEP, Inc.

PLAN MAP – SITES 1 AND 3

WESTON GEOPHYSICAL CORP.

October 1982

Figure 1



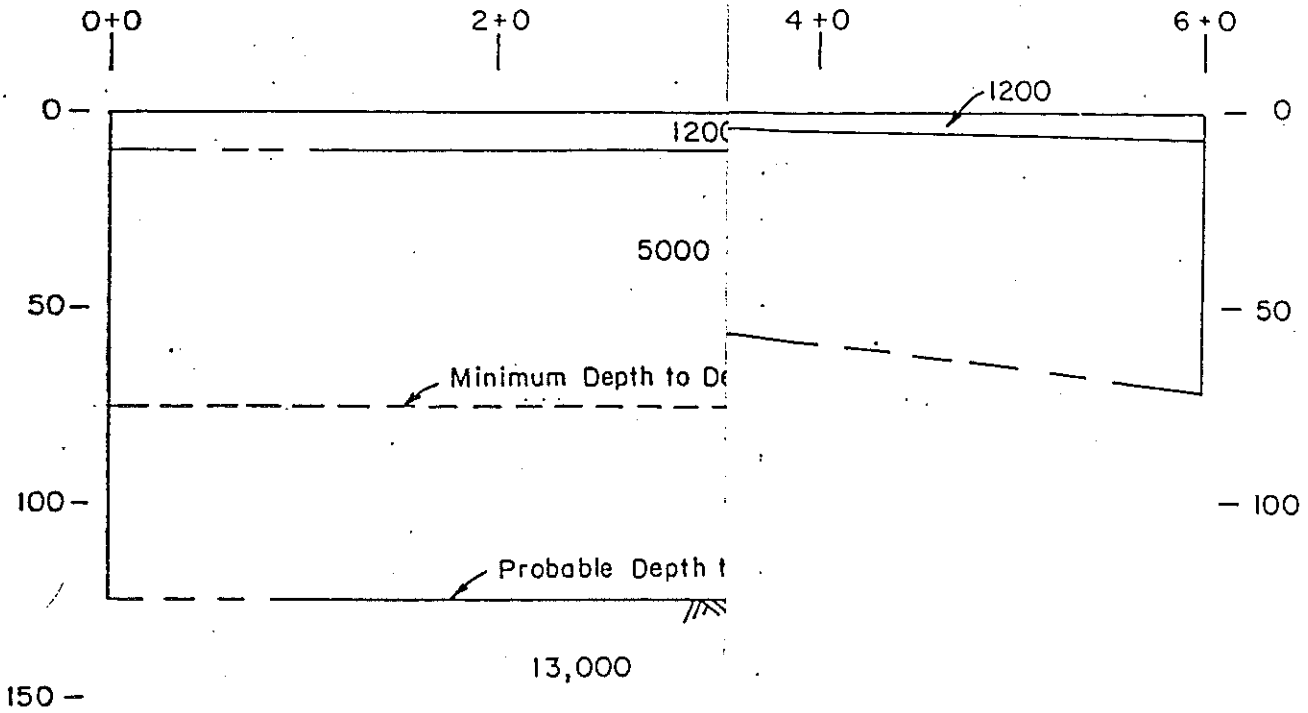
SEISMIC SURVEY
MUNICIPAL GROUNDWATER SUPPLY STUDY
NEWTON, MASSACHUSETTS
for
IEP, Inc.

PLAN MAP – SITE 2

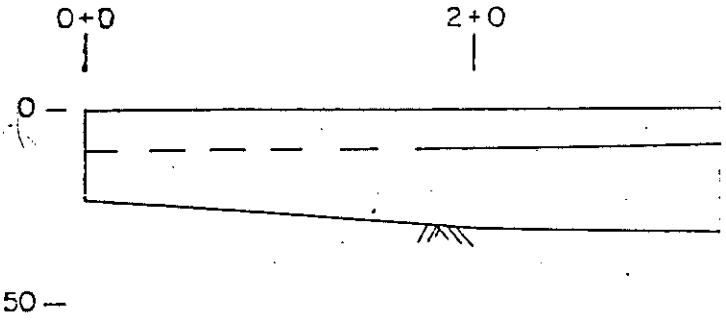
WESTON GEOPHYSICAL CORP.
October 1982

Figure 2

SITE I (SAW MILL BROOK RESERVE PARK)



SITE 3 (ST



TIES ARE IN FEET/SECOND.

Y
SUPPLY STUDY
ISETTS

SEISMIC PROFILES

WESTON GEOPHYSICAL COR

October 1982

PROJECT NO: 82-31

TITLE: Newton Ground Water

SHEET NO: 1 of 1

DATE: 12/16/82

BY: RHA CK'D D. R.

SEISMIC DATA SUMMARY

Traverse No.	by	Depth Ranges (in feet)							
		Dry Sand		Sat. Sand		Till		Bedrock	
		from	to	from	to	from	to	from	
S-1	Weston	0	10	10	75	75	130	130	—
S-2	Weston	0	0-5	—		0-5	40-70	40-70	—
S-3	Weston	0	10	10	20-30	—		20-30	—
S-4	Geoscience	0	8	8	30	—		30	—
S-5	Geoscience	0	8	8	42	—		42	—
S-6	Geoscience	0	21	21	54	—		54	—
S-7	Geoscience	0	3	3	20	—		20	—
S-8	Geoscience	0	4-13	—		4-13	?	?	—

APPENDIX 2

BORING AND MONITOR WELL LOGS

NEW ENGLAND BORING CONTRACTORS, INC.
P. O. Box 883, Glastonbury, CT 06033, 203-633-8168
1367 Main Street, Springfield, MA 01103, 413-733-1232

CLIENT T.T.T.
PROJECT NAME Wells
LOCATION Newton, MA

BORING NUMBER B-1
SHEET No 1 of 1

DRILLER R. Glenn
INSPECTOR D. Haines
DATE START 11/8/82
DATE FINISH 11/8/82

ARCHITECT ENGINEER

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	2-1/2"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
								1.0	Topsoil
								4.0	Br. Fine-Crs. Sand and Gravel
20'									Br. Fine-Crs. Sand, Tr. Fine-Crs. Gravel
	S1	35.0-36.5	WASH SAMPLE						
40'									
60'									Installed 2" Well Bottom - 75' with 2' Stick Up Materials: 30' Screen 47' Riser 1 Locking Protector Pipe
								76.5	
	S2	75.0-76.5	8	13	18	18"			Bottom of Boring 76.5
80'									

SAMPLE IDENTIFICATION
- SPLIT SPOON
- THIN WALL TUBE
- UNDISTURBED PISTON
- OPEN END ROD
- WASH SAMPLE
- AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:
SCREEN
BENTONITE
OTTAWA SAND
COL. A WELL DIAGRAM

NEW ENGLAND BORING CONTRACTORS, INC.
P. O. Box 503
Glastonbury, CT 06033
203-633-8158

1387 Main Street
Springfield, MA 01103
413-733-1232

CLIENT M.E.P.
PROJECT NAME Wells
LOCATION Newton, MA

BORING NUMBER B-2

SHEET No 1 of 1

DRILLER R. Glenn
INSPECTOR D. Haines
DATE START 11/9/82
DATE FINISH 11/9/82

ARCHITECT ENGINEER

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D	2-1/2"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
								1.0	Topsoil
0									
20									
0	S1	30.0-31.5	14	14	13	18"			Br. Fine-Crs. Sand, Tr. Fine-Crs. Gravel
40									
0									
60								61.0	
	S2	62.5-63.0	81			0"			Gray Till
								63.0	
5'									Bottom of Boring 63.0 Installed 2" Well @ 62.0 Materials: 20' Screen 44' Riser 1 Locking Protector Pipe
80									

SAMPLE IDENTIFICATION
- SPLIT SPOON
- THIN WALL TUBE
- UNDISTURBED PISTON
- OPEN END ROD
- WASH SAMPLE
- AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A WELL DIAGRAM

NEW ENGLAND BORING CONTRACTORS, INC.
P. O. Box 583, Glastonbury, CT 06033, 203-633-8158
1387 Main Street, Springfield, MA 01103, 413-733-1232

CLIENT: I.E.P.
PROJECT NAME: Wells
LOCATION: Newton, MA

BORING NUMBER: B-3
SHEET No. 1 of 1

DRILLER: R. Glenn
INSPECTOR: D. Haines
DATE START: 11/9/82
DATE FINISH: 11/10/82

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	2-1/2"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
								2.0	Black Topsoil
5'									
	S1	8.0-10.0							
10'									
5'									Br. Fine-Crs. Sand and Gravel, Some Cobbles, Tr. Boulders
20'									
5'									
30'	S2	35.0-31.5	21	20	26				
5'								35.0	
									Bottom of Boring 35.0 Installed 2" Well @ 25' Materials: 5' Screen, 22' Riser, 1 Locking Protector Pipe

SAMPLE IDENTIFICATION
- SPLIT SPOON
- T — THIN WALL TUBE
- UNDISTURBED PISTON
- OPEN END ROD
- WASH SAMPLE
- A — AUGER SAMPLE

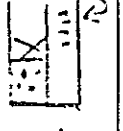
PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS: SCREEN



COL. A

EW ENGLAND BORING CONTRACTORS, INC.
P. O. Box 583
Glastonbury, CT 06033
203-633-8158
1387 Main Street
Springfield, MA 01103
413-733-1232

CLIENT J.F.F.
PROJECT NAME Wells
LOCATION Newton, MA

NUMBER B-4
SHEET No. 1 of 1

ILER R. Glenn
SPECTOR D. Haines
E START 11/10/82
ATE FINISH 11/10/82

ARCHITECT
ENGINEER

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	2-1/2"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
									.5 Topsoil -
									Br. Fine-Crs. Sand and Gravel, Tr. Cobbles
								7.0	
20'									Br. Fine-Crs. Sand, Tr. Silt
20'	S1	20.0-21.5	8	9	11	12"			
								23.0	
25'									Gray Silt and Clay, Some Fine-Crs. Sand
30'									
35'								36.0	Gray Silt and Clay, Some Fine-Crs. Sand and Gravel, Few Cobbles
40'								40.0	Bottom of Boring 40.0 Installed 2" Well @ 40.0 Materials: 10' Screen, 32' Riser, 1 Locking Protector Pipe

SAMPLE IDENTIFICATION
S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS USED
trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

REMARKS: SCREEN
BENTONITE
OTTAWA SAND

COL. A WELL DIAGRAM

NEW ENGLAND BORING CONTRACTORS, INC.
P. O. Box 683
Glastonbury, CT 06033
203 - 633-8168

1387 Main Street
Springfield, MA 01103
413 - 733-1232

CLIENT J.E.P.
PROJECT NAME Wells
LOCATION Newton, MA

BORING NUMBER B-5
SHEET No. 1 of 1

DRILLER R. Glenn
INSPECTOR D. Haines
DATE START 11/10/82
DATE FINISH 11/11/82

ARCHITECT ENGINEER

	Casing	Sampler	Core Barrel
TYPE	HW	SS	
SIZE I.D.	4"	1-3/8"	
HAMMER WT.	300	140	
HAMMER FALL	24"	30"	

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

DL	SAMPLE NO.	DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
									.5 Topsoil - Br. Fine-Crs. Sand and Gravel, Few Cobbles
								7.0	
10'	S1	10.0-11.5	15	16	20	16"			Br. Fine-Crs. Sand, Tr. Silt
15'	S2	15.0-16.5	16	17	14	18"			
20'	S3	20.0-21.5	26	30	42	0"			
								23.0	
25'	S4	25.0-26.5	16	18	18	0"			Gray Silt and Clay, Some Fine-Crs. Sand
30'								30.0	
									Bottom of Boring 30.0 Installed 2" Well @ 27.0 Materials: 10' Screen 19' Riser 1 Locking Protector Pipe

SAMPLE IDENTIFICATION
S — SPLIT SPOON
T — THIN WALL TUBE
P — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M.Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V.Stiff
		31 +	Hard

PROPORTIONS USED

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:
COL. A

NEW ENGLAND BORING CONTRACTORS, INC.
P. O. Box 583, Glastonbury, CT 06033, 203 - 633-8158
1387 Main Street, Springfield, MA 01103, 413 - 733-1232

CLIENT: I.E.P.
PROJECT NAME: Wells
LOCATION: Newton, MA

BORING NUMBER: B-6
SHEET No. 1 of 1

DRILLER: R. Glenn
INSPECTOR: C. Lyons
DATE START: 11/11/82
DATE FINISH: 11/11/82

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HW	SS	
SIZE I.D.	4"	1-3/8"	
HAMMER WT.	300	140	
HAMMER FALL	24"	30"	

FILE NO.:
SURFACE ELEV:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
								1.0	Topsoil
								4.0	Br. Fine-Crs. Sand and Gravel
5'	S1	5.0-6.5	10	14	21	12"		7.0	Br. Fine-Med. Sand
10'	S2	10.0-11.5	60	42	40	4"		22.0	Br. Fine-Crs. Sand and Gravel, Little Silt
25'								25.0	Gray Fine-Crs. Sand and Gravel, Silt and Clay
									Bottom of Boring 25.0 Installed 2" Well @ 22.5 Materials: 10' Screen 14.5' Riser 1 Locking Protector Pipe

SAMPLE IDENTIFICATION
S — SPLIT SPOON
T — THIN WALL TUBE
U — UNDISTURBED PISTON
O — OPEN END ROD
W — WASH SAMPLE
A — AUGER SAMPLE

PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M.Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V.Stiff
		31 +	Hard

PROPORTIONS USED
trace 0 to 10%
little 10 to 20%
some 20 to 35%
and 35 to 50%

REMARKS: SCREEN / BENTONITE / OTTAWA SAND

COL. A WELL DIAGRAM

APPENDIX 3
TRANSMISSIVITY AND WELL YIELD ESTIMATES

PROJECT NO: 82-31

TITLE: Newton Ground Water

SHEET NO: 1 of 1

DATE: 12/16/82

BY: RH CK'D D.R.

Estimated Transmissivity and Well Yields

Site	Transmissivity gal/day/ft	Transmissivity ft²/day	Well Yields gal/min.	Well Yields million gal./day
B-1	70,000	9358	1400	2.02
B-2	19,000	2540	400	0.58
B-3	19,000	2540	400	0.58
B-4 B-5	7000	936	50 per well	0.07
B-6	5800	775	40 per well	0.06

APPENDIX 4

WATER SUPPLY DEVELOPMENT COST ESTIMATES

PROJECT NO: 82-31

TITLE: Newton Ground Water

SHEET NO: 1 of 2

DATE: 12/16/82

BY: D.R. CK'D CH

Water Supply Development Cost Estimates

(1982 Dollars)

Municipal Well Exploration

Drill additional 4 in. diam. well to supplement existing 24 in. well. Pump test using submersible pump, measuring drawdown and recovery at monitor well.	$ 3,000
Drill additional 2 in. diam. observation wells (2) for long term pumping test.	$ 3,000
Drill 8 in. diam. well and pump near capacity for at least 5 days	$ 15,000
Provide continuous supervision of drilling and pump tests. Prepare report of results	$ 5,000
Total per site	$ 26,000

Production Well Drilling and Development (70 ft. gravel packed well), per site

$ 50,000

PROJECT NO: 82-31

TITLE: Newton Ground Water

SHEET NO: 2 of 2

DATE: 12/16/82

BY: D. R. CK'D ~~DA~~

Pumping Station *

Construction of complete station $ 150,000

Operation and maintenance per month $ 1500.00

Treatment Plant **

Construction of Iron Plant $ 4,000,000

Operation and maintenance $ 1.25/1000 gallons

* Average station life of 10-15 years after which major overhaul of equipment is needed.

** Typically for Iron, Manganese and color removal

Irrigation Well Exploration and Development

Drill additional well at each site and pump at capacity for 8 hours, taking drawdown and recovery measurements. Prepare report summarizing results. $ 2,000

Drill additional wells at desired spacing, pump at capacity and measure drawdown at observation well. $ 4,000

Install permanent pump and connect to sprinkler system. $ 2,000

Total per site $ 12,000

Appendix C

"Report to Metropolitan District Commission on Charles River - Purgatory Cove Water Quality Improvement," prepared by Metcalf & Eddy Inc., February 1975.

BOARD
OF
HEALTH

CITY OF WALTHAM

MASSACHUSETTS

ROBERT O. MAILLOUX, B.S., C.H.O.
Director of Public Health

Mr. Lawrence Leone
City Councillor - Ward 8
Waltham City Council
Waltham, Ma., 02154

Dear Councillor Leone:

The following report is in answer to your request relative to an investigation conducted by MASPIRG of alleged health hazards at the former Woerd Ave. Landfill, Cram's Cove, and Purgatory Cove.

WOERD AVE. LANDFILL - With the opening of the Waltham Incinerator in 1946, the Woerd Ave. Landfill became relegated to accepting non-burnable items. As with any landfill, there is documentation of problems associated with this kind of operation until its final closing and caping in 1974. At that time, conditions for closing and caping were dictated by the State and the closing and caping process was closely monitored and inspected and approved by various state agencies. Presently, there is growth covering a major portion of the landfill. An inspection of the area revealed the cap to be well intact. There is fencing in place from the rear of Norumbega Terrace continuing southerly and westerly along the rear lot lines of the industrial areas on Woerd Ave. There is no fence along Cram's Cove nor along the easterly portion of the landfill abutting the Moody Street playground. While no fence exists along the Cove area, there is a physical seperation between the face of the landfill and the Cove in the forms of a dirt road, vegetation, and trees. This serves as an effective warning and barrier to persons if they should wander into the area. The Moody Street playground abuts the easterly slope of the landfill which is gentle and not very high. I do not see any physical danger at either point. The landfill, as I stated previously, is holding its cap and does not pose any health hazard. It appears the area is currently being used by dirt bikes. As with any mechanical machine, if the operator does not exercise caution harm and injury may result. It may be prudent to have the police department increase their surveillance of the area in an attempt to curb this activity.

CRAM'S COVE - Cram's Cove is a narrow inlet from the Charles River approximately 875 feet long and 100 feet wide. The final 200 feet of the Cove abut the Woerd Ave. Landfill on the western slope. I have not been able to locate any results of any water testing done in Cram's Cove. While over the years some leachate from the landfill may have affected the water quality, the main problem of the cove appears to be one of hydraulics. (Much like the problems of Purgatory Cove.) There

appears to be little or no movement of the water. Further, nutrients entering the Cove from the adjoining industrial sites and septic systems prior to the installation of the sewer system would have contributed much more heavily to the poor water quality of Cram's Cove than the landfill. The aesthetic value of Cram's Cove may not rate an "A" but I do not find a health hazard in this area.

PURGATORY COVE - Attached is a report completed by Metcalf and Eddy for the M.D.C. on Purgatory Cove. Again, the problems appear to be the hydraulics of the Charles River. Sections 1 and 6 of the report are very informative and should answer any further questions you may have. Again, I do not view Purgatory Cove as a health problem.

If you should have any further questions relative to this matter, please feel free to contact me.

For a healthier environment, I remain

Very truly yours,

Robert O. Mailloux

ROBERT O. MAILLOUX
DIRECTOR OF PUBLIC HEALTH

enc.

1. M&E report to M.D.C. dated Feb. 28, 1975
2. Map of Woerd Ave. Landfill and adjacent areas

REPORT TO

METROPOLITAN DISTRICT COMMISSION
ON
CHARLES RIVER – PURGATORY COVE
WATER QUALITY IMPROVEMENT

February 28, 1975

M&E METCALF & EDDY INC | ENGINEERS & PLANNERS
BOSTON • NEW YORK • PALO ALTO • CHICAGO

Metcalf & Eddy, Inc. | Engineers & Planners
Statler Building/Boston, Massachusetts 02116 (617)423-5600 TWX 710 321-6365 Cable METEDD-BOSTON

February 28, 1975

Mr. Alfred F. Ferullo
Director of Water Quality
Metropolitan District Commission
20 Somerset Street
Boston, Massachusetts 02108

Dear Mr. Ferullo:

In accordance with our agreement dated June 26, 1974, we are pleased to submit this report entitled "Report to Metropolitan District Commission on Charles River-Purgatory Cove Water Quality Improvement, February 28, 1975."

Very truly yours,

METCALF & EDDY, INC.

James T. O'Rourke
Senior Vice President

ACKNOWLEDGMENTS

We wish to acknowledge the assistance and cooperation of the personnel at the Metropolitan District Commission during the course of this study. In particular, we thank Mr. Alfred F. Ferullo, Director of Water Quality, Mr. Martin F. Cosgrove, Administrative Engineer, and Mr. James Jones, Principal Sanitary Engineer.

We also acknowledge the cooperation and assistance from the Waltham Conservation Commission, Mr. Carl Cunningham, Chairman; The City of Newton, Honorable Theodore D. Mann, Mayor; and the City of Waltham, Honorable Arthur J. Clark, Mayor.

This study was prepared by Messrs. Edward Morrison, Richard Check, Richard Corneille and Mrs. Carol Sweet under the direction of Bernard M. Center.

REPORT

CHAPTER 1

INTRODUCTION

Background Information

Purgatory Cove is a small cove whose inlet is on the right bank (facing down stream) of the Charles River about 10 miles west of Boston, Massachusetts, see Figure 1-1. It lies on the boundary line between Waltham to the north and Newton to the south. The cove is an inverted U shape, about 600 feet wide and 1,200 feet long, covering an area of approximately 13 acres. There is little water movement in its shallow depths of 3 to 4 feet. Fathometer readings indicate the cove bottom is virtually flat. Terrain around the cove is gently hilly with elevations ranging from 35 to 60 feet above mean sea level. Land uses include residential and park areas on all sides except along the southern margin where the City of Newton sanitary landfill exists see Figures 1-2 and 1-3. Observations made during site visits reveal that the cove is inhabited by an abundance of mallard ducks and painted turtles. A thick layer of peat covers the cove bottom. Decaying tree stumps (Figure 1-2) are scattered in the southwestern area of the cove, indicating the area was not always completely flooded.

Geologically Purgatory Cove lies in the western portion of the Boston Basin. It is underlain at some depth by Carboniferous (300 million years old) sedimentary rocks which were formed from the erosion of older bedrock hills to the west.

FIG. 1-2. VIEW FROM SOUTHWEST BANK
LOOKING TOWARD INLET-OUTLET

FIG. 1-3. VIEW FROM SOUTHEAST
LOOKING NORTH

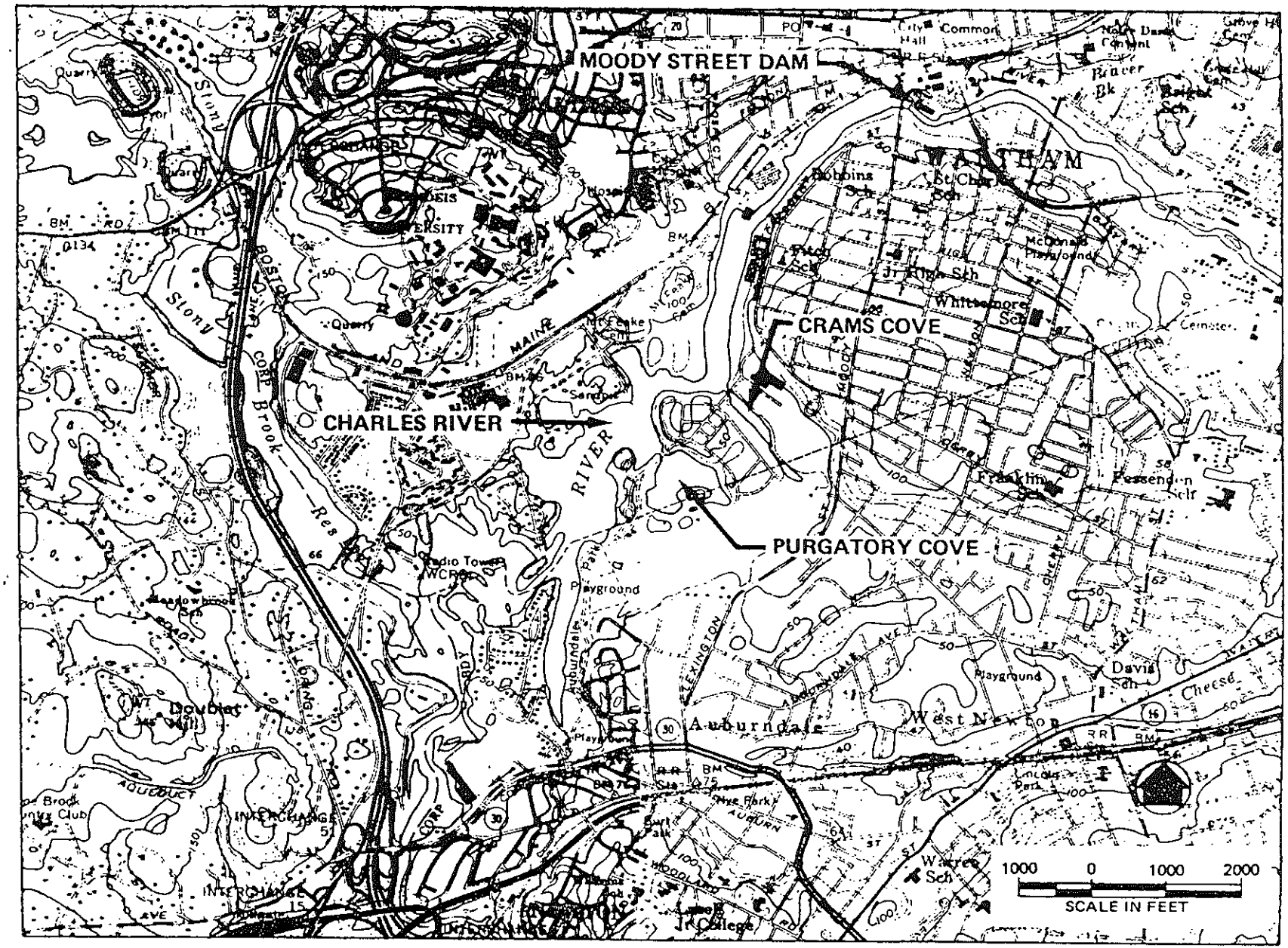


FIG. 1-1. LOCATION MAP

Since Carboniferous time, the geologic environment has been primarily erosional, forming a gentle topography with occasional low hills. Overlying the bedrock is a thick unit of glacial drift deposited during the recent Wisconsin ice advance (14,000 years ago). The drift consists of a variety of soils including mixed sand, gravel, silt and clay (till), and stratified sand and gravel (outwash). Low-lying coastal areas below El 50 were submerged to below sea level by the weight of the surrounding ice. Marine clays up to about 100 feet thick were deposited in these areas during high stands of the sea. After rebound of the land mass, subsequent erosion by streams have established modern deposits of silt and/or sand with peat deposited in marshy areas.

Purgatory Cove did not come into existence until installation of flash boards on the Moody Street Dam located on the Charles River in Waltham raised the flow line of the river. The granite dam was completed in 1836± with a masonry crest elevation of 37.8 feet and with a top of flashboard elevation of 40.5 City of Waltham Datum (CWD). The CWD is 5.65 feet below the U.S.C.&G.S. datum of mean sea level. Therefore, to correct from CWD to U.S.C.&G.S. subtract 5.65 feet from CWD elevation. According to the boat rental operator, there have been times when the depth of the water in the cove has been too shallow for motor boat activity due to removal of the flashboards.

The inlet-outlet for the cove originally had an opening of approximately 80 feet. However, with the improvement of the

Forest Grove Road, which crosses over the inlet-outlet, the trestle bridge was replaced with a 15-foot diameter corrugated metal pipe (CMP) culvert. This restriction hampers water circulation into the cove.

The cove receives water from five prime sources: (1) stormwater runoff from the land adjacent to the cove, (2) direct rainfall on the cove surface, (3) stormwater from the 60-inch reinforced-concrete pipe (RCP) drain which empties into the southeast area of the cove, (4) the Charles River through the inlet-outlet, and (5) groundwater.

The Charles River has been classified as Class B in the area of Purgatory Cove. The quality of the water of Purgatory Cove and the Charles River does not meet the Class B standard with regard to dissolved oxygen and coliform bacteria according to the previous data collected (Appendix A) and from our own water quality analyses.

Industries and municipalities along the Charles River have discharged untreated or partially treated wastewater into the river over a period of many years. Despite recent efforts to control such pollution, years of wastewater discharge have created sludge deposits on the river bottom. Increasing concentrations of nutrients have presented ideal conditions for algae blooms during the summer months. Microscopic algae of the blue-green variety create unpleasant odors and filamentous algae hamper boating and fishing. The Metropolitan District Commission (MDC) has in past summers treated the algae with a herbicide.

Normally, several treatments are required to effectively control the algae.

Our studies indicate that the dissolved oxygen (DO) concentration in the cove water is generally somewhat less than the DO in the river at comparable times. Thus, fish are less likely to be found in the cove. We have observed individuals fishing at the inlet to the cove on the Charles River side. The operator of the boat rental establishment told us that some pan fish are caught in the cove. This problem will be discussed later in this report.

Purgatory Cove and the surrounding land areas have numerous uses. The eastern and southwestern shores of the cove are lined with residences. The western peninsula which jets out into the Charles River is public land which is utilized for picnicking, parking, and a children's day camp. The entire area is lightly wooded and scenic. The area adjacent to the southeastern shore which is owned by the City of Newton and is used as a sanitary landfill. This does not detract from the appearance of the cove. The landfill is well managed and does not present problems to future plans to further utilize the cove for recreational purposes. A report* by John Wacker and Associates to the Waltham Conservation Commission has proposed plans to use the cove as an integral part of creating an attractive recreation area on the Charles River with boating, picnicking, hiking, skating, and swimming facilities. (See Figure 1-4).

*"The Charles River Waltham," by John Wacker & Assoc., September 1974.

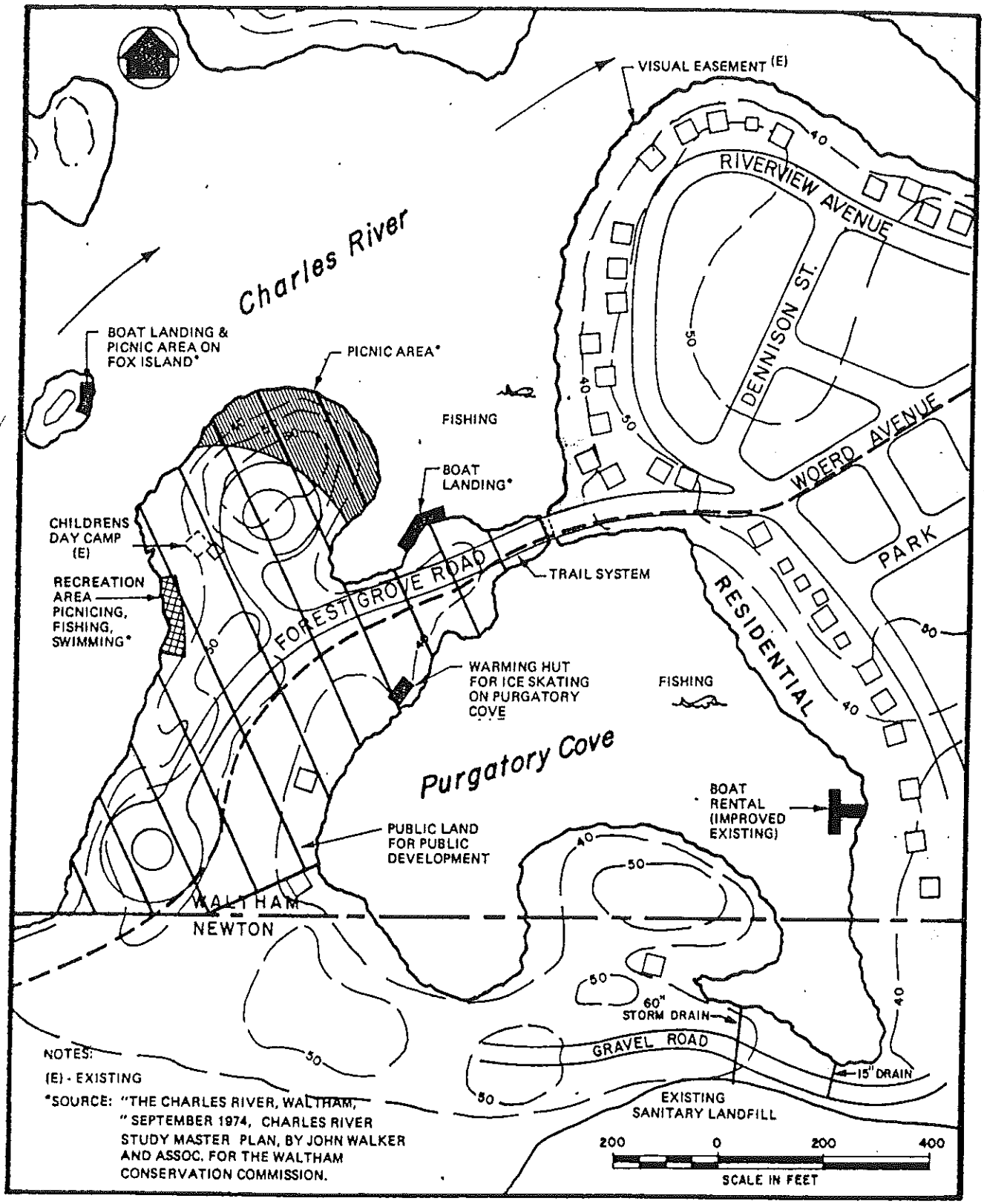


*FIG. 1-4. PROPOSED USES FOR PURGATORY COVE

Purpose of Study

Purgatory Cove can be a recreational asset to the communities of Waltham and Newton. Poor water quality is the root cause of complaints during the summer by residents adjacent to the cove. Poor water quality hinders the development of the area to its full recreational potential.

The purpose of this study is to identify the cause(s) of poor water quality, investigate various alternatives to remedy the problem, and recommend what action should be taken to improve the water quality in the cove.

Scope of Study

The scope of this study includes the following:

1. Comprehensive review of available data pertaining to water quality in Purgatory Cove and the Charles River (near the cove).
2. Gather additional data required to do a complete evaluation of the cove.
   a. Determine the degree of circulation within the cove.
   b. Determine dissolved oxygen and temperature profiles within the cove.
   c. Conduct subsurface investigations (bottom surveys and borings).
   d. Determine oxygen demands, nutrient levels, chemical and biological parameters of cove water and bottom samples.

e. Analyze leachate samples from adjacent sanitary landfill for toxic metals and compare with analyses of cove water samples.

3. Assemble and analyze the data secured by sampling and surveys and relate to the potential uses for the cove.
4. Define potential solutions to the problems of water quality--odors, low oxygen levels, algae growth, etc., based on the collected data.
5. Develop a preliminary design for each solution and estimate the capital and operating costs required.
6. Develop an evaluation of the environmental impact of modifying the water quality in the cove in terms of its use for recreation or unimproved land.
7. Recommend what action(s) should be taken to improve the water quality in Purgatory Cove.

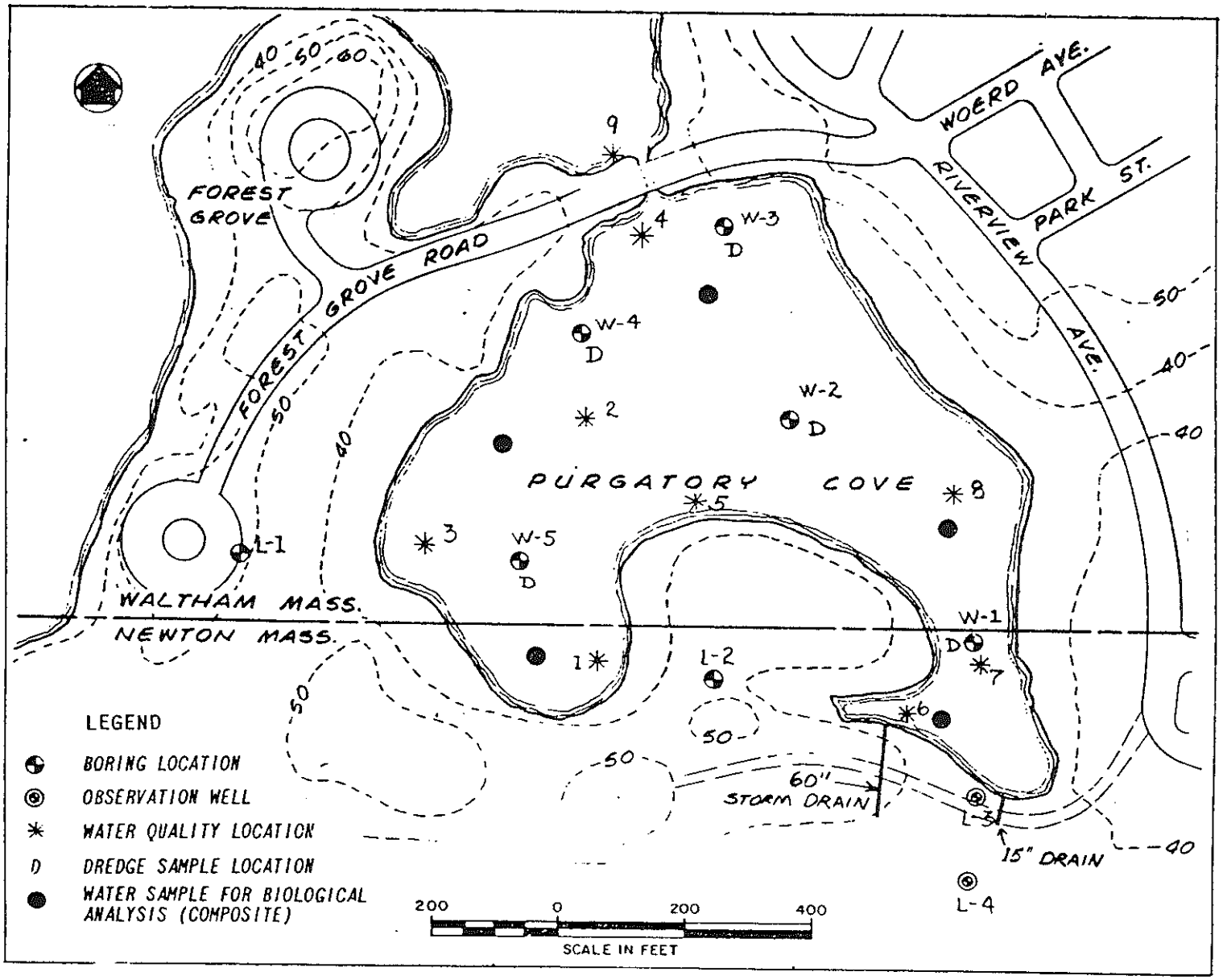


FIG. 2-2 EXPLORATION PROGRAM

CHAPTER 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Purgatory Cove is a 13 acre cove in the Charles River on the Newton-Waltham boundary line. The cove water depth varies between 2 to 4 feet with a total water volume of about 12.4 million gallons.

The cove came into existance when the Moody Street Dam was built. Water from the Charles enters the cove through a 15-foot diameter CMP pipe in the northern end of the cove. Water entering the cove comes from five sources: (1) stormwater runoff from adjacent land, (2) direct rainfall on the cove water surface, (3) stormwater from a 60-inch drain in the southeast area of the cove, (4) the Charles River through the inlet-outlet, and (5) groundwater. Groundwater entering the cove from the southeastern area contains leachate from the City of Newton sanitary landfill.

Concentrations of dissolved oxygen in the cove is generally lower than that in the Charles River. Algae blooms have been experienced in the cove and the MDC in past summers has treated the cove with an herbicide.

The cove has been included in plans proposed to the Waltham Planning Commission as an integral part of creating a recreational area on the Charles River for boating, picnicking, hiking, skating, and swimming facilities.

A general field and water quality survey was performed to complement existing data. The geotechnical survey included: (1) determining cove water depths using a recording fathometer, (2) DO, pH, temperature, and conductivity measurements of cove water, (3) drilling four land and five "in water" soil borings, (4) installing two observation wells in the area of Newton sanitary landfill for leachate analysis and determination of groundwater elevations, and (5) bottom sediments (benthal deposits) were obtained for laboratory analysis.

Cove water circulation was measured using a sensitive current meter at the 15 foot inlet-outlet of the cove. No velocity of flow was recorded on three separate occasions. In addition, a detailed analysis of all surface water sources tributary to the cove were performed. An average surface flow of 62.4 million gallons per year enters the cove of which about 68 percent of the total is attributable to the 60 inch storm drain.

Samples of cove water were taken for microscopic and bacterial analysis. The presence of certain organisms in the laboratory analysis indicate organic pollution. The ratio of fecal to total coliform bacteria was low for all the samples. In addition, the total coliform bacteria count was greater than that allowed for Class B waters in three of the five samples.

Qualitative water conditions were noted when water quality samples were taken. Filamentous algae were determined to be a

problem on August 21, 1974 and an herbicide treatment was performed on August 22, 1974. Qualitative observations on September 6 indicated that the treatment was effective.

Leachate samples were collected at the two observation wells and samples were taken simultaneously in the cove at two locations to determine the affect on the cove.

Laboratory analyses on the bottom deposit sediments included microscopic, bacterial, chemical and organic tests.

Oxygen depletion kinetics of the deposits were determined by determining reaction rates, "K" values, by BOD analysis. The average "K" rate, was 0.021 $days^{-1}$.

An oxygen balance was performed on the cove to quantify the oxygen demand of the cove. Calculations for oxygen demands of the benthal deposits show that 550 pounds per day of oxygen are required. The BOD of the cove water accounts for an oxygen demand of 150 pounds per day. "Natural" reaeration was assumed to be 100 pounds per day of oxygen. The net production of oxygen by photosynthesis was assumed to be zero. The net amount of oxygen required by the cove is, therefore, 600 pounds per day.

Five technically feasible alternative systems were sized to provide the necessary oxygen to satisfy the cove's oxygen demand and maintain Class B quality water with respect to DO. The five alternatives are as follows: (1) pumping Charles River water into the cove, (2) pumping saturated Charles River water into the cove, (3) siphoning water out of the cove to downstream

of the Moody Street Dam thereby allowing river water to enter the cove, (4) mechanical surface aeration of the cove, and (5) diffused aeration of the cove. Table 6-1 summarizes the five alternatives including capital and operating costs, equipment requirements, and "pros" and "cons" for each alternative.

Other alternatives were considered, but were not recommended as these would not significantly upgrade the cove's water quality, they include: (1) construction of an open channel from the Charles River upstream of the cove outlet to the southwestern end of the cove, (2) construction of a levee into the Charles River to divert flow into the cove via an open channel, (3) using a low head screw pump to create flow into the southwest end of the cove, and (4) enlarging the inlet-outlet. The possibility of "flushing" the cove by lowering the flashboards at the Moody Street Dam should be investigated by the MDC.

Dredging of the cove is required if motor boats are to continue to use the cove. Also dredging would be required for alternatives IV and V as aeration systems require greater water depths. The cost of dredging the cove to a water depth of 6 feet is about $300,000.

The environmental impact of changing water quality in the cove was discussed.

Conclusions

The following conclusions have been reached regarding this study:

TABLE 6-1. SUMMARY OF ALTERNATIVES TO IMPROVE PURGATORY COVE'S WATER QUALITY

Alternative	I Pumping Charles River water into cove	II Pumping saturated Charles River water into the cove	III Siphoning cove water out of cove to downstream of Moody Street Dam	IV Mechanical surface aeration in the cove	V Diffused aeration in the cove
Equipment requirements	Complete pumping station with 34 mgd capacity, and force main.	Complete pumping station with 21 mgd capacity, mechanical aerator, and force main.	Surface intakes, and gravity pipe with capacity of 34 mgd.	4-10 horsepower mechanical floating aerators with MCC and control building.	2-40 hp blowers (1 standby) and housing, diffused air piping and tubing.
Capital costs	$405,000	$415,000	$1,650,000	$95,000	$258,000
O&M costs	$ 58,000	$ 57,000	$ 58,000	$28,000	$ 28,000
Advantages:	1. Greatly improved circulation in the cove. 2. System would not interfere with recreational uses of cove.	1. Greatly improve circulation in cove. 2. Positive system for adding DO to cove. 3. System would not interfere with recreational uses of the cove.	1. No energy requirement. 2. Low maintenance requirement. 3. Greatly improved circulation in cove. 4. Alt. would not interfere with recreational uses of cove.	1. Can easily be turned off or on as necessary by timers or DO probes. 2. Low estimated capital investment. 3. Positive and simple system to add DO to cove. 4. Instantaneous reaction to dropping DO values. 5. Low O&M costs.	1. Can be turned off and on as necessary by timers or DO probes. 2. Equipment would not interfere with recreational uses. 3. Positive and relatively simple system to add DO to cove. 4. Second lowest capitol investment. 5. Instantaneous reaction to dropping DO values.
Disadvantages:	1. Relying on Charles River to have a greater DO. than the cove. 2. Flow rate is higher than minimum discharge of river, therefore, could be circulating same river water through cove more than once. 3. Relatively large capital investment. 4. System would not instantaneously react to a deficiency of DO in the cove. 5. Less flexibility than the positive aeration system.	1. Relatively large capital investment. 2. More complicated to operate than the other systems. 3. System would not instantaneously react to a deficiency of DO in the cove.	1. Flow through the siphon can be greater than flow in Charles River thereby necessitating throttling of flow out of cove during low flow periods (i.e., Sept, Oct). 2. Large capital investment. 3. Relying on Charles River to have a greater DO than the cove. 4. Less flexibility than the positive aeration system.	1. Would not be as aesthetically pleasing as diffused air. 2. Would limit use of cove somewhat in area directly around aerator. 3. Unit more subject to vandalism than pumping gravity alternates. 4. Alt. does not improve circulation.	1. Diffuser tubing must be cleaned periodically and small nozzles are subject to clogging. 2. Diffuser tubing and air piping subject to vandalism. 3. Alt. does not improve circulation.

1. The existing cove bottom is virtually flat with an average water depth of 3 feet.
2. A 15 to 54 foot layer of peat underlies the cove's bottom.
3. Dissolved oxygen in the cove is generally lower than the concentration of DO in the Charles River.
4. The cove does not meet Class B water quality standards with regard to DO and total coliform.
5. Groundwater levels correspond closely to the level of the cove and, therefore, there is no significant groundwater flow into the lagoon.
6. Circulation in the cove is inadequate. Water is turned over in the cove only once or twice in the critical summer months and on the average only five times in a year.
7. The bottom deposits account for the major oxygen demand in the cove.
8. The contaminants contributed to the cove by the leachate and storm drainage are insignificant in terms of their affect on the concentrations in the cove. Therefore, interception and treatment of these flows is not recommended.
9. Five alternative systems are technically feasible to improve the cove's water quality.

10. The environmental impact of improving the cove's water quality is desirable in terms of its recreational value.

Recommendations

Although a detailed cost-benefit analysis is beyond the scope of this study, we are of the opinion that the benefits from upgrading the water quality of Purgatory Cove may outweigh the considerable costs involved. The use of the area as a recreational center for boating, fishing, picnicking, and water contact sports can be heightened by improving the water quality.

To realize the cove's full potential, we would recommend that the cove be dredged to an average depth of 6 feet. This would widen the use of the cove by small motor boats in addition to removing some oxygen demanding organic deposits.

To upgrade the cove's water quality to Class B in regard to DO, we recommend alternative IV - mechanical surface aeration be installed. This alternative involves the least capital and operating expenditures. The system is simple to operate, flexible, and is a positive means of adding DO to the cove. In addition, it can be easily controlled automatically by DO probes or timers.

The major drawback to the aeration system is that it does not improve the circulation in the cove. It could be assumed that without any flushing action pollutants and algal growths would accumulate. However, it is our belief that by providing adequate DO in all areas and depths of the cove, a complete food chain from aerobic microorganisms to aerobic macroorganisms will

develop which will control these accumulations. We do not expect that maintaining DO will prevent algal blooms, but we would expect less algal activity with improved water quality. To control algal growth and to correct any problems before a bloom occurs, we recommend the continued treatment with herbicides as necessary by monitoring water quality.

* Our major objection to the flushing alternatives, irrespective of costs, is that the Charles River water presently does not meet Class B requirements. It contains high concentrations of total phosphorus which would be conducive to algal blooms. Therefore, improving the cove's water quality is directly dependent on improving the Charles River water quality. The aeration system can effectively improve the cove's water quality without regard to the Charles River water quality condition.

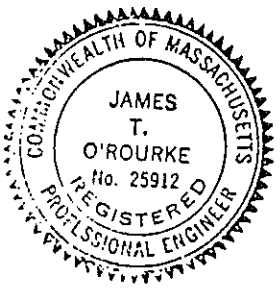
The mechanical aeration system offers the shortest anticipated mechanical life (10 years). If a superior system is developed or the Charles River water quality improves substantially, a new technique might be tried without a substantial cost penalty.

Table 6-1 summarizes the costs and advantages and disadvantages of the five alternatives. Because of the intangibles involved in cost/benefits of amenities, the Metropolitan District Commission is better able to select the most advantageous alternative. For instance, if aesthetics is a major consideration, the diffused aeration system would be more desirable than

the surface aeration alternative. The Commission must also decide if the benefits of improving the water quality of Purgatory Cove justify the costs, since there may be other such inlets and coves along the Charles which need water quality upgrading.

Respectfully submitted,

METCALF & EDDY, INC.



James T. O'Rourke
Senior Vice President

Registered Professional Engineer
Massachusetts License No. 25912

Appendix D

"Hydrogeologic Investigation Report - Parker Hannifin, Waltham, Massachusetts," prepared by TWM Northeast, January 1990.

May 21, 1990

Parker Hannifin Corporation
Nichols Division
48 Woerd Avenue, Box 9115
Waltham, MA 02254-9115
Phone: (617) 894-0650
Fax: (617) 899-7057 (Sales)
Fax: (617) 894-9235
Telex: 283905

Massachusetts Department of
Environmental Protection
Metropolitan Boston - Northeast Region
5 Commonwealth Avenue
Woburn, Massachusetts 01801

Attn: John Fitzgerald

Gentlemen:

Parker Hannifin Corporation hereby submits the enclosed "Hydrogeologic Investigation Report" prepared by TWM Northeast with respect to the property located at 48 Woerd Avenue, Waltham, Massachusetts.

The enclosed submission is made pursuant to Section 7 of the Massachusetts Oil and Hazardous Material release Prevention and Response Act (General Laws of Massachusetts, Chapter 21E), and shall constitute notification that a release of hazardous materials has occurred at 48 Woerd Avenue.

Representatives of Parker Hannifin Corporation are available to meet with you at any time to discuss the enclosed report. Please let us know if you have any questions.

Very truly yours,

PARKER HANNIFIN CORPORATION

John Meston
General Manager
Nichols Division

Enclosure

cc: Waltham Board of Health

Parker
Nichols

HYDROGEOLOGIC INVESTIGATION REPORT
PARKER HANNIFIN
48 WOERD AVENUE
WALTHAM, MASSACHUSETTS

Prepared for

PARKER HANNIFIN CORPORATION
Waltham, Massachusetts

Prepared by

TWM NORTHEAST
The Concord Center
Box 7, 10 Ferry Street
Concord, New Hampshire 03301

R-698004.30/JN

January, 1990

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1.0 INTRODUCTION

TWM NORTHEAST/Normandeau Engineers, Inc. (TWMNE) was retained by the Nichols Division of the Parker Hannifin Corporation to perform a hydrogeological site assessment of an 11.5 acre parcel located in Waltham, Massachusetts. The purpose of the investigation was to evaluate the hydrogeologic conditions at the site and to evaluate whether petroleum and/or hazardous substances have been released at the property, specifically with respect to the strict liability and lien provision of Massachusetts General Law Chapter 21E. The investigation has been conducted in two phases. Phase I of the investigation included an electromagnetic geophysical survey, the installation of six ground water monitoring wells and the collection and analysis of ground water and surface water quality samples. The results of the Phase I investigation were presented in a Summary Report prepared by TWMNE and dated December, 1987. The findings and recommendations of Phase I Hydrogeologic Investigation included:

1) Relatively low concentrations of several volatile organic compounds (VOCs) were detected in four of the six monitoring wells installed during the Phase I investigation. The largest number of VOCs were detected in monitoring well MW-3. Trichloroethene, vinyl choride, benzene and 1,2-dichloroethane were detected in MW-3 at concentrations slightly higher than the MDEP guidelines for these compounds in public drinking water supplies. Trichloroethene and vinyl chloride were also detected at concentrations slightly higher than the MDEP quidelines in the sample from MW-1.

2) Vinyl chloride is known to be a degradation product of trichloroethene. Trichloroethene is a common industrial solvent which has been used at the site and was also present at low concentrations in the three wells where vinyl chloride was detected. 1,2-Dichloroethane is known to be a degradation product of 1,1,1-trichloroethane. 1,1,1-Trichloroethane is also a common industrial solvent and was also detected in well MW-3, the only

sampling location where 1,2-dichloroethane was detected. Benzene may also be used as a solvent; however, it is also a constituent of petroleum products, such as gasoline. Benzene was only detected at substantial concentrations in the sample from well MW-3 and appears to be related to a release of gasoline, as other common petroleum consitutents (i.e, ethylbenzene, toluene and xylenes) were also detected at this location. Petroleum constituents were also detected at MW-4, 6, 7 and 8.

3) Potential sources of the VOCs detected in MW-3 include the migration of VOCs within ground water from the adjacent City of Waltham landfill and/or VOC surface migration on the Parker Hannifin Property.

4) The ground water contamination detected at the site does not appear to threaten public or private drinking water supplies. Private water supply wells are not known to exist at the site or in the vicinity of the site, since the area is provided with municipal water from the Quabbin Reservoir, located in central Massachusetts. Ground water at the site could potentially impact the surface water quality of Cram's Cove and the Charles River. However, no VOCs were detected in surface water samples collected from Cram's Cove.

5) Additional investigations would be necessary to further evaluate the direction of ground water flow, the source and extent of ground water contamination and the risk to the public and the environmemt.

A Phase II Hydrogeological Investigation was subsequently conducted, including the installation of four additional ground water monitoring wells and the collection and analysis of a second round of water quality samples.

A soil gas investigation was also performed as part of the Phase II activities in the vicinity of MW-3 to identify potential source areas for the VOCs identified in MW-3. Soil samples were collected and submitted for the laboratory analysis of VOCs.

This report incorporates the findings from Phase I Hydrogeologic Investigation and presents the findings of the Phase II Hydrogeologic Investigations. The following report documents the methods used during these investigations, discusses the investigations results and presents TWMNE's conclusions and recommendations. All field and laboratory data are summarized and included in the report.

1.1 SITE LOCATION

The Nichols facility is located at 48 Woerd Avenue, approximately one mile north of Interstate 90 and one mile east of Route 128 (Figure 1). The study area consists of approximately 11.5 acres on two city lots. The small, undeveloped northern plot consists of approximately 14,000 square feet (0.3 acres) and is bounded by the Charles River to the north, a City park to the east and west, and Woerd Avenue to the south. The larger southern lot is bounded by residential properties to the northeast, the former City of Waltham landfill to the southeast, an embayment of the Charles River to the southwest (Cram's Cove) and Woerd Street to the northwest (Figure 2). The Nichols Division of the Parker Hannifin Corporation presently owns both parcels of land.

1.2 SITE HISTORY

In the early 1900's, the small northern parcel of land was the site of a boathouse owned by the Nichols family. No evidence of the boathouse exists at the site today. This parcel presently appears to be undeveloped.

The southern parcel (11 acres) currently consists of a complex of industrial manufacturing and office facilities. These facilities include the Nichols Division administrative offices and main manufacturing complex in the northeast corner of the property, four storage buildings and

SOURCE: NEWTON AND NATICK, MASSACHUSETTS, 7.5 MINUTE SERIES, TOPOGRAPHIC QUADRANGLE.

SCALE 1:25 000

1000 0 1000 2000 3000 4000 5000 FEET

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

LOCATION OF PARKER HANNIFIN NICHOLS DIVISION

FIGURE 1. LOCATION MAP OF PARKER HANNIFIN NICHOLS DIVISION. WALTHAM, MASSACHUSETTS.

parking areas in the southern portion of the property, a light-manufacturing complex along the western portion of the property and an office complex in the northwestern portion of the property (Figure 2).

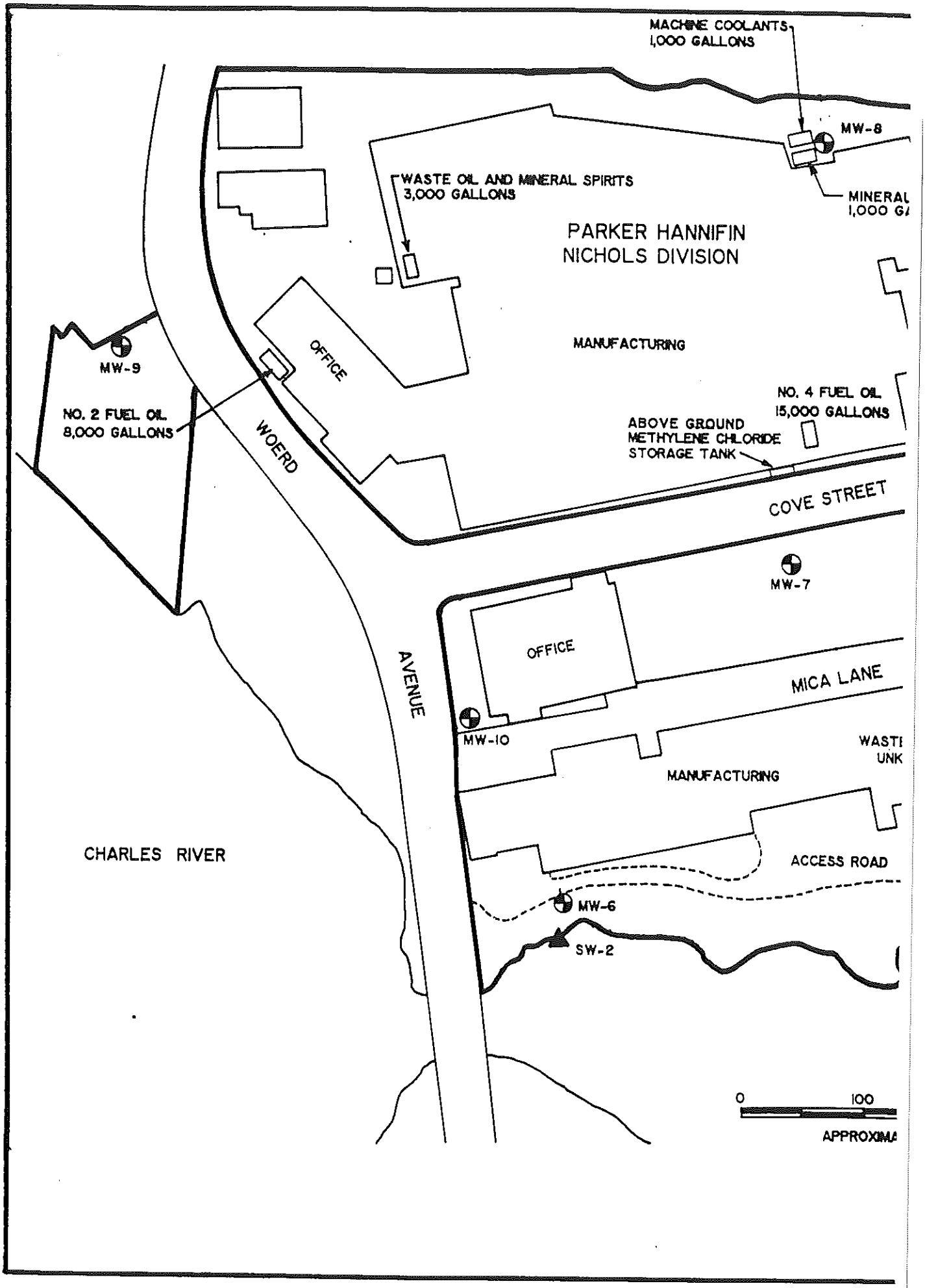
The original manufacturing facilities were constructed from 1913 to 1958 by the W.H. Nichols Company. The W.H. Nichols Company manufactured machine parts. The original facility included the complex of buildings located north of Cove Street, near Woerd Avenue, and a building south of Mica Lane, adjacent to Cram's Cove. Additions to the original manufacturing complex were constructed in the 1930's, 1950's, 1960's and 1970's. The W.H. Nichols Company was purchased by Parker Hannifin in 1984. No additional structures have been constructed since the acquisition of the property by Parker Hannifin.

The W. H. Nichols Company leased the manufacturing buildings south of Mica Lane to the New England Mica Company (dates uncertain). The New England Mica Company manufactured mica insulators. Waste mica was encountered in the subsurface in the areas south of the New England Mica Company building and adjacent to Cram's Cove. Mica is an abundant, naturally occurring mineral. Mica is not an EPA listed hazardous waste, and would not be expected to exhibit the characteristics of a hazardous waste, as defined by EPA.

Based upon a review of the files of the City of Waltham's Board of Health and the State of Massachusett's Department of Environmental Protection (Hazardous Waste and Solid Waste Bureaus) no complaints or violations are on record for the Nichols Facility.

1.3 EXISTING CONDITIONS

The Nichols Division manufactures metal parts for commercial, computer and aerospace industries. Both solid and liquid wastes are generated at the site. Liquid wastes include; coolants, mineral spirits,


MACHINE COOLANTS
1,000 GALLONS
MW-8
WASTE OIL AND MINERAL SPIRITS
3,000 GALLONS
MINERAL
1,000 G
PARKER HANNIFIN
NICHOLS DIVISION
MANUFACTURING
OFFICE
MW-9
NO. 2 FUEL OIL
8,000 GALLONS
WOERD
NO. 4 FUEL OIL
15,000 GALLONS
ABOVE GROUND
METHYLENE CHLORIDE
STORAGE TANK
COVE STREET
MW-7
OFFICE
AVENUE
MICA LANE
MW-10
WASTI
UNK
MANUFACTURING
CHARLES RIVER
ACCESS ROAD
MW-6
SW-2
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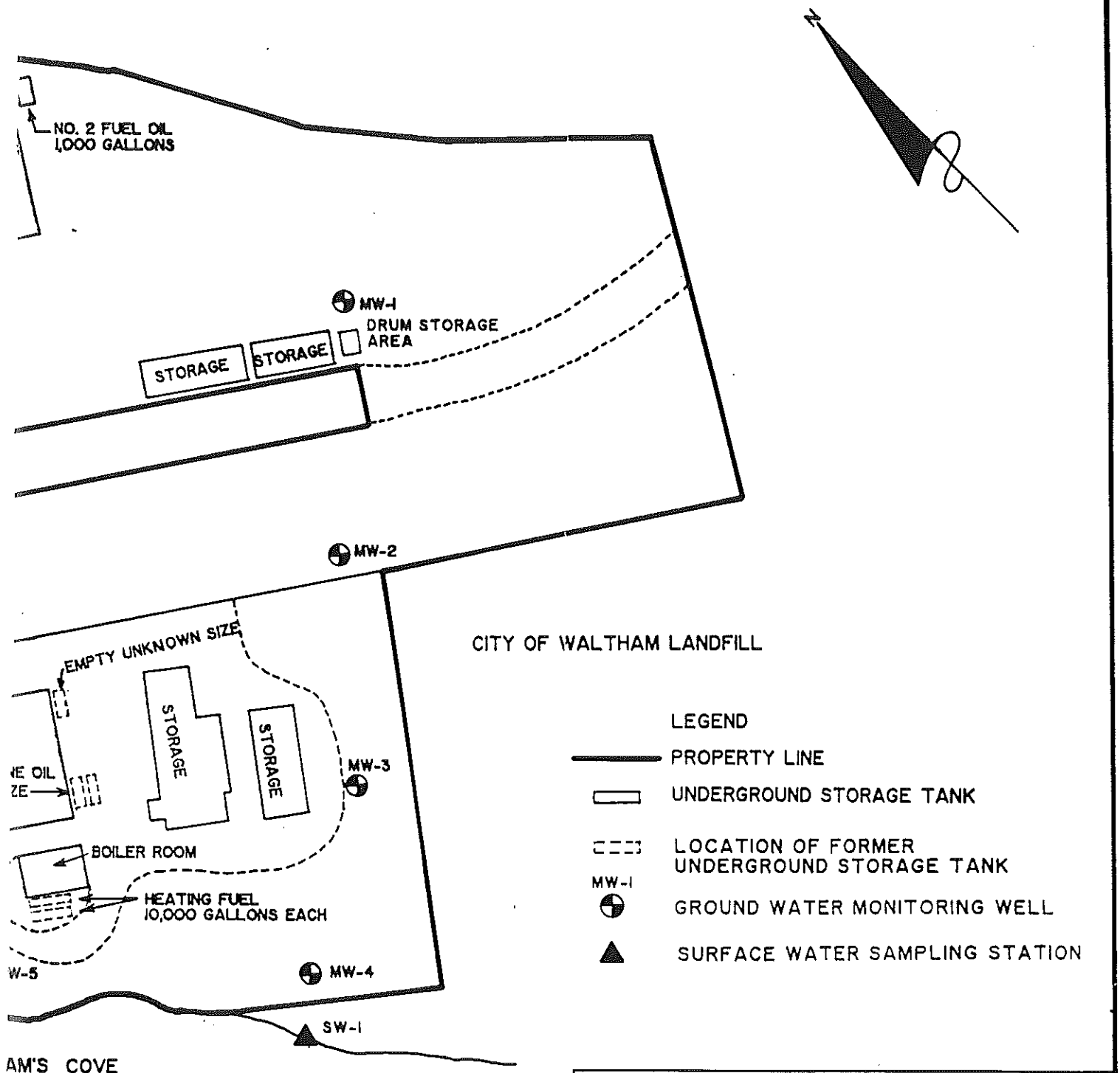

FIGURE 2

SITE LOCATION PLAN AND LOCATION OF UNDERGROUND STORAGE TANKS AND GROUND WATER MONITORING WELLS.

PARKER HANNIFIN
WALTHAM, MASSACHUSETTS

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TRC NORTHEAST
NORMANDEAU ENGINEERS INC. CONCORD, NEW HAMPSHIRE

freon, paint, nitric acid, zyglo dye. Liquid wastes are either discharged to the sanitary sewer or contained and shipped off site for disposal or recycling. Solid wastes include: scrap metal and swarf. These wastes are either reclaimed or disposed of off site.

A total of six underground storage tanks were present at the site during this investigation. The tanks are used for the storage of machine coolants, mineral spirits, waste machine oils, and No. 2 and No. 4 heating oil. The location and volumes of these tanks are shown in Figure 2. Based upon a discussion with the Plant Engineer, all of the tanks, except the waste machine oil storage tanks, are currently registered with the State of Massachusetts (pers. comm.).

Five of the tanks were excavated and removed from the property in the spring of 1988. These included two 10,000 gallon heating fuel tanks, two waste machine oil tanks of unknown size and an empty tank of unknown size. The tanks were excavated and removed from the property by a certified subcontractor. According to the Plant Engineer who supervised the tank removal, no subsurface contamination was observed when the tanks were removed.

2.0 SITE INVESTIGATION

The hydrogeologic conditions at the site were investigated to evaluate the potential for on-site release of petroleum and/or hazardous substances, in accordance with Massachusetts General Law/ Chapter 21E. The Phase I Hydrogeologic Investigation consisted of the following tasks:

- an electromagnetic terrain conductivity survey,
- installation and surveying of six ground water monitoring wells, and
- collection and analysis of surface water and ground water samples.

The Phase II Hydrogeologic Investigation consisted of the following tasks:

- installation and surveying of four additional ground water monitoring wells,
- collection and analysis of additional surface water and ground water samples, and
- soil gas survey and soil analysis.

The following section documents the methods used in these Hydrogeologic Investigations.

2.1 ELECTROMAGNETIC GEOPHYSICAL SURVEY

An electromagnetic geophysical survey was performed to determine whether significant concentrations of inorganic contaminants were present in the ground water at the site and to optimize the locations selected for the installation of ground water monitoring wells. The electromagnetic terrain conductivity meter (Geonics EM-34) records the electrical conductivity of the subsurface materials (both saturated and unsaturated) by measuring the response of these materials to an induced electromagnetic field. The higher the concentration of conductive materials in the

subsurface, the higher the electrical conductivity. Inorganic contaminants (such as dissolved salts and metals) are typically conductive. Where these contaminants are present in the ground water at significant concentrations, the measured conductivity values are higher than those measured at background or uncontaminated areas.

There are several factors which are capable of significantly influencing conductivity measurements. These factors include:

- the presence of power lines or landfill refuse,
- geologic variations in the subsurface including; textural changes, depth to bedrock, and depth to the water table,
- the concentration of dissolved electrolytes in the ground water.

On November 21, 1987 an electromagnetic (EM) conductivity survey was conducted at the subject property. Three survey transverses were completed. Two traverses were conducted in the vicinity of the southern property line with the City of Waltham landfill (refer to Appendix A). The third traverse was conducted along the western property line near Cram's Cove. Terrain conductivity measurements were recorded at 50-foot intervals along each traverse. At each station, two measurements were recorded; one measurement with the instrument's coils in the horizontal dipole mode (HDM), and the second with the coils in the vertical dipole mode (VDM). Using a coil separation of ten meters, the EM-34 measures the apparent conductivity of the subsurface materials from the ground surface to a depth of 7.5 meters (25 feet) in HDM, and 15 meters (50 feet) in VDM. The results of the terrain conductivity survey are discussed in Section 3.2.

2.2 INSTALLATION OF GROUND WATER MONITORING WELLS

Six ground water monitoring wells were installed at the Nichols site during the Phase I investigation (November 24-25, 1987) and four additional monitoring wells were installed during the Phase II

investigation (August 11 and 12, 1988). The monitoring well installation was performed by Carr-Dee Corp. (Medford, Massachusetts) and Soil Exploration Corp. (Leominster, Massachusetts), respectively, and observed by an TWMNE hydrogeologist.

One monitoring well (MW-5) was installed in the vicinity of the 10,000 gallon underground storage tanks located near the boiler building and well MW-6 was located downgradient from the facility, along Crams Cove. In Phase II, two monitoring wells (MW-9 and MW-10) were installed near Woerd Avenue and the Charles River, one well (MW-7) was installed near the center of the site and one monitoring well (MW-8) was installed in the vicinity of the 1,000-gallon machine coolant and 1,000-gallon mineral spirit tanks, (Figure 2). The remaining wells were located throughout the facility for the collection of additional ground water flow and water quality data.

The monitoring wells were installed in soil borings that were advanced to depths up to 16 feet, using 3.75-inch-inside-diameter (ID) hollow stem augers, per the American Society of Testing Materials (ASTM) method D-1452. Soil samples were collected either continuously or at five-foot intervals, per ASTM method D-1586. The soil samples were identified using the Burmister Soil Classification System.

A portion of each soil sample was placed in a glass jar, which was then sealed with aluminum foil. The headspace (i.e., air) within each jar was subsequently screened for volatile organic compounds (VOCs) using an HNU photoionization instrument. The total VOCs reading in several of the soil samples were up to 200 parts per million (ppm) greater than ambient levels. The HNU readings are shown on the boring logs presented in Appendix B. The HNU readings are a relative indication of the total concentrations of VOCs, relative to a known standard. The HNU cannot distinguish the concentrations of individual compounds. The results of the headspace analysis are discussed in Section 3.3.

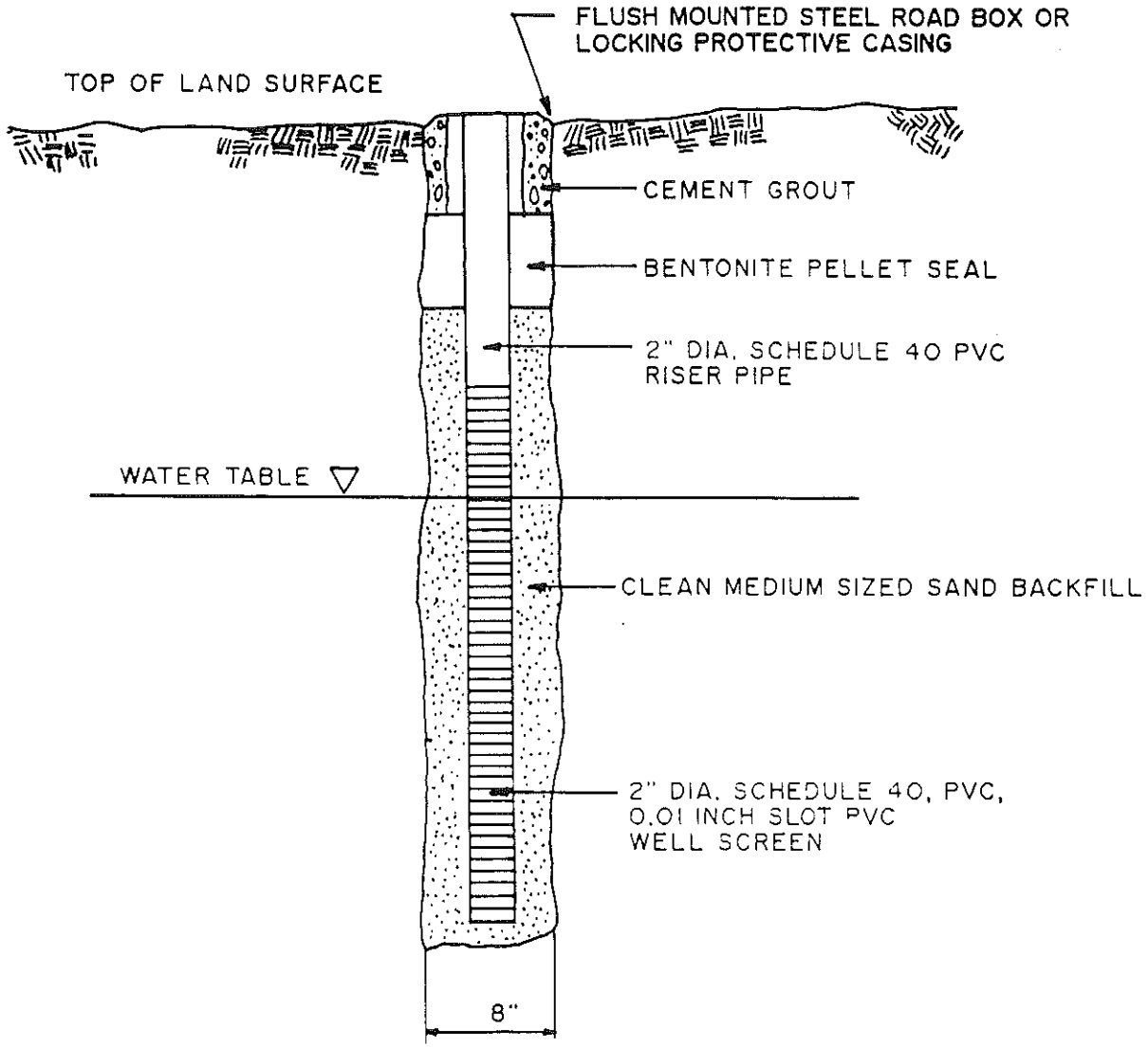
Each boring was completed as a monitoring well. The monitoring wells consist of 2.0-inch ID, schedule 40 PVC riser pipe fitted with a 0.010 inch slot schedule 40 PVC well screen (Figure 3). The lower 5 to 10 foot section of each well was screened, with the screen positioned to extend above and below the water table. The annular space around the well screen was backfilled with clean sand to at least one foot above the top of the screen. The sand backfill was then sealed with a layer of bentonite clay. The bentonite seal was hydrated with a minimum of five gallons of water before sealing the remainder of the boring with a cement grout. A locking steel casing or flush-mounted roadbox was installed at the ground surface to protect the well. Figure 3 shows the general well construction details; the specific construction details of each well are presented on the boring logs in Appendix B.

All downhole drilling equipment was thoroughly decontaminated between borings. Decontamination was performed by steam cleaning augers, drill rods and sampling spoons.

Following installation, the elevations of the wells were surveyed and ground water levels measured to evaluate the direction and gradient of ground water flow. The elevation data are presented in Table 1. The evaluation of ground water flow is discussed in Section 3.4.

2.3 WATER QUALITY SAMPLING

On November 30, 1987 (Phase I) and August 25, 1988 (Phase II) TWMNE collected water quality samples from each of the ground water monitoring wells installed at the site and at two locations on Cram's Cove. On September 1, 1988 a second round of water quality samples were collected from the four monitoring wells installed during the Phase II investigation in August, 1988, so that two samples would be obtained and analyzed from each well during these investigations. Field blank and duplicate samples were also submitted with the samples from each round to evaluate the reliability of the laboratory results.



NOT TO SCALE

FIGURE 3. TYPICAL CONSTRUCTION DETAILS FOR SHALLOW GROUND WATER MONITORING WELL AT PARKER HANNIFIN NICHOLS DIVISION WALTHAM, MASSACHUSETTS.

TABLE 1. SUMMARY OF GROUND WATER MONITORING WELL CONSTRUCTION DETAILS

MONITORING WELL	GROUND* ELEVATION (FT)	DEPTH OF BORING (FT)	DEPTH OF WELL (FT)	ELEVATION OF WELL SCREEN TOP (FT)	ELEVATION OF WELL SCREEN BOTTOM (FT)
MW-1	42.96	13.0	13.0	39.6	29.26
MW-2	44.46	13.0	13.0	41.46	31.46
MW-3	46.70	12.5	12.5	44.20	34.20
MW-4	43.00	12.0	12.0	41.00	31.00
MW-6	37.39	6.5	6.5	35.89	30.89
MW-7	41.39	15.6	13.3	38.09	28.09
MW-8	41.72	14.5	13.3	38.42	28.42
MW-9	39.80	13.5	12.4	37.40	27.40
MW-10	40.89	14.5	12.6	38.29	28.29

NOTE: All elevations referenced to City of Waltham Datum.

Refer to Table 2 for Top of Casing elevations and ground water elevations.

A minimum of three well volumes of water were purged from each well prior to sampling. The wells were purged using a hand pump and samples were collected using a stainless steel bailer. The samples were placed in bottles provided by the laboratory, preserved per EPA recommended guidelines, and sent to the Skinner and Sherman Laboratories (Waltham, Massachusetts), under chain-of-custody protocol.

2.4 WATER QUALITY ANALYSES

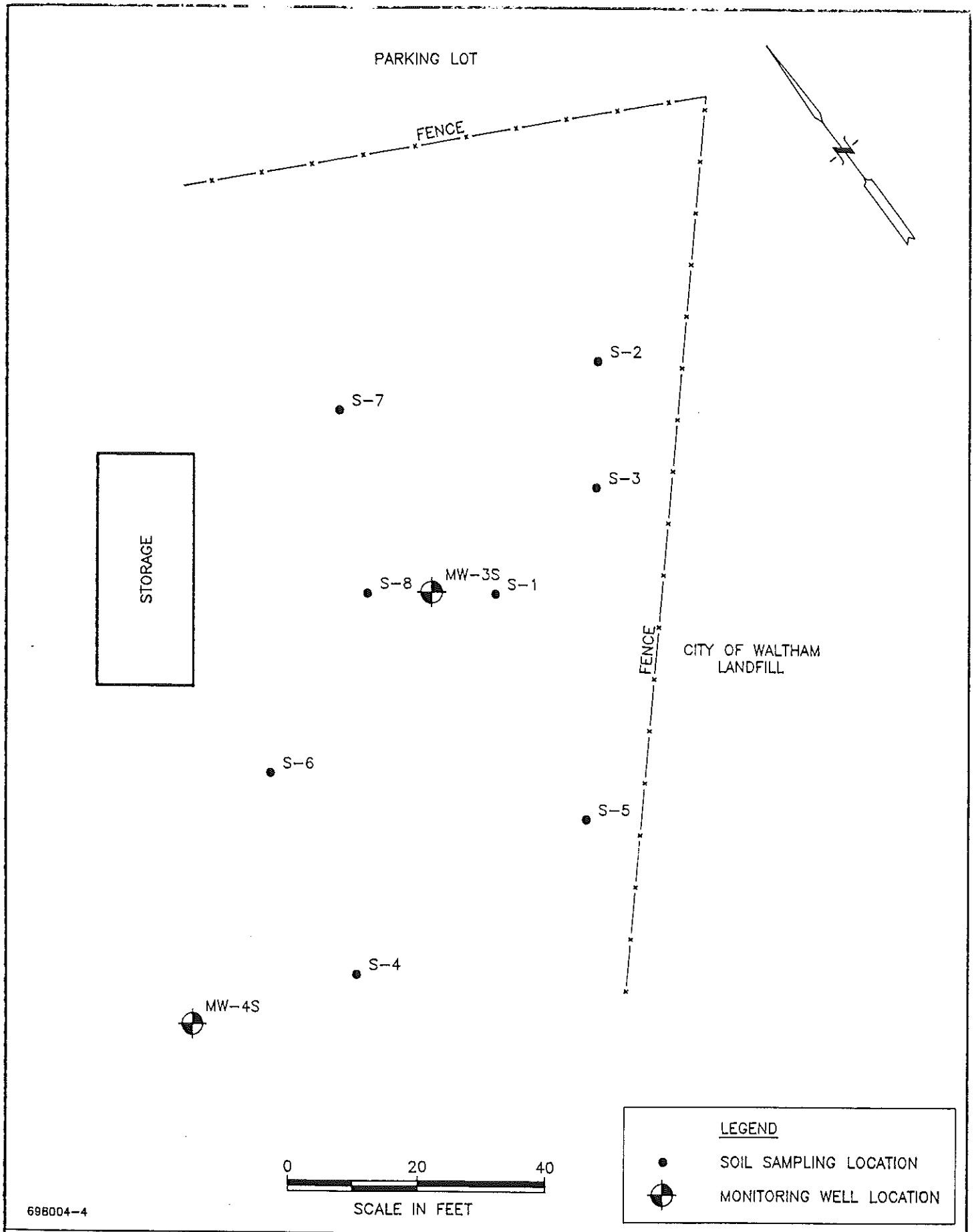
The water quality samples collected in November, 1987 were analyzed by Skinner and Sherman Laboratories for priority pollutant metals and the priority pollutant volatile organic compounds, plus EPA hazardous substance listed volatile organic compounds. The samples collected in August, 1988 were also analyzed by Skinner and Sherman Laboratories for the priority pollutant volatile organic compounds. However, based on the initial results, only eight of the samples were selected for priority pollutant metals analysis. The four ground water samples collected in September, 1988 were analyzed for the priority pollutant volatile organic compounds.

The samples were analyzed for metals using atomic absorption techniques, per EPA Method 200 (EPA, 1983). The samples were analyzed for volatile organic compounds using gas chromatograph/mass spectrometer (GC/MS) techniques, per EPA Method 624 (EPA, 1982). The results of the laboratory analyses are presented in Appendix C. In addition to the laboratory analyses, the pH, specific conductance and temperature of the samples were measured in the field at the time of sampling. The results of the water quality analysis are discussed in Section 3.5.

2.5 SOIL SAMPLING AND ANALYSES

To evaluate the potential sources for the VOCs identified at monitoring well MW-3, TWMNE collected soil samples from eight locations in the vicinity of the monitoring well. The sampling points were located in a radial pattern surrounding the well so that the direction and extent of the

contamination could be assessed (Figure 4). The eight soil borings were performed in January, 1989. The borings were drilled using a 1.5 inch diameter auger sampler with a 0.5 inch diameter drill. The borings were advanced to depths ranging from 0.5 to 3.5 feet depending upon subsurface conditions. Soil samples were collected at 0.5 feet intervals in glass vials and glass jars. The samples placed in glass jars were then screened for the presence of VOCs using a photoionization meter. Four samples having the highest VOC readings were submitted for laboratory analysis.



PARKER HANNIFIN
WALTHAM, MASSACHUSETTS

TWM NORTHEAST
NORMANDEAU ENGINEERS INC. CONCORD, NEW HAMPSHIRE

FIGURE 4

SOIL SAMPLING LOCATION PLAN
AUGUST, 1989

3.0 RESULTS OF INVESTIGATION

The following section presents the results of the site investigation. This section includes discussions of the hydrogeologic setting of the property and the quality of ground water at the site.

3.1 HYDROGEOLOGIC SETTING

The topography of the Waltham area consists of rolling hills, with low topographic relief. The area has been heavily developed for residential, commercial and industrial use, with significant alterations to both topography and drainage. In general, the study area consists of till covered bedrock uplands bordered by low-lying, poorly drained wetlands which are underlain by glacial outwash or alluvial deposits (Walker, et al. 1976). The wetlands are drained by small streams which discharge to the Charles River, the principal drainageway in the study area. The Charles River is located approximately 100 feet to the northwest of the site, with an embayment bordering the site to the west (Figure 1 and 2).

The topography in the immediate vicinity of the site is relatively flat, with the site underlain by unconsolidated glacial outwash deposits and/or alluvium, and man made fill (refer to geologic logs in Appendix B). The glacial outwash sediments were apparently deposited by meltwater streams that flowed northeastward in what is presently the Charles River valley. The site may also be underlain by more recent alluvial deposits from the Charles River. Based upon the topography of the site and the proximity to the Charles River, this area may have once been occupied by the channel of the Charles River and Cram's Cove potentially represents a former meander of the river. Peat was identified in a soil sample collected at 10 feet below grade at boring MW-2. This peat may represent a wetland deposit associated with the former stream channel.

The site is underlain by silts, sands and gravels and man-made fill (Figure 5). In the eastern portion of the property, a five to eight foot layer of sand and gravel fill overlies fine to coarse sand and gravel, with

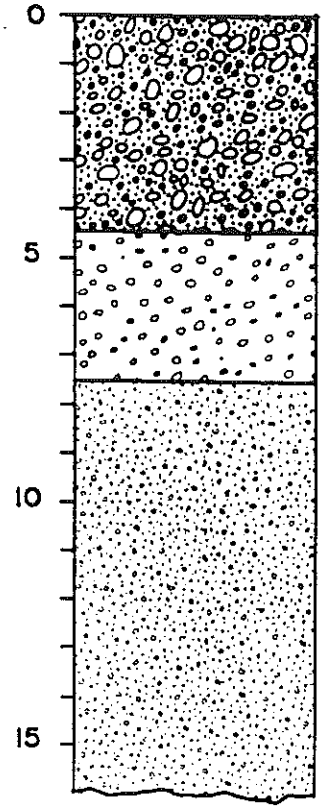
SOIL BORING SECTION	DEPTH (FT)	SOIL DESCRIPTION
	0 - 12	BLACK, SILT, SAND AND GRAVEL WITH METAL, COAL, CINDERS, ASH, WOOD AND BRICK FRAGMENTS
	4.5 - 13	BLACK TO TAN, FINE TO COARSE SAND AND GRAVEL, TRACE TO SOME SILT
	7.5 - 16	TAN TO GRAY, SILT, SAND AND GRAVEL

FIGURE 5 GENERALIZED STRATIGRAPHY OF SOIL BORINGS FOR PARKER HANNIFIN NICHOLS DIVISION, WALTHAM, MASSACHUSETTS

some silt. The eastern parking lot is reportedly underlain by municipal trash since this area was apparently once part of the Waltham City landfill. According to the Plant Engineer trash was reportedly encountered in this area during the excavation of a utility trench.

The western portion of the property is underlain by fill, which consists of sand and gravel, with coal and steel fragments. Along the western property line and in the vicinity of borings MW-4 and MW-5, the fill consists of silt, sand and gravel with waste muscovite mica. The mica was probably disposed of as waste and used as fill during the former on-site manufacturing operations of the New England Mica Company. Bedrock was not encountered in any of the borings which penetrated to depths up to 16 feet below grade, at the site.

3.2 RESULTS OF GEOPHYSICAL SURVEY

The results of the EM survey are presented in Appendix A. In general, the conductivity readings for the site, when compared to background conditions, are relatively high along the eastern and southern property lines. To establish a baseline conductivity values for the area, conductivity values were measured on an undeveloped parcel of land northwest of the site, at locations immediately adjacent to the Charles River. The conductivity readings in this area were an order of magnitude lower than the readings recorded at the site, indicating that conductive materials are present beneath the Parker Hannifin property. The conductivity readings recorded at the site appear to indicate that dissolved electrolytes are present in ground water beneath the site at concentrations higher than background levels. However, the fill deposited at the site may contain ferrous material, which could contribute to the higher readings detected on the property.

In general, the conductivity data indicates that conductive materials are present at relatively shallow depths (<25 feet) beneath the property. The highest conductivities were recorded in the parking lot located adjacent to the former Town of Waltham landfill (transect A-A') which is reportedly underlain by fill material (refer to Figure in Appendix A).

Along transect B-B' (further downgradient from the landfill), conductivities were lower than those recorded along transect A-A' but generally higher than background levels indicating lower concentrations of dissolved electrolytes in ground water in this area. To determine if significant concentrations of electrolytes were present in ground water in this area three monitoring wells (MW-1, MW-2 and MW-3) were installed along this transect.

The electrical conductivities recorded along transect C-C' appeared to vary randomly. The highest conductivities were recorded near the former Town of Waltham landfill and adjacent to the former mica manufacturing building. A review of aerial photographs indicates that a significant amount of fill material has been placed along Cram's Cove in the vicinity of this transect. The high conductivities encountered may reflect either solids in fill or dissolved electolytes in the ground water in this area. Three ground water monitoring wells (MW-4, MW-5 and MW-6) were installed to evaluate the composition of the subsurface material and to determine if electrolytes were present at significant concentrations in ground water in this area.

3.3 RESULTS OF SOIL HEADSPACE READINGS

Headspace readings (HNU) of soil samples collected from the soil borings indicate the presence of volatile organic compounds (VOCs) in the unsaturated and saturated zone at the site. The total HNU VOCs readings in soils ranged from less than 5 ppm at MW-1, MW-5, MW-6 and MW-10 to greater than 5 ppm at MW-2, MW-3, MW-4, MW-7, MW-8 and MW-9 (refer to geologic logs in Appendix B). The highest VOC reading, 250 ppm, was recorded in a sample collected from the saturated zone (5-6.5 feet) at MW-3. Typically the highest VOC concentrations were measured from soil samples collected at or immediately below the water table suggesting that the VOCs are migrating within the ground water, rather than coming from local surface spills. However, at monitoring well MW-7, the highest headspace VOC reading was measured in the soil sample collected in the unsaturated fill. This result could suggest that a surficial spill is the source of VOCs in the vicinity of MW-7.

To evaluate the ground water quality at the site, water quality samples were collected from each monitoring well and analyzed for VOCs using gas chromatograph/mass spectrometer techniques. VOCs were detected in ground water samples obtained from monitoring wells MW-3, MW-4, MW-6, MW-7 and MW-8. For further discussion of the ground water quality refer to Section 3.6.

3.4 GROUND WATER HYDROLOGY

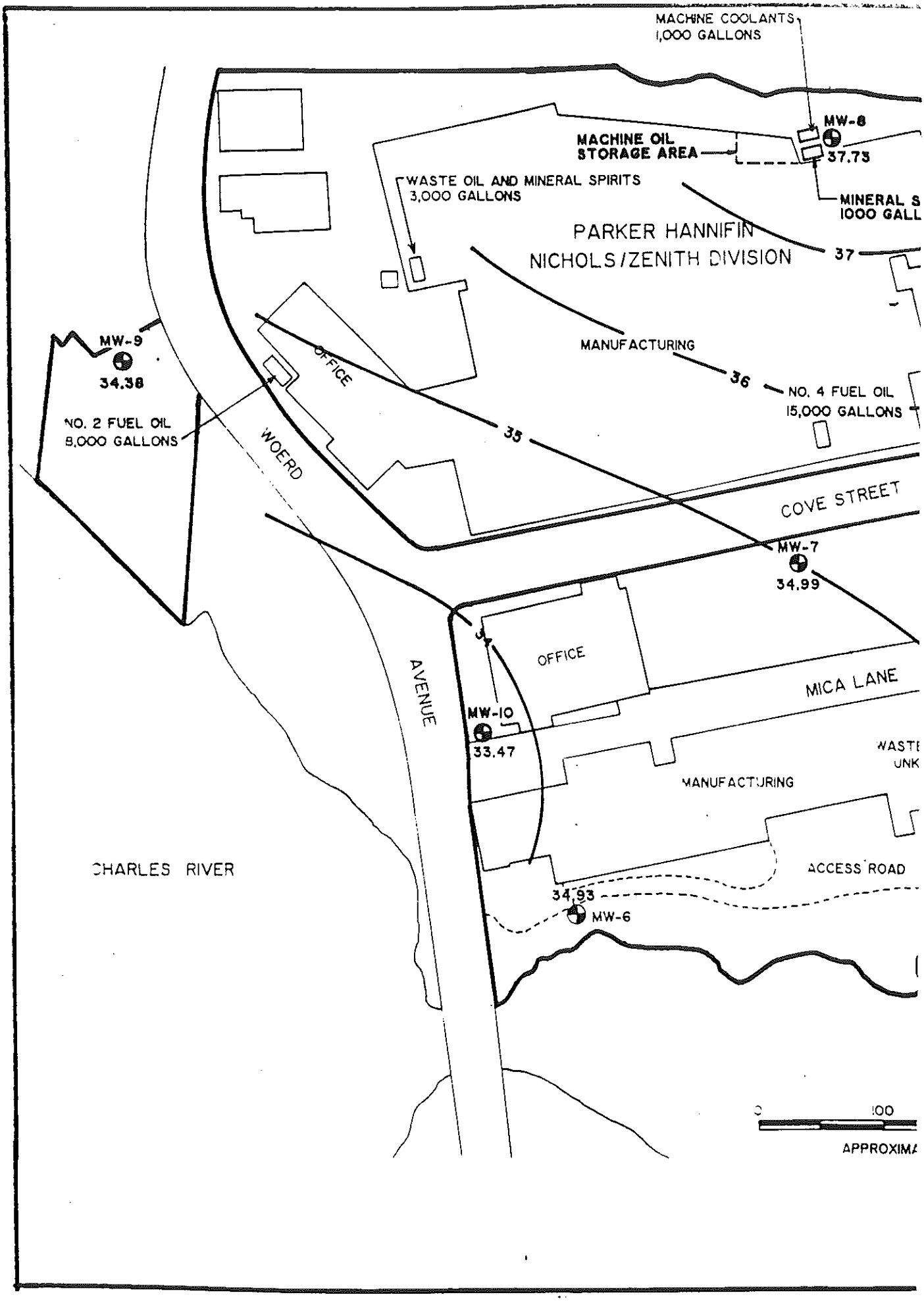
Ground water was encountered at the site at depths ranging from approximately 2.1 feet (MW-6) to 10.4 feet (MW-3) below grade (Table 2). Based upon the ground water elevation data recorded at the site, ground water appears to flow unconfined through the silt, sand and gravel and in the fill from the north-northeast to the south-southwest (Figure 6). Ground water may also flow to the site from the former City of Waltham landfill along the southeastern property line as reflected by elevated water levels recorded at monitoring well MW-3 located immediately downgradient of the landfill. Localized mounding of ground water may occur beneath the landfill in response to the higher permeability and porosity of the waste materials and resulting in the increased infiltration of precipitation at the landfill. Ground water mounding beneath landfills is a common occurrence and can result in the radial flow of ground water from a landfill.

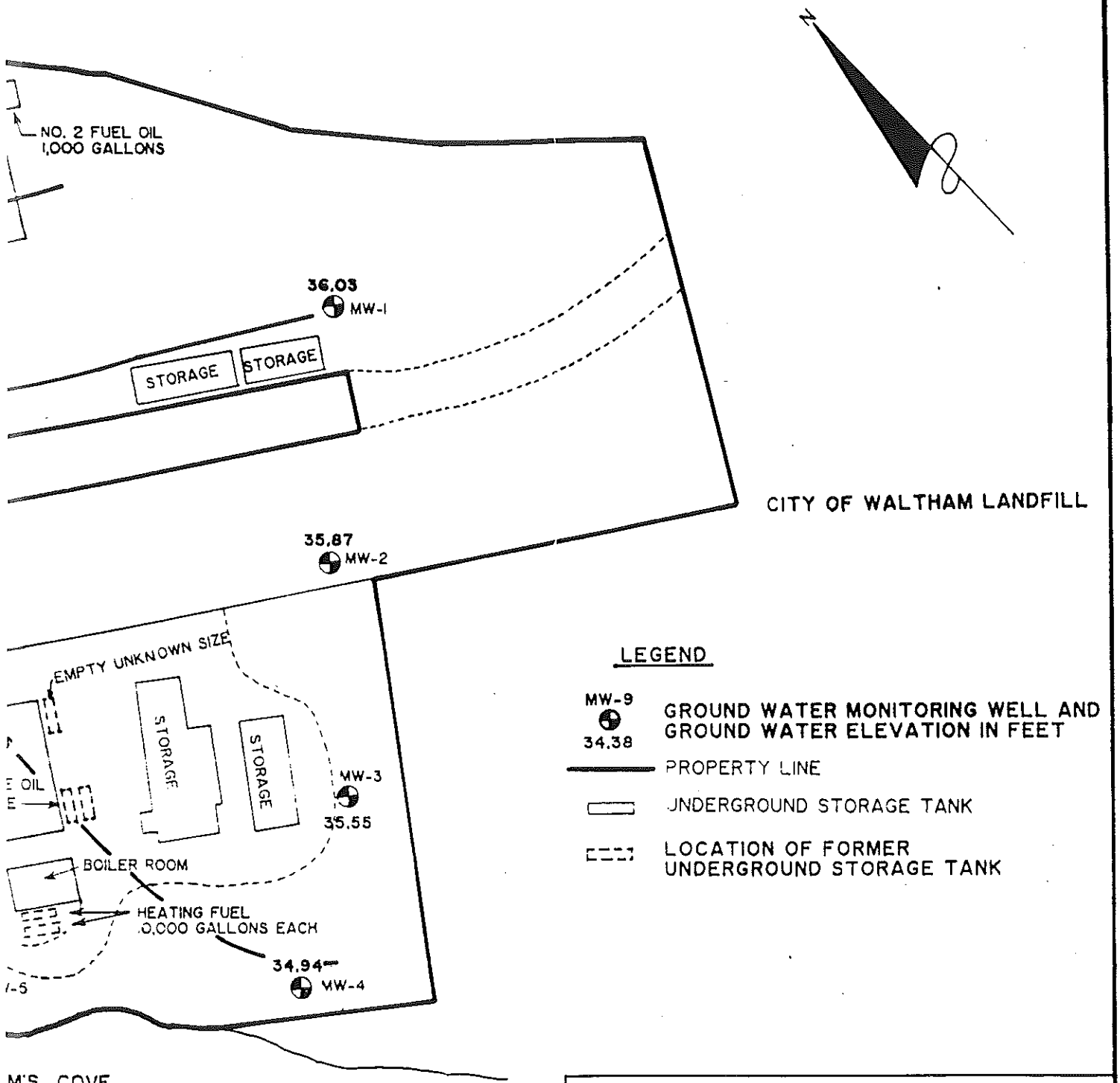
Regionally, ground water flows through the study area from recharge areas located in the till-covered uplands to the north and east of the site, to the Charles River and the embayment (Cram's Cove).

TABLE 2. SUMMARY OF GROUND WATER MONITORING WELL AND WATER TABLE ELEVATIONS

Monitoring Well	Ground Elevation (ft)	Top of Casing Elevation (ft)	November 30, 1987		December 7, 1987		August 25-26, 1988		September 28, 1988	
			Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)	Depth to Water (ft)	Water Elevation (ft)
MW-1	42.96	42.96	6.39	36.57	6.49	36.47	6.49	36.47	6.90	36.03
MW-2	44.46	44.46	8.10	36.38	8.08	36.38	8.19	26.27	8.59	35.87
MW-3	46.70	49.65	13.23	36.01	13.64	36.01	13.63	36.02	14.10	35.55
MW-4	43.00	45.38	10.07	35.36	10.02	35.36	10.24	35.14	10.44	34.94
MW-5	38.70	41.81	6.92	35.11	6.70	35.11	7.04	34.77	7.26	34.55
MW-6	37.39	37.39	2.12	35.28	2.11	35.28	2.43	34.96	2.46	34.93
MW-7	41.39	41.39	-		-		6.00	35.39	6.40	34.99
MW-8	41.72	41.72	-		-		3.65	38.07	3.99	37.73
MW-9	39.80	41.67	-		-		7.17	34.50	7.29	34.38
MW-10	40.89	40.89	-		-		7.19	33.70	7.42	33.47

NOTE: All elevations referenced to City of Waltham Datum.


MACHINE COOLANTS
1,000 GALLONS
MW-8
37.73
MACHINE OIL
STORAGE AREA
WASTE OIL AND MINERAL SPIRITS
3,000 GALLONS
MINERAL S
1000 GALL
PARKER HANNIFIN
NICHOLS/ZENITH DIVISION
37
MW-9
34.38
OFFICE
MANUFACTURING
36
NO. 4 FUEL OIL
15,000 GALLONS
NO. 2 FUEL OIL
8,000 GALLONS
WOERD
35
COVE STREET
MW-7
34.99
OFFICE
MICA LANE
AVENUE
MW-10
33.47
WASTE
UNK
MANUFACTURING
CHARLES RIVER
ACCESS ROAD
34.93
MW-6
100
APPROXIMA



LEGEND

MW-9 / 34.38 — GROUND WATER MONITORING WELL AND GROUND WATER ELEVATION IN FEET

PROPERTY LINE

UNDERGROUND STORAGE TANK

LOCATION OF FORMER UNDERGROUND STORAGE TANK

FIGURE 6

GROUND WATER ELEVATION AND CONTOUR MAP FOR WATER LEVELS RECORDED SEPTEMBER 28, 1988

PARKER HANNIFIN
WALTHAM, MASSACHUSETTS

DRAWN BY	CHECKED BY		
RFC	PJK	6980 04.30	DEC 1988

TRC NORTHEAST
NORTHEASTERN ENGINEERS INC. CONCORD, NEW HAMPSHIRE

3.5 WATER QUALITY

During the investigation three rounds of water quality samples were collected. The water quality samples were analyzed for water temperature, pH, specific conductance, volatile organic compounds, and the priority pollutant metals. The analytical results are discussed below and are also presented in Appendix C and summarized in Tables 3, 4 and 5.

3.5.1 Ground Water Quality

3.5.1.1 Inorganics

The pH of the ground water ranged from 6.02 (MW-9) to 6.77 (MW-3), which is considered mildly acidic and typical of ground water in New England (Table 3). The specific conductance of ground water ranged from 343 umhos/cm at MW-6, near Cram's Cove to 2,520 umhos/cm (MW-3) near the former Waltham landfill. The highest conductivities were recorded at the wells located adjacent to the former landfill (MW-1, MW-2, MW-3, MW-4 and MW-5). In general, the specific conductance of ground water decreased with increasing distance from the landfill.

3.5.1.2 Metals

Total recoverable and dissolved metals were analyzed in the ground water and surface water samples collected from the site. The samples collected in November, 1987 were analyzed for total recoverable metals as a preliminary screening for metals. Several metals were detected at the concentrations shown in Table 4. To evaluate the presence of dissolved metals in ground water, a second round of samples as collected from selected monitoring wells.

Dissolved cadmium was detected in monitoring wells MW-3 and MW-4 at concentrations exceeding recommended drinking water standards, while mercury was detected at monitoring well MW-3 at a concentration exceeding the standard. Both monitoring wells MW-3 and MW-4 are adjacent to the former Waltham landfill and in the vicinity of the former scrap metal storage area.

TABLE 3. SUMMARY OF WATER TEMPERATURE, pH AND SPECIFIC CONDUCTIVITY DATA FOR GROUND WATER AND SURFACE WATER AT THE PARKER HANNIFIN SITE

	November 30, 1987		August 25, 1988		September 1, 1988	
Monitoring Well	pH	Specific Conductance (umhos/cm)	pH	Specific Conductance (umhos/cm)	pH	Specific Conductance (umhos/cm)
MW-1	6.42	765	6.27	835	-	-
MW-2	6.60	904	6.15	789	-	-
MW-3	6.77	1,172	6.42	2,520	-	-
MW-4	6.67	1,385	6,52	1,504	-	-
MW-5	6.70	1,069	6.46	1,005	-	-
MW-6	6.55	353	6.17	343	-	-
MW-7	-	-	6.37	1,416	6.11	510
MW-8	-	-	6.24	413	6.43	483
MW-9	-	-	6.56	500	6.02	545
MW-10	-	-	6.42	651	6.16	825
SURFACE WATER						
SAMPLING STATION						
SW-1	6.86	918	6.54	299	-	-
SW-2	6.68	284	6.46	317	-	-

TABLE 4. SUMMARY OF TOTAL AND DISSOLVED METALS DETECTED IN GROUND WATER AND SURFACE WATER AT THE PARKER HANNIFIN SITE.

Priority Pollutant Metal	Drinking Water Standard (ppb)	MONITORING WELLS MW-1 1987	MW-1 1988	MW-2 1987	MW-2 1988	MW-3 1987	MW-3 1988	MW-4 1987	MW-4 1988	MW-5 1987	MW-5 1988
Antimony	NE	41	NS	42	NS	75	<60	167	<60	<25	<60
Arsenic	50	39	NS	319	NS	600	17	1640	<5	40	<5
Beryllium	NE	10	NS	11	NS	7	<5	54	<5	<3	<5
Cadmium	10	5	NS	<4	NS	36	17	149	12	15	<10
Chromium	50	214	NS	355	NS	368	<20	1730	<20	106	<20
Copper	1000	443	NS	784	NS	5000	13	2790	16	1050	<10
Lead	50	501	NS	8120	NS	1570	<50	3520	<50	2350	<50
Mercury	2	7.8	NS	7.3	NS	4.2	2	1.9	0.2	<.2	<0.2
Nickel	NE	216	NS	200	NS	419	36	3780	37	646	<10
Selenium	10	<5	NS	<5	NS	<5	<5	<5	<5	<5	<5
Silver	90	<5	NS	<5	NS	138	<10	<5	<10	<5	<10
Thallium	NE	<5	NS	<5	NS	<5	NA	<5	NA	<5	<NA
Zinc	5000	3670	NS	4840	NS	1400	101	7030	89	3410	43

Notes:

All concentrations reported in parts per billion.
1987 samples collected 11/30/87 and analyzed for total recoverable metals.
1988 samples collected 8/25-8/26 and analyzed for dissolved metals (ground water) and total metals (surface water).
Drinking Water Standards - USEPA primary (P) and Secondary (S) Maximum Contaminant Levels (MCLs) for Public Drinking Water Supplies.
MCLs for primary compounds are based on health-related criteria and are legally enforceable. MCLs for secondary compounds, are based on non-health related criteria, such as odor and taste, and are not enforceable.

NE = Not Established
NA = Not Analyzed
NS = Not Sampled

TABLE 4. SUMMARY OF TOTAL AND DISSOLVED METALS DETECTED IN GROUND WATER AND SURFACE WATER AT THE PARKER HANNIFIN SITE. (CONTINUED)

	MONITORING WELLS						SURFACE WATER			
Priority Pollutant Metal	MW-6 1987	MW-6 1988	MW-7 1988	MW-8 1988	MW-9 1988	MW-10 1988	SW-1 1987	SW-1 1988	SW-2 1987	SW-2 1988
Antimony	<25	<60	NS	<60	NS	NS	<25	<60	<25	<60
Arsenic	30	<5	NS	<5	ns	ns	6	<5	<5	<5
Beryllium	5	<5	NS	<5	NS	NS	<3	<5	<3	<5
Cadmium	13	<10	NS	<10	NS	NS	22	<10	13	<10
Chromium	118	<20	NS	<20	NS	NS	14	<20	<10	<20
Copper	436	<10	NS	<10	NS	NS	28	<10	9	<10
Lead	847	<50	NS	<50	NS	NS	70	<50	6	<50
Mercury	<.2	<0.2	NS	0.5	NS	NS	2.1	0.3	<0.2	0.6
Nickel	102	<10	NS	<10	NS	NS	10	<10	<10	<10
Selenium	<5	<5	NS	<5	NS	NS	<5	<5	<5	<5
Silver	<5	<10	NS	<10	NS	NS	<5	<10	<5	<10
Thallium	<5	NA	NS	NA	NS	NS	<5	NA	<5	NA
Zinc	8810	28	NS	51	NS	NS	140	48	31	47

Notes:

1987 samples collected 11/30/87 and analyzed for total recoverable metals.
1988 samples collected 8/25-8/26 and analyzed for dissolved metals (ground water) and total metals (surface water).
All concentrations reported in parts per billion.
Drinking Water Standards - Proposed and existing USEAP and MDEP Drinking Water Guidelines for Public Drinking Water Supplies.

NE = Not Established
NA = Not Analyzed
NS = Not Sampled

TABLE 5. SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUND WATER AND SURFACE WATER AT THE PARKER HANNIFIN PROPERTY, NOVEMBER 30, 1987, AUGUST 25-26, 1988 AND SEPTEMBER 1, 1988

Volatile Organic Compounds (ppb)	Drinking Water Standard (ppb)	MW-1		MW-2		MW-3			MW-4		MW-5		MW-6	
		1	2	1	2	1	2	DUP	1	2	1	2	1	2
Acetone	250E	ND	ND	ND	ND	DL	ND	ND	ND	ND	ND	ND	DL	ND
Benzene	5M	ND	ND	ND	TR	30	9	9	3	4	<2	2	ND	ND
Chlorobenzene	NE	ND	ND	ND	ND	110	18	16	ND	ND	ND	ND	ND	ND
Chloroethane	NE	ND	ND	ND	ND	1300	940	864	300	357	30	26	ND	ND
Chloroform	NE	ND	ND	ND	ND	ND	4	TR	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	NE	ND	ND	ND	ND	600	541	529	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5M	ND	ND	ND	ND	13	11	9	ND	ND	ND	ND	ND	ND
1,2-Dichloroethenes	140E	12	15	ND	ND	44	14	12	ND	ND	ND	ND	ND	ND
Ethylbenzene	700E	ND	ND	ND	ND	10	TR	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	NE	ND	ND	ND	ND	160	69	68	<5	ND	ND	ND	ND	ND
Tetrachloroethene	5E	ND	ND	ND	ND	3	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	200M	ND	ND	ND	ND	ND	29	28	ND	ND	ND	ND	ND	ND
Trichloroethene	5M	14	11	ND	ND	6	9	8	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	100M	ND	ND	ND	ND	ND	35	18	ND	ND	ND	ND	ND	3
Toluene	2,000 PMCL	ND	TR	ND	ND	20	12	TR	10	TR	3	TR	ND	ND
M,P,O-Xylenes	10,000 PMCL	ND	ND	ND	ND	61	35	19	<2	2	ND	ND	ND	ND
Vinyl Chloride	2E	4	11	ND	ND	7	29	25	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	NE	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NE	ND	ND	ND	ND	10	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	100M	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	TOTAL	30	37	ND	TR	2381	1755	1605	320	363	35	28	ND	3

Notes: All concentrations in parts per billion
M - MDEP Chronic Drinking Water Number
TR - Trace
DUP - Duplicate Analysis
NE - Not Established
PMCL - USEPA Proposed Maximum Contaminant Level (MCL)
ND - Not Detected
DL - At Detection Limit
E - USEPA Final MCL

1 - November 30, 1987 2 - August 25-26, 1988 3 - September 1, 1988

TABLE 5. SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUND WATER AND SURFACE WATER AT THE PARKER HANNIFIN PROPERTY, NOVEMBER 30, 1987, AUGUST 25-26, 1988 AND SEPTEMBER 1, 1988. (Continued)

	MONITORING WELLS								SURFACE WATER					
	MW-7		MW-8		MW-9		MW-10		BLANKS		SW-1		SW-2	
	2	3	2	3	2	3	2	3	1	2	1	2	1	2
Acetone	TR	ND	ND	42	ND	ND	ND	ND	DL	ND	ND	ND	ND	ND
Benzene	2	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	TR	ND	TR	6	ND	ND	ND	ND	ND	ND	ND	TR	ND	ND
1,1-Dichloroethane	5	ND	5	14	ND	ND	ND	ND	ND	ND	ND	TR	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethenes	17	14	ND	TR	ND	ND	ND	5	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	9	4	ND	ND	TR	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND
Trichloroethene	4	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
M,P,O-Xylenes	4	4	50	21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	16	10	ND	ND	ND	ND	ND	TR	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL	48	32	64	97	ND	ND	TR	5	DL	7	ND	TR	ND	ND

Notes: All concentrations in parts per billion
TR - Trace
ND - Not Detected
DL - At Detection Limit

The higher concentrations of metals in the unfiltered samples is due to the presence of silt and clay-size particles in the samples. These particles are dissolved in the preparation of the samples for the metals analysis, releasing adsorbed metal constituent ions into the sample. The clay particles were removed, by filtration, prior to the analysis of the second round of samples for the analysis of dissolved metals. The concentrations of dissolved metals sampled in the second round are more representative of the migration of metals with the ground water since sediments are not typically transported with ground water.

3.5.1.3 Volatile Organic Compounds

Relatively low concentrations of volatile organic compounds (VOCs) were detected in samples from nine of the ten ground water monitoring wells installed at the site (Table 5). However, only trichloroethene, vinyl chloride, benzene and 1,2-dichloroethane were detected at concentrations greater than the current Massachusetts Drinking Water Guidelines and Standards for these compounds in public drinking water supplies.

The total concentration of VOCs ranged from zero (MW-9) to 2381 parts per billion (ppb) (MW-3). The volatile organic compounds detected at the site include both halogenated hydrocarbons (e.g., chloroethane) and non-halogenated aromatic compounds (e.g., benzene).

Several of the chlorinated compounds detected in the ground water (e.g., trichloroethene, tetrachloroethene, 1,1,1-trichloroethane) are common industrial solvents. Based upon the results of recent research, (Wood, et al 1986) both tetrachloroethene and trichloroethene have been found to transform, due to biochemical processes, into cis-1,2-dichloroethene and vinyl chloride. The source of 1,1-dichloroethane, 1,2-dichloroethane and chloroethane may also be the result of the degradation of 1,1,1-trichlorethane, although these compounds may have also been present as impurities in solvents previously used at the facility or may have been used as solvents themselves.

The halogenated hydrocarbons were detected in three general locations: near the waste solvent storage area (MW-1), in the central parking areas (MW-7), and in the vicinity of a former waste storage area and/or the City of Waltham landfill (MW-3). Monitoring well MW-1 is located within 20 feet of a former waste solvent storage area. According to the Plant Engineer, all waste materials are currently stored in Building No. 8 and not stored outside. The past practice of the storage of drums outside of the maintenance building may have resulted in a release and the contamination of ground water in this area. This area is also located within 50 feet of the former City of Waltham landfill. Waste TCE may have been disposed of in the landfill upgradient of this monitoring well and migrated to the site with the ground water.

The second area is located in the central parking lot in the vicinity of monitoring well MW-7. Vinyl chloride was detected in a concentration (16 ppb) which exceeds the MDEP drinking water guidelines for vinyl chloride (1 ppb). This monitoring well was installed in an area which is underlain by fill material.

The third area in which both halogenated and aromatic hydrocarbons were detected is located near several storage barns, the southern property line adjacent to the former City of Waltham landfill and Cram's Cove in the vicinity of Monitoring Wells MW-3, MW-4 and MW-5. The highest concentrations of these compounds were detected at MW-3 (Table 5). Organic compounds detected at concentrations exceeding existing and/or proposed State and/or Federal drinking water standards for public drinking water supplies included: benzene, 1,2-dichloroethane, trichloroethane and vinyl chloride (Table 5).

Although these compounds were detected at concentrations greater than applicable standards, they are typically within the same order of magnitude as the standard. Higher concentrations would be expected in ground water in the immediate vicinity of the source area. In addition, several of the organic compounds identified are known to be degradation products of 1,1,1 - trichloroethane and tetra/trichloroethene. The relatively low

concentrations of parent and daughter product compounds along with the number of degradation compounds present in the ground water would suggest an upgradient source.

Lower concentrations of some of the compounds detected at MW-3 were also detected at monitoring wells MW-4 and MW-5. These wells are located hydraulically downgradient from MW-3 (Figure 5).

3.5.2 Surface Water Quality

Surface water samples were collected from two locations on Cram Cove (See Figure 2). One sampling station was located upstream in the vicinity of monitoring MW-4 (SW-1), while the second downstream sampling station was located in the vicinity of monitoring well MW-6 (SW-2). Samples were collected and analyzed for pH, specific conductivity, priority pollutant metals and the priority pollutant volatile organic compounds.

3.5.2.1 Inorganics

The pH of the water collected from Cram's Cove ranged from 6.46 (SW-2) to 6.86 (SW-1) (Table 3). The pH of surface water is mildly acidic, with the water becoming less acidic towards the Charles River. The specific conductance of surface water ranged from 284 umhos/cm (SW-2) to 918 unhom/cm (SW-1) with the specific conductance of surface water decreasing towards the Charles River. These water quality parameters indicate a general improvement of the water quality as it flows past the subject site.

3.5.2.2 Metals

In the samples collected from Cram's Cove, the concentration of cadmium, lead and mercury exceeded the recommended drinking water standards at the upstream sampling station (Table 4). The concentration of these metals was lower at the downstream surface water sampling station (SW-2). Only the concentration of cadmium exceeded the drinking water standards at this location. These parmeters also indicate an improvement in water quality as it flows past the site.

3.5.2.3 Volatile Organic Compounds

Only trace concentrations (i.e., less than 2 ppb) of chloroethane and chloroform were detected in the surface water samples (Table 5). Based upon the absence of any volatile organic compounds in the samples collected from Cram's Cove, the surface water quality does not appear to be significantly impacted by the migration of VOCs, via ground water flow, from the property.

4.0 ENVIRONMENTAL ASSESSMENT

4.1 SOURCES OF CONTAMINATION

Although low concentrations of VOCs were detected in nine of the ten monitoring wells at the site, VOCs were only detected in three monitoring wells MW-1, MW-3 and MW-7 at concentrations which exceed MDEP drinking water standards. Monitoring well MW-1 is located in the vicinity of a former waste solvent drum storage area and is also located downgradient of the former City of Waltham landfill. The concentrations detected in the ground water at MW-1 are consistent with the potential for incidential small spills from drums stored in this area; although VOCs may also be migrating to the site from the adjacent landfill.

At monitoring well MW-3 both chlorinated hydrocarbons and aromatic hydrocarbons were detected in ground water. The VOCs detected at this location may be associated with the former wastes stored in this area or the result of the migration of contaminants from the former City of Waltham landfill. Based upon a review of aerial photographs, the area between the storage buildings and the former City of Waltham landfill has been used as a scrap metal storage area. Prior to the commencement of this investigation the storage area was regraded and waste materials were placed into two piles. The piles consisted of scrap steel, rubber tires, crushed steel drums and miscellaneous debris.

To evaluate the potential source of the VOCs detected at MW-3, eight shallow (0.5 to 3.5 foot deep) soil borings were performed in the vicinity of the monitoring well. Based upon the results of a headspace analysis of the soil samples collected from these borings four samples were forwarded for the laboratory analysis of VOCs. The laboratory results are summarized in Table 6 and presented in Appendix D. VOCs were detected in measurable concentrations in only two of the samples (Table 6). The VOCs detected included vinyl chloride, 1,1,1-trichloroethane, trichloroethene (in S-1) and toluene (in S-4). The highest concentrations of VOCs were detected in sample S-1 which was collected at a depth of 0.5-1.5 feet at a location

approximately 10 feet southeast of MW-3. Considering the shallow depth of the contaminated soil (0.5 - 1.5 feet) and the depth to ground water (greater than 13 feet) the most likely source of these VOCs was a release at or near the ground surface. The chlorinated hydrocarbons vinyl chloride, 1,1,1-trichloroethane and trichloroethane were also detected in the ground water at monitoring well MW-3. Several additional chlorinated hydrocarbons and aromatic compounds were also detected in the ground water which were not identified in the soil samples. The presence of these additional VOCs in the ground water and their absence in the soil samples would suggest an upgradient source for several of these compounds. A potential upgradient source for these compounds is the former City of Waltham landfill.

Toluene was detected in sample S-4, which was collected at a depth of 1.5 - 2.5 feet, at a location approximately 55 feet southeast of monitoring well MW-4. The shallow depth of the soil contamination and the depth to ground water (greater than 10 feet) suggests that toluene was released at the ground surface. The presence of toluene in the ground water samples collected from monitoring well MW-4 may be related to either releases on the Parker Hannifin Property or from a source hydraulically upgradient of monitoring well MW-4.

At monitoring well MW-7, vinyl chloride was detected at concentrations exceeding the MDEP guidelines for drinking water supplies. Vinyl choloride can be used as a solvent and is also the end product of the biotransformation of tetrachloroethene or trichloroethene. The source(s) for vinyl chloride at this well may include the fill material placed in this area or surface releases prior to the paving of this area. As the monitoring well was installed, soil samples were collected from the unsaturated zone and screened for VOCs. Headspace concentrations of VOCs ranged from 110 to 170 ppm and decreased from the surface to the water table. The trend of decreasing concentrations with depth suggests that the VOCs may have been formerly released to the ground surface at this location.

Table 6. Summary of Organic Soil Analysis Data for
Parker Hannifin Corporation,
Waltham, Massachusetts
January 25, 1989.

Compound mg/kg	Boring Identification S-1	S-3	S-4	S-5
Vinyl Chloride	0.4	ND	ND	ND
1,1,1-Trichloroethane	0.6	ND	ND	ND
Trichloroethene	1.2	ND	ND	0.3
Toluene	ND	ND	0.7	ND

Note: ND = Not Detected at EPA Detection Limit Method 8240

4.2 POTENTIAL RECEPTORS

Based upon our evaluation of the local ground water flow pattern, the ground water at the site discharges to Cram's Cove and the Charles River. Properties located west-southwest of Cram's Cove consist of commercial, industrial and residential properties. Municipal water is provided to these properties by the City of Waltham; the municipal water supply is obtained from the Quabbin Reservoir which is located in central Massachusetts.

Cram's Cove is an embayment of the Charles River. The Charles River is presently classified as a Class B stream and has a designated use as a warm water fishery and primary and secondary contact recreation. This reach of the Charles River is not designated for use as a municipal water supply and based on the surface water samples obtained during this investigation, the water quality in Cram's Cove has not been measurably impacted by the subject site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

In consideration of the data collected during our hydrogeologic site assessment, the following conclusions are presented:

1. The subsurface materials encountered at the site consist of from 4 feet to greater than 12 feet of fill material, which overlies glacial outwash or alluvial deposits. The fill material was found to consist of sand and gravel containing what appears to be coal fragments, brick fragments, metal fragments and mica. The glacial outwash or alluvial deposits encountered beneath the fill consist of fine to coarse sand with some silt. Domestic trash was not encountered in any of the borings although it is expected that the far eastern portion of the site may be constructed on a portion of the former City of Waltham landfill. Bedrock was not encountered in any of the borings.

2. Ground water was encountered at depths ranging from 2.1 to 10.4 feet below the existing grade. Ground water at the site appears to discharge to Cram's Cove and the Charles River. Based on the available water level data, it appears that much of the ground water at the site discharges to Cram's Cove, which in turn discharges to the Charles River. Some ground water mounding may occur at the former City landfill, with contaminants migrating from the landfill to the subject site.

3. Concentrations of dissolved cadmium and mercury were detected in monitoring wells MW-3 and MW-4 at levels greater than the EPA Maximum Concentration Levels (MCL) for these metals in public drinking water supplies.

4. Volatile organic compounds (VOCs) were detected in monitoring wells MW-1, MW-3, and MW-7 at concentrations which exceed the MDEP drinking water guidelines. The VOCs included trichloroethene, vinyl chloride, benzene and/or 1,2-dichloroethane. Each of these VOCs were detected in concentrations exceeding the MDEP guidelines at monitoring well MW-3. Trichloroethene and vinyl chloride were detected at monitoring well MW-1 and vinyl chloride was detected at monitoring well MW-7 in concentrations exceeding the MDEP drinking water guidelines.

5. The results of the laboratory analysis of shallow soil samples collected from a former waste material strorage area indicate the presence of VOCs in soils in the vicinity of monitoring wells MW-3 and MW-4. The VOCs included vinyl chloride, 1,1,1-trichloroethane, trichloroethene and toluene. The limited areal and vertical extent of the VOCs and the documented past use of this area for storage suggests that surface releases of VOCs may have occurred in this area of the Nichols-Division property. Furthermore, other VOC's detected in ground water samples collected from well MW-3 appear to be migrating from the former City of Waltham landfill.

6. Non-aqueous phase liquids (such as petroleum products) were not detected as a separate floating layer on the ground water surface in any of the monitoring wells installed at the site. Volatile organic compounds typically associated with petroleum products, such as benzene, toluene, ethylbenzene and xylenes, were not detected in the ground water at concentrations that would indicate that extensive petroleum contamination exists at the site.

7. The ground water contamination detected at the site does not appear to presently threaten public or private drinking water supplies. Private water supply wells are not known to exist at the site or in the vicinity of the site, since as this area is provided with municipal drinking water. The City of Waltham reportedly obtains it drinking water from the Quabbin Reservoir located in west-central Massachusetts. Conditions at the subject site will not impact this water supply. Ground water at the site is expected to discharge to Cram's Cove and the Charles River. The Charles River is a Class B stream, and is not designated as a municipal drinking water supply. Cram's Cove appears to be a eutropying embayment of the Charles River, and is probably impacted by the former City of Waltham landfill located upstream from the subject site.

8. No significant hazard appears to exist with respect to the potential for the public to come into direct contact with contaminated soils or ground water (i.e., inhalation and/or adsorption exposure routes). Public access to the site is limited and ground water migrates only a short distance before discharging to Cram's Cove or the Charles River.

9. Ground water at the site is not expected to have a measureable impact the quality of surface water quality of Cram's Cove and the Charles River. No VOCs were detected in the samples from Cram's Cove and the metal concentrations were found to decrease significantly when comparing the sample obtained at an upstream location (SW-1) with the sample obtained at the downstream location (SW-2).

10. Pursuant to M.G.L. Chapter 21E, the property may be classified as a Disposal Site by the MDEP. However, using MDEP criteria, the subject property does not appear to be a Priority Disposal Site because:

    a) There is no physical access to areas of contamination. Releases have occurred to the subsurface, therefore limiting the potential for direct contact with hazardous substances.

b) No uncontained, migrating, free-floating oil and/or hazardous materials were encountered at the site.

c) Ground water contamination does not occur within 2000 feet of a municipal water supply well, within a mapped cone of influence of municipal water supply wells or of private water supply wells. No municipal or private water wells are within 2000 feet of the property.

d) There is no evidence of a release of hazardous materials from the propoety to adjacent potable surface water supplies. No contaminants have been detected in significant concentrations in surface water adjacent to the site.

e) There is no evidence of a release to surface water that has resulted in a concentration which exceeds ambient water quality criteria for the protection of aquatic life or human health.

f) There is no threat of fire and/or explosion from the releases at the site. Releases have occurred to the subsurface and the contaminants are found in low concentrations limiting the potential for fires and/or explosions.

g) No air emissions of hazardous materials are anticipated which could adversely impact human or environmental receptors.

h) The release of hazardous materials at the site will not impact the human food chain. No significant concentrations of contaminants have been detected in surface water adjacent to the site (recreational fishing) and no crops are grown on the property thus limiting any potential impact to the food chain.

11. Based on our present knowledge of the site, we recommend the implementation of actions to limit the potential for any future releases to the environment. (i.e., implementation of a tank management plan.) Based on our present knowledge of the site conditions and evaluation of the risks posed to human health and the environment, it does not appear that significant additional investigations or long-term remedial actions are warranted, with the exception of confirmatory monitoring.

12. We recommend that the Massachusetts Department of Environmental Protection (MDEP) be notified that evidence of past releases of hazardous materials has been discovered at the site, in accordance with the Massachusetts Oil and Hazardous Materials Release Prevention Act, Section 7, and that a copy of this report be provided to the MDEP for review.

6.0 LIMITATIONS

The purpose of this investigation was to assess the potential environmental liabilities at the subject site, with respect to Massachusetts General Law Chapter 21E, based on a limited number of test borings, monitoring wells and chemical analyses. The conclusions presented in this report are based only on the observations made during this investigation and data provided by others. The report presents a description of the subsurface conditions observed at each test pit and boring location conducted during this investigation. The subsurface conditions at other locations may vary significantly from those observed during this investigation. The subsurface conditions may also vary significantly from those observed during this investigation. The subsurface conditions may also vary with time, particularly with respect to ground water elevations and ground water quality. Should any additional data become available, these data should be reviewed by TWMNE and the conclusions presented herein modified, as appropriate.

Information provided by others was utilized in assessing the site conditions. The accuracy of conclusions drawn from this information is inherently based on the accuracy of the information that was provided. No attempts were made to check the compliance of the present or past owners of the site with federal, state or local laws and regulations.

This report has been prepared exclusively for Parker Hannifin Corporation in accordance with TWMNE's Standard Terms and Conditions. No other warranty, expressed or implied, is made.

7.0 REFERENCES

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Appendix E

"Response Action Outcome Statement and Supporting Documentation, Parker Hannifin Corporation," prepared by Handex of New England, August 9, 1996.

RESPONSE ACTION OUTCOME STATEMENT AND SUPPORTING DOCUMENTATION

Parker Hannifin Corporation
Nichols Aircraft Division
48 Woerd Avenue
Waltham, Massachusetts
MADEP Case #3-3260

August 9, 1996

Prepared For:

Parker Hannifin Corporation
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Handex®

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Parker Hannifin Corporation
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MADEP # 3-3260

1.0 INTRODUCTION

This information is provided in support of a Class A-3 Response Action Outcome (RAO) Statement. This document applies to the disposal site as described below, and it is the second RAO that has been prepared for this location. A Method 3 Risk Characterization, based on 310 CMR 40.0990, was performed to determine if a condition of No Significant Risk exists at the subject site. The Risk Characterization was conducted with an Activity and Use Limitation (AUL) consideration. The RAO does not address silver impacted groundwater. Parker Hannifin Corporation filed a Downgradient Property Status (DPS) due to an apparent upgradient source.

2.0 SITE DESCRIPTION

The subject property is located at 48 Woerd Avenue in the City of Waltham, Massachusetts and consists of approximately 11.5 acres of land. The property boundaries were determined using City of Waltham Assessor's Map (Map 76, Lots 20-28) and are shown on Figure 2, Site Information Map. Figure 1, Locus Map, illustrates the property in relation to surrounding topography and drainage. Cove Street bisects the property from east to west. The Nichols Aircraft Division manufacturing building is located in the northern segment of the property and abuts residential properties consisting of condominiums and apartments. The southern segment of the property is an open space which previously contained a Mica processing building, an engineering building, two storage buildings and a boiler building. All of the facilities on the southern sections of the property were demolished and removed in 1995.

The disposal site does not encompass soil borings GP-7, GP-8, and GP-37 through GP-41 that are located on City of Waltham property as shown on Figure 3, Soil Boring Locations. A recent professional survey of Parker Hannifin property revealed that the property boundary was approximately 36 feet east of the assumed property boundary. As a result, soil borings GP-7, GP-8, and GP-37 through GP-41 are located on City of Waltham property. The City of Waltham property, as described in Section 3.0, is a former landfill with Massachusetts Department of Environmental Protection (MADEP) Solid Waste Registration # SL00308.004. This RAO does not encompass investigated areas of the City of Waltham property as there are no known releases to this property from the Parker Hannifin site. In addition, the City of Waltham property is adequately regulated under the

Massachusetts Solid Waste Regulations as defined in 310 CMR 40.0110.

3.0 SURROUNDING PROPERTIES

The site is situated within an area of Waltham with dense residential and commercial development. The northern portion of the site is bound by residential properties to the north, a former City of Waltham municipal landfill to the east, Cove Street to the south and Woerd Avenue to the west. The southern portion of the site is bounded by the former City of Waltham Landfill to the east, Crams Cove (an embayment of the Charles River) to the south, Woerd Avenue to the west and Cove Street to the north. The Charles River is located approximately 50 feet west of the site.

4.0 REGULATORY STATUS

The site was listed by the MADEP as a Location to be Investigated (LTBI) on July 12, 1990, based on the discovery of Volatile Organic Compounds (VOCs) and metals in shallow groundwater and soil in the southwest portion of the property. In addition, Release Tracking Number (RTN #3-10944) was assigned to a portion of the site containing a #2 fuel oil underground storage tank (UST). A #2 fuel oil release was discovered during tank removal activities on April 30, 1994. Remedial actions were undertaken and an RAO statement for RTN #3-10944 was filed with the MADEP on August 26, 1994. The following additional documents have been submitted to the MADEP for Case #3-3260:

Document Title	Document Date
Phase II Hydrogeological Site Assessment by TWMNE	January 1990
Release Abatement Measure Plan by Handex	May 1996
Downgradient Property Status by Handex	June 1996

The following reports have also been prepared for Parker Hannifin but have not been submitted to the MADEP:

Document Title	Document Date
Phase I Investigation by TWMNE	December 1987
Environmental Site Assessment by AET	December 1993
Phase II Site Investigation by Handex	November 1994

TWMNE represents TWM Northeast/Normandeau Engineers, Inc. and AET represents Atlantic Environmental Technologies, Inc.

5.0 POTENTIAL RECEPTORS

The site and surrounding properties are serviced by the City of Waltham municipal water supply system. The municipal water supply is obtained from the Quabbin Reservoir which is located in central Massachusetts. There are no documented public or private drinking water supply wells within 1/2 mile of the site.

The site is not located within a potentially productive aquifer, a sole source aquifer, a MADEP-approved wellhead protection area (Zone II) or Interim Wellhead Protection Area (IWPA). The nearest surface water bodies are Crams Cove (an embayment of the Charles River) which abuts the site to the south and the Charles River which is approximately 50 feet west of the site.

There are several residential properties in the vicinity of the site. No schools, day-care centers, or agricultural areas are located within 500 feet of the site. No Areas of Critical Environmental Concern (ACEC) or NHESP Estimated Habitats of Rare Wetlands Wildlife are located within 1/2 mile of the site. However, several areas classified as Open Space and Recreational Facilities are located within 1/2 mile of the site. Refer to Appendix A for a MADEP 21E Geographic Information Systems (GIS) Map for the relative location of the Open Space and Recreational Facility.

6.0 DOWNGRADIENT PROPERTY STATUS

A Downgradient Property Status (DPS), pursuant to 310 CMR 40.0180, was filed by Parker Hannifin in June of 1996. The DPS was filed based on concentrations of dissolved silver in groundwater samples collected from monitoring wells MW-3A and MW-4 on March 5, 1996. The location of monitoring wells MW-3A and MW-4 are shown on Figure 2. The silver concentrations were 36 μg/l and 49 μg/l, respectively. Monitoring wells MW-3A and MW-4 are located near the southeast property boundary which abuts the former Woerd Avenue Landfill owned by the City of Waltham. Monitoring wells MW-3A and MW-4 are located upgradient of historical known release areas at the site and downgradient of the former landfill.

On June 13, 1996 monitoring well MW-4 was re-sampled for laboratory analysis of dissolved silver. Groundwater quality results indicated non-detectable (<7 μg/l) concentrations of dissolved silver.

7.0 SITE GEOLOGY

The lithology at the site was characterized during assessment activities conducted by Handex in 1994. The eastern portion of the site is underlain mainly with fill material such as paper,

glass, metal products, wood, ash, cinders, cement and building debris mixed with brown fine to coarse sand and gravel. Samples obtained south of the former Mica building consisted of discarded mica to a depth of approximately 12 feet in the area of the boiler room and 4 feet in the area adjacent to Crams Cove. Below the mica was brown and black fine to coarse sand and gravel. Geoprobe locations north and west of the Parker Nichols building exhibited brown and black fine to coarse sand and gravel with some silt. Bedrock was not observed during soil borings conducted at the site. Soil boring logs are provided as Appendix B.

8.0 OIL OR HAZARDOUS MATERIALS (OHM)

Environmental assessment activities have been conducted at this site since 1987. Metals and VOCs historically detected in site groundwater samples are listed below; historical groundwater quality data are summarized in Tables 1 and 2.

Volatile Organic Compounds
acetone
benzene
chlorobenzene
chloroethane
chloroform
1,1-dichloroethane
1,2-dichloroethane
1,2-dichlorethenes
ethylbenzene
methylene chloride
tetrachloroethene
1,1,1-trichloroethane
trichloroethene
trichlorofluoromethane
toluene
xylenes
vinyl chloride
1,4-dichlorobenzene
1,2-dichlorobenzene
cis-1,2-dichloroethane
chloroethane
methyl tertiary butyl ether

Metals (total and dissolved)
antimony
arsenic
barium
beryllium
cadmium
chromium
copper
lead
mercury
nickel
selenium
silver
zinc

Extensive soil sampling has been conducted by Handex at the site. Historical OHM

detected in site soil samples are listed below; historical soil quality data are summarized in Tables 3 through 5.

PAHs	VOCs	Metals
acenaphthene	benzene	arsenic
acenaphthylene	chlorobenzene	barium
anthracene	1,2-dichlorobenzene	cadmium
benzo(a)anthracene	1,1-dichloroethene	chromium
benzo(a)pyrene	ethylbenzene	lead
benzo(b)fluoranthene	tetrachloroethylene	mercury
benzo(k)fluoranthene	toluene	selenium
benzo(ghi)perylene	1,1,1-trichloroethane	silver
chrysene	trichloroethylene	
dibenzo(ah)anthracene	vinyl chloride	
fluoranthene	xylenes	
fluorene		
indeno(123-cd)pyrene		
naphthalene		
pyrene		
phenanthrene		

9.0 MONITORING WELL GAUGING

Groundwater gauging events conducted by Parker Hannifin in 1988 and 1993 indicated a local groundwater flow direction of west and southwest across the site. On March 18, 1996, Handex surveyed the elevations of the monitoring wells and measured the depth to groundwater using an electronic interface probe. As summarized in Table 6, the depth to groundwater ranged from 1.65 feet below grade in MW-11 to 8.69 feet in MW-3 and MW-4. The well gauge data indicated a local groundwater flow direction to the west and southwest as illustrated on Figure 2. All groundwater elevations are based on a known point which was set as an arbitrary datum of 100 feet.

10.0 SUMMARY OF RECENT GROUNDWATER QUALITY DATA

Groundwater samples were obtained from eight monitoring wells (MW-1, MW-2, MW-3A, MW-4, MW-7, MW-8, MW-10 and MW-11) on March 5, 1996. Monitoring wells MW-3 and MW-5 were inaccessible to sampling, MW-6 had been destroyed and MW-9 is located on private property not accessible to sampling. The locations of all wells are depicted on Figure 2. All samples were transported to a MADEP certified environmental laboratory under Chain of Custody protocol and analyzed for dissolved metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Dissolved metals detected in site

groundwater samples included arsenic, barium, lead and silver. Groundwater analytical data from the sampling activities conducted on March 5, 1996, are summarized in Table 2 and the laboratory analytical reports are attached as Appendix C. Monitoring well MW-4 was re-sampled on June 13, 1996 and analyzed at a certified environmental laboratory for Polycyclic aromatic hydrocarbons (PAHs) and dissolved silver. Groundwater quality data indicated concentrations of PAHs and silver below laboratory analytical detection limits.

Analysis of VOCs was not conducted in the latest round of groundwater sampling. Referring to Table 1, VOC levels have decreased since 1987. The last two rounds of groundwater samples that were analyzed for VOCs, conducted in 1993 and 1994, indicated that concentrations of VOCs were below Method 1 Risk Characterization Groundwater Category GW-2 and GW-3 standards.

11.0 SUMMARY OF SOIL QUALITY DATA

Soil borings were advanced using Geoprobe drilling techniques in July 1994, April 1995 and March 1996. Samples were collected from a total of 45 locations (GP-1 through GP-44 and MW-3A) shown on Figure 3. Soil samples were submitted to a certified environmental laboratory under chain of custody protocol and analyzed for VOCs, PAHs, Total Petroleum Hydrocarbons (TPH) and metals. Soil quality data are summarized in Tables 3, 4 and 5. March 1996 laboratory analytical reports are attached as Appendix D. Referencing Table 5, TPH concentrations in soil samples GP-7, GP-12, GP-44 and MW-3A exceeded the Upper Concentration Limit (UCL) for soil. These areas were excavated as part of a Release Abatement Measure (RAM) discussed in Section 13. All other OHM detected in on-site soil were below the UCLs.

12.0 BACKGROUND OHM CONCENTRATIONS

Subsurface investigations have revealed that a majority of the site is underlain with layers of fill material consisting of wood, ash, cinders and building debris. The fill material is more prominent in the eastern portion of the site and decreases from easterly to westerly across the site. The identification of fill material is critical in determining background concentrations of OHM at the site. The MCP defines "background" as those levels of oil and hazardous material that would exist in the absence of the disposal site of concern which are:

(a) ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern; and

(b) attributable to geologic or ecologic conditions, atmospheric deposition of industrial processes or engine emissions, fill materials containing wood or coal ash, releases to groundwater from a public water supply system, and/or petroleum residues that are incidental to the normal operation of motor vehicles.

The western portion of the site is underlain with fill material at depths ranging from 1 to 12 feet below grade. The fill consists of ash and wood debris. Soil borings GP-35 and GP-36 in the central portion of the site revealed fill material at depths between 1 and 9 feet which consisted of ash and fill debris. Soil boring GP-31 in the southwest corner of the site revealed fill materials at depths of 1 to 5 feet. On the western side of the site, the fill material decreases in thickness from 4 feet thick to 1 feet in a south to north direction across the site. Several borings along the northern portion of the site did not contain fill material. Based on subsurface lithology, the following sample locations were chosen to represent background: GP-15 through GP-20, GP-31, GP-32, GP-34, GP-35 and GP-36. Boring logs for the background samples are attached as Appendix B. The background samples were selected based on the presence of fill material in the subsurface as well as an upgradient location on the property that was representative of background. OHM evaluated in the background samples included PAHs, TPH and eight heavy metals. The compounds detected in these borings represent background concentrations of OHM related to historic fill materials. Table 7 summarizes soil quality data collected from the background soil sample locations including average and median concentrations.

The background levels of VOCs in groundwater were considered to be below analytical detection limits. Metals in groundwater were compared against MADEP calculated background levels which are presented in "Background Documentation For the Development of the MCP Numerical Standards, 1994 ". The most recent round of metals analysis indicates that dissolved arsenic and silver concentrations in several monitoring wells are above those that could be considered background.

Background concentrations of PAHs in groundwater are expected to be below laboratory analytical detection limits. Laboratory analysis of a groundwater sample collected from monitoring well MW-4 on June 13, 1996 indicated PAH concentrations below laboratory analytical detection limits. The MADEP has not derived urban and/or residential PAH background concentrations for groundwater.

13.0 RESPONSE ACTIONS

Response actions conducted relative to MADEP RTN #3-3260 include soil excavation as part of a RAM Plan submitted to the MADEP on May 3, 1996. The RAM consisted of soil excavation in areas of the site where TPH concentrations exceeded the UCL for soil. As shown on Figure 6, Release Abatement Measure Soil Excavation Locations, soil was

excavated in three discrete locations to depths of eight to ten feet below grade. Soil samples were screened for VOCs using an HNu photoionization detector and the jar head-space technique. Soil exhibiting visual evidence of TPH impact and elevated headspace VOC concentrations was stockpiled for future disposal at a licensed facility. Post excavation soil samples were also screened for TPH with a PetroFlag Hydrocarbon Test Kit calibrated to a #2 fuel oil standard. If the TPH screening results were less than 1,000 parts per million (ppm), a base of excavation soil sample was collected for laboratory analysis.

A total of approximately 40 yards of soil was stockpiled on plastic sheeting and covered with same. A composite soil stockpile sample was collected and analyzed for future acceptance to an asphalt batching facility for disposal. All three excavation areas were backfilled with clean fill material, graded and re-seeded.

A base of excavation soil sample was collected from each excavation prior to backfilling. Each soil sample was analyzed at a certified environmental laboratory for TPH by EPA Method 418.1. Select soil samples were additionally analyzed for PAHs and TPH by EPA Method 8100. Post excavation soil quality results are summarized in Table 8 and a copy of the laboratory analytical results are attached as Appendix E. Referring to Table 8, TPH concentrations ranged from 260 mg/kg to 1,600 mg/kg and PAHs were detected at concentrations which were less than the UCL for soil. TPH analysis by Method 8100 classified the petroleum as indicative of heavy oil and gasoline.

On June 14, 1996 the stockpiled soil was transported by Franklin Environmental Services, Inc. to American Reclamation Corporation (AMREC) of Charlton Massachusetts for incorporation into an asphalt batch process. A total of 60.64 tons of soil was transported to AMREC. The MADEP Bill of Lading used for management of the soil is attached as Appendix F.

Release Abatement Measure activities were conducted prior to a professional survey of the Parker Hannifin property boundaries. A professional property boundary survey conducted in July 1996 revealed that the Parker Hannifin property boundaries were approximately 36 feet east of the assumed property boundary. As a result, Soil Excavation #1 was actually on City of Waltham property.

14.0 ACTIVITY AND USE LIMITATION (AUL)

An AUL, pursuant to 310 CMR 40.1070, has been filed for portions of this property. The AUL has been filed to restrict current and future human exposure to OHM impacted subsurface soil at the site. In reducing human exposure to site OHM, the overall potential harm to the public is reduced.

The AUL has been applied to two portions of the property (hereinafter referred to as "Portions of the Property"). The Portions of the Property, designated as AUL Portion "1" and AUL Portion "2" are shown on Figure 4, Activity and Use Limitation Locations.

In general, the AUL prevents future site development for residential, outdoor recreational and child-care purposes on Portions of the Property. By restricting residential, outdoor recreational and child-care type uses, potentially sensitive human receptors (i.e. children) and potential high-impact exposure scenarios (i.e. children playing in contaminated soil) are eliminated from the risk assessment process.

Further land-use restrictions are also applied to Portions of the Property. Portions of the Property contain PAH concentrations in soil which are above Soil Category 3 (S-3) standards as listed in 310 CMR 40.0975(6)(c). Additional land use restrictions on Portions of the Property are applied to address potential human exposures from construction activities (soil excavation) and unauthorized site visitors such as neighborhood residents. AUL Portion "1" and "2" are enclosed by a chain-linked fence which will be maintained and secured. Any future soil excavation work conducted on Portions of the Property will be performed under the supervision of a Licensed Site Professional (LSP). Construction workers involved with soil excavation on Portions of the Property will be required to wear, at a minimum, Level "D" personal protective equipment (PPE) pursuant to 29 CFR 1910.120. PPE grades would be based on appropriate site monitoring. Utilization of appropriate PPE will prevent human exposure to OHM impacted soil.

15.0 RISK CHARACTERIZATION

A Method 3 Risk Characterization, as described in 310 CMR 40.0990, was used to characterize the risk of harm to health, public welfare and the environment. The human health risk assessment estimated non-carcinogenic risks, represented as the Hazard Indices (HI), and carcinogenic risks, represented as the Excess Lifetime Cancer Risks (ELCR) associated with current and reasonably foreseeable site use.

The risk characterization evaluated human health risks associated with exposure to subsurface soil in Exposure Area #3, as shown on Figure 5. Exposure to soils in Exposure Areas #1, #2 and #4 were not evaluated. Exposure Areas #1 and #2 are restricted with an AUL, as described in Section 14.0 and OHM in Exposure Area #4 are considered representative of background. The risk characterization also evaluated exposure to OHM vapors that could potentially migrate from groundwater to indoor air.

Five hypothetical human exposure scenarios were evaluated. These exposure scenarios are listed below:

Scenario #1: Future On-Site Resident (Child)
Scenario #2: Future On-Site Resident (Adult)
Scenario #3: Future Construction Worker
Scenario #4: Future Utility Line Worker
Scenario #5: Current & Future On-Site Factory Worker

The Hazard Index and Excess Lifetime Cancer Risk that was calculate for each exposure scenario is summarized in the table below.

Exposure Scenario #	Hazard Index	ELCR
1	7.3×10^{-4}	3.0×10^{-6}
2	1.6×10^{-4}	2.0×10^{-6}
3	5.5×10^{-4}	4.0×10^{-7}
4	4.9×10^{-5}	6.0×10^{-7}
5	0.033	4.0×10^{-6}
MCP Risk Limits	1.0	1×10^{-5}

Referring to the above table, the Hazard Indices for each exposure scenario are two to five orders of magnitude less than the MCP non-carcinogenic risk limit of 1.0. The Excess Lifetime Cancer Risk for each exposure scenario is also less than the MCP carcinogenic risk limit of 1×10^{-5}.

Risk to safety and public welfare was also evaluated. Current OHM concentrations in subsurface soil are below the Upper Concentration Limits (UCL). There are no open pits or lagoon, no rusted or corroded hazardous waste drums and no reports of odors emanating from the site.

A Stage I Environmental Screening, pursuant to 310 CMR 40.0095, was conducted to evaluate potential impacts to environmental receptors. The environmental screening is presented in the Method 3 Risk Characterization. Conclusions of the environmental screening are presented below.

1. There is no evidence of past or present releases to environmental receptors.
2. There is negligible groundwater migration potential of OHM to environmental receptors.
3. There is minimal potential for surface runoff of OHM to environmental receptors.
4. There is no visible evidence of stressed vegetation due to OHM at the site.

5. Environmental conditions at the site supports a conclusion that there is minimal potential for impacts to aquatic and terrestrial habitats and organisms.

Based on the Stage I Environmental Screening, a condition of No Significant Risk to environmental receptors has been achieved for this location.

16.0 EXTENT OF REDUCTION TO BACKGROUND

An evaluation of achieving background concentrations can be summarized by the following:

Background concentrations for OHM encountered in the soil at the site are summarized in Table 7. The risk characterization evaluated four potential exposure areas at the site. Of the four exposure areas, one is consistent with background (Area #4) and two are restricted with an AUL (Areas #1 and #2) and contain OHM levels greater than background. Area #3 does not contain fill material, therefore OHM concentrations in soil can not be related to site specific background levels. As a result, the OHM in Area #3 are compared against MADEP derived background levels for PAHs (0.5 mg/kg). As described in the Method 3 risk characterization, OHM levels in Area #3 do not pose a threat to the environment or human health. Background concentrations for volatile organic compounds in groundwater are presumed to be below laboratory analytical detection limits. Metal concentrations in groundwater are compared against background concentrations presented in "Background Documentation For the Development of the MCP Numerical Standards, April, 1994 ". Dissolved arsenic and silver concentrations are above background in several monitoring wells.

The financial costs associated with further remediation responses are not justified. Current concentrations of OHM in Areas #1 and #2 are above background but the land is restricted through the implementation of an AUL. OHM in Area #3 soil is above MADEP derived background levels. The combined square footage of Areas #1, #2 and #3 is substantial. The cost of remediating these areas via technologies proven to be effective in remediating the types of OHM found at the site (i.e., soil excavation) is considerable. OHM in these two areas have low mobility and will likely continue approaching background levels through natural processes (i.e., biodegradation).

17.0 CONCLUSIONS

The following conclusions were reached based on the Method 3 Risk Characterization of site conditions at 48 Woerd Avenue in Waltham, Massachusetts:

1. A Method 3 Human Health Risk Characterization determined that non-carcinogenic and carcinogenic risks for current and future site uses are less than the promulgated MCP risk

criteria.

2. The site does not pose a risk to safety and public welfare.

3. A Stage I Environmental Screening concluded that a condition of No Significant Risk to environmental receptors exists.

4. A Condition of No Significant Risk to human health and the environment exists.

LIMITATIONS

Parker Hannifin Corporation ("Client") and those who may use or rely upon the report and the work performed by Handex (hereafter "Report") expressly accepts the Report upon the following specific conditions. The Report is based upon a limited investigation and analysis of the site on the dates performed as specifically described. Changes in use, tenants, work practices, storage, federal, state or local laws, rules or regulations may affect the Report. The Report is based in part upon the documents and statements of persons, including Client, and their representations, if inaccurate, may affect the conclusions of the Report. Other than as described, no other investigation or analysis has been requested by the Client or performed by Handex for the site Report. Handex assumes no responsibility or liability for the failure to discover or otherwise locate any type of contamination, defect or information which would lead to discovery of contamination or a defect in, at or near the site for any reason whatsoever or for accuracy and reliance upon drawings, reports or statements obtained, received or reviewed.

Table 1
Groundwater Quality Data
Historical VOC Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

Parameter / Dates	MW-1				MW-2				MW-3			
	1	2	4	5	1	2	4	5	1	2	4	5
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	TR	ND	320	ND
Benzene	ND	ND	ND	ND	ND	TR	ND	ND	30	9	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	110	18	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	1,300	940	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	ND	ND
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	600	541	ND	ND
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	13	11	ND	ND
1,2-Dichloroethenes	12	15	ND	ND	ND	ND	ND	ND	44	14	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	10	TR	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	160	69	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	29	ND	ND
Trichloroethene	14	11	ND	36	ND	ND	ND	ND	6	9	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	35	ND	ND
Toluene	ND	TR	ND	ND	ND	ND	ND	ND	20	12	ND	ND
M,P,O-Xylenes	ND	ND	ND	11	ND	ND	ND	ND	61	35	ND	ND
Vinyl Chloride	4	11	ND	ND	ND	ND	ND	ND	7	29	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	ND
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cis-1,2-Dichloroethene	NS	NS	7	ND	NS	NS	ND	ND	NS	NS	ND	ND
MTBE	NS	NS	ND	ND	NS	NS	19	ND	NS	NS	23	ND
Chloroethene	NS	NS	ND	ND	NS	NS	ND	ND	NS	NS	55	ND

1 = November 30, 1987
2 = August 25-26, 1988
3 = September 1, 1988
4 = 1993
5 = August 3, 1994

ND = Not detected
NS = Not sampled
TR = Trace
Concentractions reported as $\mu g/l$ (parts per billion)
MTBE represents methyl tertiary butyl ether

- Continued -

Table 1

Groundwater Quality Data
Historical VOC Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

Parameter / Dates	MW-4				MW-5				MW-6			
	1	2	4	5	1	2	4	5	1	2	4	5
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	TR	ND	ND	ND
Benzene	3	4	ND	ND	<2	2	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	300	357	ND	ND	30	26	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	<5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	ND
Toluene	10	TR	ND	ND	3	TR	ND	ND	ND	ND	ND	ND
M,P,O-Xylenes	<2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cis-1,2-Dichloroethene	NS	NS	ND	ND	NS	NS	ND	ND	NS	NS	ND	ND
MTBE	NS	NS	10	ND	NS	NS	ND	ND	NS	NS	ND	ND
Chloroethene	NS	NS	88	ND	NS	NS	ND	ND	NS	NS	ND	ND

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4 = 1993
5 = August 3, 1994

ND = Not detected
NS = Not sampled
TR = Trace
Concentrations reported as µg/l (parts per billion)
MTBE represents methyl tertiary butyl ether

- Continued -

Table 1

Groundwater Quality Data
Historical VOC Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

Parameter / Dates	MW-7				MW-8				MW-9			
	2	3	4	5	2	3	4	5	2	3	4	5
Acetone	TR	ND	ND	ND	ND	42	ND	ND	ND	ND	NS	ND
Benzene	2	ND	ND	ND	ND	2	ND	ND	ND	ND	NS	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Chloroform	TR	ND	ND	ND	TR	6	ND	ND	ND	ND	NS	ND
1,1 Dichloroethane	5	ND	ND	ND	5	14	ND	ND	ND	ND	NS	ND
1,2 Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
1,2-Dichloroethenes	17	14	ND	ND	ND	TR	ND	ND	ND	ND	NS	ND
Ethylbenzene	ND	ND	ND	ND	9	4	ND	ND	ND	ND	NS	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Trichloroethene	4	4	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Toluene	ND	ND	ND	ND	ND	8	ND	ND	ND	ND	NS	ND
M,P,O-Xylenes	4	4	ND	ND	50	21	ND	ND	ND	ND	NS	ND
Vinyl Chloride	16	10	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND
Cis-1,2-Dichloroethene	NS	NS	7	ND	NS	NS	ND	ND	ND	ND	NS	ND
MTBE	NS	NS	ND	ND	NS	NS	ND	ND	ND	ND	NS	ND
Chloroethene	NS	NS	ND	ND	NS	NS	ND	ND	ND	ND	NS	ND

1 = November 30, 1987
2 = August 25-26, 1988
3 = September 1, 1988
4 = 1993
5 = August 3, 1994

ND = Not detected
NS = Not sampled
TR = Trace
Concentractions reported as µg/l (parts per billion)
MTBE represents methyl tertiary butyl ether

- Continued -

Table 1

Groundwater Quality Data
Historical VOC Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

Parameter / Dates	MW-10				MW-11
	2	3	4	5	5
Acetone	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND
1,1 Dichloroethane	ND	ND	ND	ND	33
1,2 Dichloroethane	ND	ND	ND	ND	ND
1,2-Dichloroethenes	ND	5	ND	ND	ND
Ethylbenzene	TR	ND	ND	10	81
Methylene Chloride	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	110
M,P,O-Xylenes	ND	ND	ND	50	470
Vinyl Chloride	ND	TR	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND	ND
Cis-1,2-Dichloroethene	NS	NS	9	ND	ND
MTBE	NS	NS	ND	ND	ND
Chloroethene	NS	NS	ND	ND	ND

1 = November 30, 1987
2 = August 25-26, 1988
3 = September 1, 1988
4 = 1993
5 = August 3, 1994

ND = Not detected
NS = Not sampled
TR = Trace
Concentractions reported as ug/l (ppb)
-- = Groundwater Standard not established

MTBE represents methyl tertiary butyl ether

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Table 2
Groundwater Quality Data
Historical Metals Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

PARAMETER	MW-1					MW-2					MW-3				
DATES	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
ANTIMONY	41	NS	NS	NS	NS	42	NS	NS	NS	NS	75	<60	NS	NS	NS
ARSENIC	39	NS	NS	<5.0	<50	319	NS	NS	16	14	600	17	NS	35	NS
BERYLLIUM	10	NS	NS	NS	NS	11	NS	NS	NS	NS	7	<5	NS	NS	NS
CADMIUM	5	NS	ND	<10	<10	<4	NS	ND	<10	<10	36	17	ND	92	NS
CHROMIUM	214	NS	NS	12	<10	355	NS	NS	11	<10	368	<20	NS	70	NS
COPPER	443	NS	NS	NS	NS	784	NS	NS	NS	3.6	5,000	13	NS	NS	NS
LEAD	501	NS	ND	68	<3.0	8,120	NS	ND	160	NS	1,570	<50	ND	2,900	NS
MERCURY	7.8	NS	NS	<0.50	<0.50	7.3	NS	NS	<0.50	<0.50	4.2	2	NS	0.70	NS
NICKEL	216	NS	NS	NS	NS	200	NS	NS	NS	NS	419	36	NS	NS	NS
SELENIUM	<5	NS	NS	<5.0	<5.0	<5	NS	NS	<5.0	<5.0	<5	<5	NS	<5.0	NS
SILVER	<5	NS	NS	<30	<10	<5	NS	NS	<30	<10	138	<10	NS	160	NS
THALLIUM	<5	NS	NS	NS	NS	<5	NS	NS	NS	NS	<5	NA	NS	NS	NS
ZINC	3,670	NS	ND	NS	NS	4,840	NS	50	NS	NS	1,400	101	50	NS	NS
BARIUM	NS	NS	NS	<200	<50	NS	NS	NS	850	810	NS	43,000	NS	24,000	NS

1 = November 30, 1987 - Total Recoverable Metals
2 = August 25, 1988 - Dissolved Metals
3 = 1993 - Total Recoverable Metals
4 = August 3, 1994 - Total Recoverable Metals
5 = March 5, 1996 - Dissolved Metals

ND = Not detected
NS = Not sampled
Concentrations reported as ug/l (ppb)

- Continued -

Table 2
Groundwater Quality Data
Historical Metals Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

PARAMETER / DATES	MW-4					MW-5					MW-6				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
ANTIMONY	167	<60	NS	NS	NS	<25	<60	NS	NS	NS	<25	<60	NS	NS	NS
ARSENIC	1,640	<5	NS	19	<5.0	40	<5	NS	NS	NS	30	<5	NS	35	NS
BERYLLIUM	54	<5	NS	NS	NS	<3	<5	NS	NS	NS	5	<5	NS	NS	NS
CADMIUM	149	12	ND	13	<10	15	<10	NS	NS	NS	13	<10	ND	<10	NS
CHROMIUM	1,730	<20	NS	16	<10	106	<20	NS	NS	NS	118	<20	NS	76	NS
COPPER	2,790	16	NS	NS	NS	1,050	<10	NS	NS	NS	436	<10	NS	NS	NS
LEAD	3,520	<50	26	76	<3.0	2,350	<50	NS	NS	NS	847	<50	ND	430	NS
MERCURY	1.9	0.2	NS	<0.50	<0.50	<.2	<0.2	NS	NS	NS	<.2	<0.2	NS	<0.50	NS
NICKEL	3,780	37	NS	NS	NS	646	<10	NS	NS	NS	102	<10	NS	NS	NS
SELENIUM	<5	<5	NS	<5.0	<5.0	<5	<5	NS	NS	NS	<5	<5	NS	<25	NS
SILVER	<5	<10	NS	43	49	<5	<10	NS	NS	NS	<5	<10	NS	<30	NS
THALLIUM	<5	NA	NS	NS	NS	<5	<NA	NS	NS	NS	<5	NA	NS	NS	NS
ZINC	7,030	89	50	NS	NS	3,410	43	NS	NS	NS	8,810	28	50	NS	NS
BARIUM	NS	6,600	NS	6,900	9,100	NS	660	NS	NS	NS	NS	43	NS	480	NS

1 = November 30, 1987 - Total Recoverable Metals
2 = August 25, 1988 - Dissolved Metals
3 = 1993 - Total Recoverable Metals
4 = August 3, 1994 - Total Recoverable Metals
5 = March 5, 1996 - Dissolved Metals

ND = Not detected
NS = Not sampled
Concentrations reported as ug/l (ppb)

- Continued -

Table 2
Groundwater Quality Data
Historical Metals Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

PARAMETER	MW-7				MW-8				MW-9			
DATES	2	3	4	5	2	3	4	5	2	3	4	5
ANTIMONY	NS	NS	NS	NS	<60	NS	NS	NS	NS	NS	NS	NS
ARSENIC	NS	NS	37	<5.0	<5	NS	52	<5.0	NS	NS	NS	NS
BERYLLIUM	NS	NS	NS	NS	<5	NS	NS	NS	NS	NS	NS	NS
CADMIUM	NS	ND	55	<10	<10	ND	<10	<10	NS	NS	NS	NS
CHROMIUM	NS	NS	390	<10	<20	NS	28	<10	NS	NS	NS	NS
COPPER	NS	NS	NS	NS	<10	NS	NS	NS	NS	NS	NS	NS
LEAD	NS	ND	2,800	<3.0	<50	9	180	<3.0	NS	NS	NS	NS
MERCURY	NS	NS	0.60	<0.50	0.5	NS	<0.50	<0.50	NS	NS	NS	NS
NICKEL	NS	NS	NS	NS	<10	NS	NS	NS	NS	NS	NS	NS
SELENIUM	NS	NS	<50	<5.0	<5	NS	7	<5.0	NS	NS	NS	NS
SILVER	NS	NS	<50	<10	<10	NS	<30	NS	NS	NS	NS	NS
THALLIUM	NS	NS	NS	NS	NA	NS	NS	NS	NS	NS	NS	NS
ZINC	NS	40	NS	NS	51	50	NS	NS	NS	NS	NS	NS
BARIUM	NS	NS	660	430	210	NS	<200	230	NS	NS	NS	NS

1 = November 30, 1987 - Total Recoverable Metals
2 = August 25, 1988 - Dissolved Metals
3 = 1993 - Total Recoverable Metals
4 = August 3, 1994 - Total Recoverable Metals
5 = March 5, 1996 - Dissolved Metals

ND = Not detected
NS = Not sampled
Concentrations reported as ug/l (ppb)

- Continued -

Table 2
Groundwater Quality Data
Historical Metals Concentrations
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts

PARAMETER	MW-10				MW-11		MW-3A
DATES	2	3	4	5	4	5	5
ANTIMONY	NS	NS	NS	NS	NS	NS	NS
ARSENIC	NS	NS	15	<5.0	82	11	7.1
BERYLLIUM	NS	NS	NS	NS	NS	NS	NS
CADMIUM	NS	ND	<10	<10	22	<10	<10
CHROMIUM	NS	NS	51	<10	700	<10	<10
COPPER	NS	NS	NS	NS	NS	NS	NS
LEAD	NS	26	210	<3.0	790	<3.0	<3
MERCURY	NS	NS	0.70	<0.50	0.60	<0.50	<0.5
NICKEL	NS	NS	NS	NS	NS	NS	NS
SELENIUM	NS	NS	<25	<5.0	<50	<5.0	<5.0
SILVER	NS	NS	<30	<10	<50	<10	36
THALLIUM	NS	NS	NS	NS	NS	NS	NS
ZINC	NS	40	NS	NS	NS	NS	NS
BARIUM	NS	NS	270	240	2,200	510	6,000

1 = November 30, 1987 - Total Recoverable Metals
2 = August 25, 1988 - Dissolved Metals
3 = 1993 - Total Recoverable Metals
4 = August 3, 1994 - Total Recoverable Metals
5 = March 5, 1996 - Dissolved Metals

ND = Not detected
NS = Not sampled
Concentrations reported as ug/l (ppb)

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Table 3
Soil Quality Data
EPA Method 8270
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts
Sample Date: July 25 & 26, 1994

COMPOUNDS	GP-12	GP-15	GP-16	GP-18	GP-20	GP-23	GP-24	GP-27	GP-28	GP-29	GP-30
ACENAPHTHENE	ND	ND	ND	ND	ND	ND	ND	ND	1,100	ND	ND
ACENAPHTHYLENE	ND	ND	ND	1,100	ND	ND	ND	ND	550	ND	ND
ANTHRACENE	ND	1,100	ND	1,200	ND	ND	ND	ND	2,300	ND	ND
BENZO(A)ANTHRACENE	ND	3,500	ND	4,200	ND	1,300	1,200	950	6,400	ND	ND
BENZO(A)PYRENE	ND	3,600	ND	4,400	4,400	1,100	1,000	680	5,300	ND	ND
BENZO(B)FLUORANTHENE	ND	3,300	ND	3,900	1,300	1,200	1,000	440	3,900	ND	ND
BENZO(K)FLUORANTHENE	ND	3,100	ND	3,500	950	960	920	450	3,900	ND	ND
BENZO(G,H,I)PERYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHRYSENE	2,100	5,700	1,600	5,600	1,000	1,500	1,500	1,200	7,000	ND	ND
DIBENZO(A,H)ANTHRACENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FLUORANTHENE	1,200	9,000	2,600	ND	1,100	2,300	2,800	2,400	14,000	860	560
FLUORENE	ND	6,300	ND	8,600	ND	ND	ND	ND	1,000	ND	ND
INDENO(1,2,3-CD)PYRENE	ND	9,500	ND	ND	ND	ND	ND	ND	2,100	ND	ND
NAPHTHALENE	3,300	ND	ND	ND	ND	ND	ND	5,900	580	1,200	ND
PHENANTHRENE	2,200	ND	2,000	5,000	ND	1,100	1,900	2,500	9,400	1,300	420
PYRENE	5,100	ND	4,100	11,000	1,400	2,700	2,700	5,400	12,000	2,800	470

- Continued -

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TABLE 3
Soil Quality Data
EPA Method 8270
Parker Hannifin
48 Woerd Avenue
Waltham, MA
Sample Date: April 13, 1995

COMPOUNDS	GP-31	GP-32	GP-33	GP-33	GP-34	GP-34	GP-35	GP-35	GP-36	GP-36	GP-36
ACENAPTHENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ACENAPHTHYLENE	ND	ND	ND	ND	ND	ND	170	ND	ND	ND	ND
ANTHRACENE	290	ND	200	ND	ND	ND	ND	ND	ND	ND	ND
BENZO(A)ANTHRACENE	800	ND	970	ND	ND	ND	730	ND	ND	220	ND
BENZO(A)PYRENE	550	ND	710	ND	ND	ND	560	ND	ND	ND	ND
BENZO(B)FLUORANTHENE	370	ND	600	ND	ND	ND	530	ND	ND	ND	ND
BENZO(K)FLUORANTHENE	510	ND	670	ND	ND	ND	630	ND	ND	ND	ND
BENZO(G,H,I)PERYLENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CHRYSENE	810	ND	1,000	ND	ND	ND	770	ND	ND	240	ND
DIBENZO(A,H)ANTHRACENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
FLUORANTHENE	1,700	ND	1,900	ND	350	ND	1,100	ND	300	450	ND
FLUORENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
INDENO(1,2,3-CD)PYRENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
NAPTHALENE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PHENANTHRENE	1,200	ND	900	ND	210	ND	450	ND	ND	230	ND
PYRENE	1,400	ND	1,500	ND	300	ND	1,400	300	260	430	ND

- Continued -

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Table 3
Soil Quality Data
EPA Method 8270 and TPH
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts
Sample Date: March 13, 1996

COMPOUNDS	MW-3A	GP-42	GP-43	GP-44
ACENAPHTHENE	5,100	510	ND	ND
ACENAPHTHYLENE	ND	600	ND	ND
ANTHRACENE	9,500	1,600	ND	ND
BENZO(A)ANTHRACENE	13,000	5,100	790	ND
BENZO(A)PYRENE	7,600	3,700	620	ND
BENZO(B)FLUORANTHENE	4,400	1,900	ND	ND
BENZO(K)FLUORANTHENE	4,000	1,900	ND	ND
BENZO(G,H,I)PERYLENE	11,000	2,800	1,500	ND
CHRYSENE	18,000	7,300	1,200	4,300
DIBENZO(A,H)ANTHRACENE	3,900	2,300	ND	ND
FLUORANTHENE	14,000	4,300	1,000	6,300
FLUORENE	8,100	870	ND	ND
INDENO(1,2,3-CD)PYRENE	10,000	6,000	1,200	ND
NAPHTHALENE	7,700	560	580	12,000
PHENANTHRENE	30,000	4,900	1,700	7,200
PYRENE	61,000	14,000	5,600	6,300

Notes:

ND indicates not detected above method detection limit.
Results reported as ug/kg (ppb).
Shaded results exceed S-1 and S-2 soil standards.

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Table 4
Soil Quality Data
EPA Method 8240
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts
Sample Date: July 25 - 26, 1996

COMPOUNDS	GP-12	GP-15	GP-16	GP-17	GP-18	GP-19	GP-20
BENZENE	31	12	ND	ND	ND	ND	ND
CHLOROBENZENE	1,300	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	1,100	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
ETHYLBENZENE	300	ND	ND	ND	ND	ND	ND
TETRACHLOROETHYLENE	ND	ND	ND	ND	ND	ND	ND
TOLUENE	120	6	28	ND	ND	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	ND	ND
TRICHLOROETHYLENE	59	10	100	ND	ND	ND	ND
VINYL CHLORIDE	ND	97	100	ND	ND	6	ND
XYLENES	1,500	ND	160	ND	ND	ND	ND

- Continued -

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Table 4
Soil Quality Data
EPA Method 8240
Parker Hannifin
48 Woerd Avenue
Waltham, Massachusetts
Sample Date: July 25 - 26, 1996

COMPOUNDS	GP-22	GP-25	GP-26	GP-27	GP-28	GP-29	GP-30
BENZENE	ND	ND	ND	ND	ND	ND	ND
CHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	ND	ND	ND	ND	ND	ND	ND
1,1-DICHLOROETHANE	ND	3	ND	61	ND	340	ND
ETHYLBENZENE	ND	ND	ND	1,700	ND	73	ND
TETRACHLOROETHYLENE	ND	ND	ND	1,200	ND	1,300	3
TOLUENE	ND	ND	ND	250	ND	ND	ND
1,1,1-TRICHLOROETHANE	ND	ND	ND	ND	ND	490	ND
TRICHLOROETHYLENE	ND	ND	ND	47	7	4,100	64
VINYL CHLORIDE	ND	ND	ND	ND	ND	ND	ND
XYLENES	ND	ND	ND	13,000	ND	510	ND

Notes: Results reported as ug/kg (ppb).
ND indicates not detected above the method detection limit.

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Table 5
Soil Quality Data - RCRA 8 Metals and TPH
Parker Hannifin
Woerd Avenue
Waltham, Massachusetts
Sample Date: July 25, 1994

COMPOUNDS	GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	GP-9	GP-10	GP-11
ARSENIC	NA	NA	NA	NA	NA	NA	11	12	6
BARIUM	NA	NA	NA	NA	NA	NA	76	3,600	250
CADMIUM	NA	NA	NA	NA	NA	NA	<1	5	<1
CHROMIUM	NA	NA	NA	NA	NA	NA	31	160	29
LEAD	NA	NA	NA	NA	NA	NA	88	1,400	2,000
MERCURY	NA	NA	NA	NA	NA	NA	0.098	2	0.16
SELENIUM	NA	NA	NA	NA	NA	NA	<3	2	<0.62
SILVER	NA	NA	NA	NA	NA	NA	<3	21	<4
TPH Method (418.1)	NA	NA	NA	NA	NA	NA	40	2,300	6,500
TPH,8015 GASOLINE STD.	ND	ND	44	ND	ND	ND	NA	NA	NA

- Continued -

Table 5
Soil Quality Data - RCRA 8 Metals and TPH
Parker Hannifin
Woerd Avenue
Waltham, Massachusetts
Sample Date: July 25, 1994

COMPOUNDS	GP-12	GP-13	GP-14	GP-15	GP-16	GP-17	GP-18	GP-19	GP-20
ARSENIC	6	10	12	39	11	7	9	9	5
BARIUM	160	180	230	170	220	450	130	66	100
CADMIUM	<1	<1	<1	<1	5	<1	2	3	3
CHROMIUM	65	19	6	42	42	11	46	69	61
LEAD	300	560	340	280	1,100	660	550	240	480
MERCURY	0.45	0.25	0.18	0.20	0.066	0.060	0.27	0.085	0.090
SELENIUM	<2	<3	<3	<3	3	.94	<0.63	<0.54	<2
SILVER	<3	<4	<4	<4	<4	<3	4	<3	<3
TPH Method (418.1)	13,000	110	520	460	2,600	1,400	1,900	1,100	540
TPH,8015 GASOLINE STD.	NA	NA	NA	NA	NA	NA	NA	NA	NA

- Continued -

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Table 5
Soil Quality Data - RCRA 8 Metals and TPH
Parker Hannifin
Woerd Avenue
Waltham, Massachusetts
Sample Date: July 25, 1994

COMPOUNDS	GP-26	GP-27	GP-28	GP-29	GP-30
ARSENIC	3	19	12	7	9
BARIUM	<22	170	94	100	320
CADMIUM	<1	<1	<1	1	1
CHROMIUM	8	21	16	28	16
LEAD	18	940	250	330	920
MERCURY	<0.054	0.090	0.25	0.097	0.12
SELENIUM	<0.54	1	<0.62	1	<0.67
SILVER	<3	<4	<4	<4	<4
TPH Method (418.1)	NA	NA	NA	NA	NA
TPH,8015 GASOLINE STD.	1	2,800	ND	30	ND

- Continued -

Table 5
Soil Quality Data - RCRA 8 Metals and TPH
Parker Hannifin
Woerd Avenue
Waltham, Massachusetts
Sample Date: March 13, 1994

COMPOUNDS	GP-42	GP-43	GP-44	MW-3A
ARSENIC	NA	NA	NA	NA
BARIUM	NA	NA	NA	NA
CADMIUM	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA
LEAD	NA	NA	NA	NA
MERCURY	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA
SILVER	NA	NA	NA	NA
TPH Method (418.1)	2,100	3,000	13,000	26,000
TPH,8015 GASOLINE STD.	NA	NA	NA	NA

Notes: NA indicates not analyzed.
ND indicates not detected above method detection limit.
Results reported as mg/kg (ppm).
TPH indicates total petroleum hydrocarbons.
Shaded results exceed S-1 soil standards.
Shaded/bold results exceed S-1 and S-2 soil standards.

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TABLE 6

OBSERVATION WELL GAUGE REPORTS

CLIENT: PARKER HANNIFIN
LOCATION: WALTHAM - 48 WOERD ST
STATE: MA

CLIENT CODE:
HANDEX CODE: 108226

MONITORING DATE	WELL TYPE-#	C	PRODUCT DEPTH (feet)	WATER DEPTH (feet)	PRODUCT THICK. (feet)	PRODUCT ELEV. (feet)	GW ELEV. (feet)	CORR GW ELEV. (feet)
18-Mar-96	MW-1			4.35			96.36	96.36
18-Mar-96	MW-2			6.15			95.96	95.96
18-Mar-96	MW-3			11.53			0.00	0.00
18-Mar-96	MW(A)-3			8.69			95.86	95.86
18-Mar-96	MW-4			8.69			92.64	92.64
18-Mar-96	MW-5			5.50			92.26	92.26
18-Mar-96	MW-7			3.90			95.08	95.08
18-Mar-96	MW-8			2.26			96.99	96.99
18-Mar-96	MW-10			5.08			93.55	93.55
18-Mar-96	MW-11			1.65			95.37	95.37

"C"omments: [P = Pumping; N = Non-Pumping; B/A = Before/After Adjustment]
[I = Well Inaccessible; # = nth Monitoring Event of Day]
[D = Dry Well; F = Film or Trace of Product]

TABLE 7
BACKGROUND SOIL DATA SUMMARY
POLYAROMATIC HYDROCARBONS and TOTAL PETROLEUM HYDROCARBONS

Compounds	DATA SUMMARY STATISTICS							
	Number Detected	Number Analyzed	Minimum	Maximum	All Data - Ave. Conc.**	Median**	90th Percentile	MCP Background
Acenaphthene	0	12	<0.17	<2.1	N/A	N/A	N/A	0.50
Acenaphthylene	2	12	0.17	1.1	0.51	0.28	1.0	0.50
Anthracene	3	12	0.29	1.2	0.53	0.36	1.1	0.50
Benzo(a)anthracene	4	12	0.73	4.2	1.2	0.48	3.5	0.50
Benzo(a)pyrene	5	12	0.55	4.4	1.4	0.56	4.4	0.50
Benzo(b)fluoranthene	5	12	0.37	3.9	1.0	0.46	3.3	0.50
Benzo(k)fluoranthene	5	12	0.51	3.5	0.95	0.57	3.1	0.50
Benzo(g,h,i)perylene	0	12	<0.17	<2.1	N/A	N/A	N/A	0.50
Chrysene	6	12	0.77	5.7	1.4	0.79	5.6	0.50
Dibenzo(a,h)anthracene	0	12	<0.17	<2.1	N/A	N/A	N/A	0.50
Fluoranthene	7	12	0.30	9.0	1.6	1.0	2.6	0.50
Fluorene	2	12	6.3	8.6	1.6	0.25	6.3	0.50
Indeno(1,2,3-ce)pyrene	1	12	9.5	9.5	1.2	0.25	1.0	0.50
Naphthalene	0	12	<0.17	<2.1	0.49	0.25	1.0	0.50
Phenanthrene	5	12	0.21	5.0	1.0	0.68	2.0	0.50
Pyrene	8	12	0.26	11	1.9	1.0	4.1	0.50
Total Petroleum Hydrocarbons	6	6	460	2,600	1,300	1,300	2,600	N/A

Notes: ** Average and median values calculated using 1/2 detection limit for non-detect results.
Concentrations reported as mg/kg (ppm).
MCP Background represents DEP calculated background concentrations for urban areas.

TABLE 7
BACKGROUND SOIL DATA SUMMARY - METALS

Compounds	DATA SUMMARY STATISTICS							
	Number Detected	Number Analyzed	Minimum	Maximum	All Data - Ave. Conc.**	Median**	90th Percentile	MCP Background
Arsenic	6	6	5	39	13	9	—	32
Barium	6	6	66	450	190	150	—	45#
Cadmium	4	6	2	5	2.3	2.5	—	2.0#
Chromium	6	6	11	69	45	44	—	105*
Lead	12	12	42	1,100	440	420	800	69
Mercury	6	6	0.06	0.27	0.13	0.88	—	1.0
Selenium	2	6	0.94	3.0	1.2	0.97	—	0.5#
Silver	1	6	4.0	4.0	1.8	2.1	—	0.6#

Notes: ** Average and median values calculated using 1/2 detection limit for non-detect results.
Concentrations reported as mg/kg (ppm).
MCP Background represents DEP calculated background concentrations for urban areas.
*Chromium background represents Cr(VI).
DEP Background concentrations for rural and suburban locations.

TABLE 8
Release Abatement Measure
Post Excavation Soil Quality Data
EPA Method 8270 and TPH
Parker Hannifin
Woerd Avenue, Waltham, MA

April 30, 1996

Compounds	Excavation #1	Excavation #2	Excavation #3 (south)	Excavation #3 (north)
ACENAPTHENE	< 220	< 230	380	NA
ACENAPHTHYLENE	< 220	< 230	< 230	NA
ANTHRACENE	< 220	< 230	700	NA
BENZO (A) ANTHRACENE	290	290	2,700	NA
BENZO (A) PYRENE	< 220	340	2,900	NA
BENZO (B) FLUORANTHENE	< 220	350	2,400	NA
BENZO (K) FLUORANTHENE	< 220	< 230	1,700	NA
BENZO (G,H,I) PERYLENE	< 220	< 230	4,500	NA
CHRYSENE	420	400	3,400	NA
DIBENZO (A,H) ANTHRACENE	< 220	< 230	780	NA
FLUORANTHENE	450	610	5,500	NA
FLUORENE	< 220	< 230	340	NA
INDENO (1,2,3-CD) PYRENE	< 220	< 230	3,000	NA
NAPTHALENE	480	< 230	< 230	NA
PHENANTHRENE	400	260	3,800	NA
PYRENE	680	560	5,800	NA
TPH (mg/kg)	1,600	260	260	620

Notes: Results reported as µg/kg (ppb) unless otherwise noted.
ND indicates not detected above the method of detection limit.
NA indicates not analyzed.

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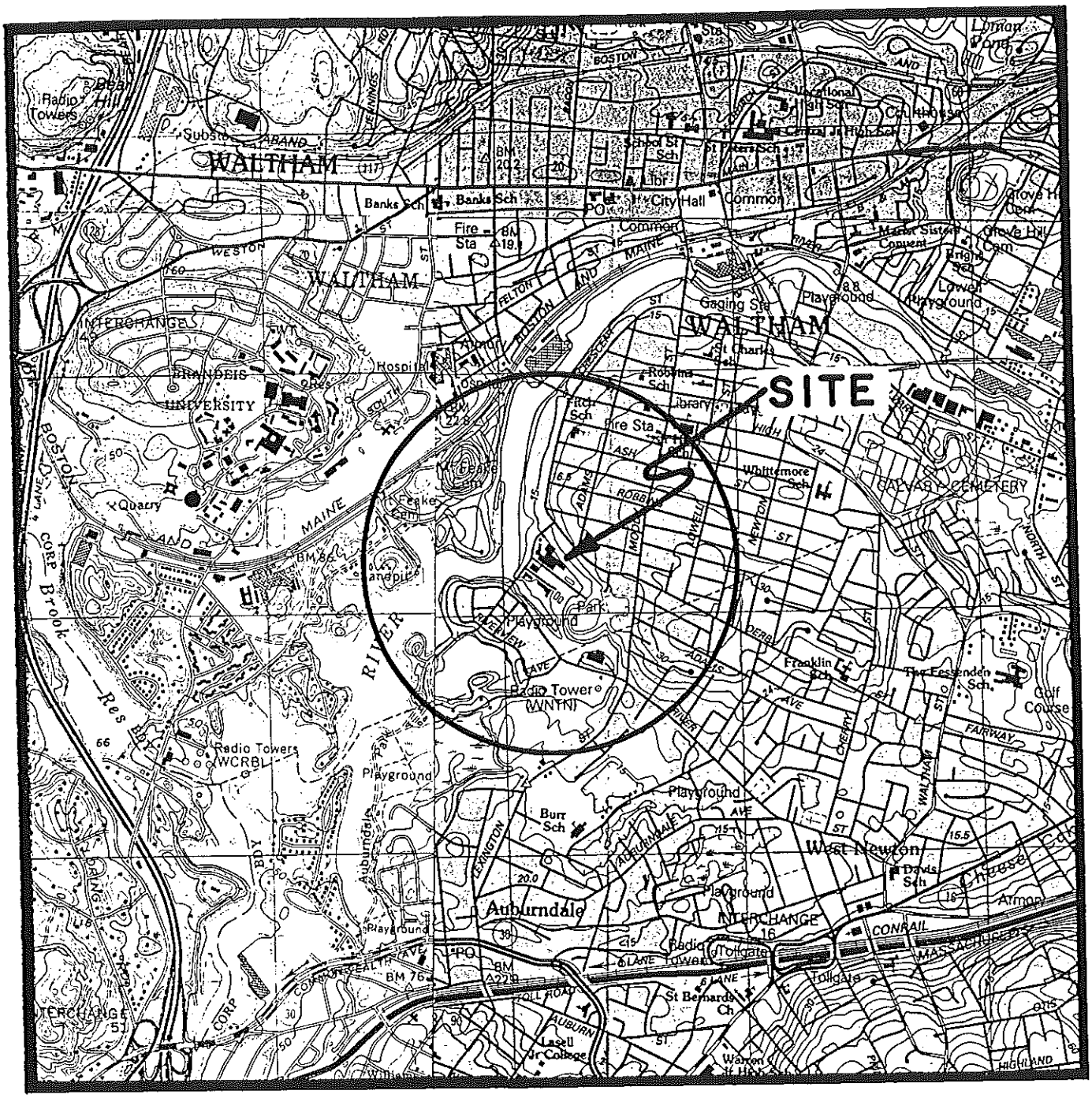

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398 CEDAR HILL STREET MARLBORO, MA 01752

FIGURE 1
LOCUS MAP

LOCATION	48 WOERD AVENUE
	WALTHAM, MA
JOB NO.	108226-01
SCALE	1" = 2000' APPROX.

LEGEND

MW-2 95.96	MONITORING WELL W/WATER TABLE ELEVATION IN FEET
MW-6	DESTROYED MONITORING WELL
367	HOUSE NUMBER
U/O	USED/OIL
F/O	FUEL/OIL
H/O	HEATING/OIL
UST(S)	UNDERGROUND STORAGE TANK(S)
SMH-2	SEWER MANHOLE
95.6	WATER TABLE CONTOUR W/WATER TABLE ELEVATION IN FEET
	PROPERTY BOUNDARY APPROX.
	SITE PROPERTY BOUNDARY APPROX.

DATA COLLECTED ON 3-18-96

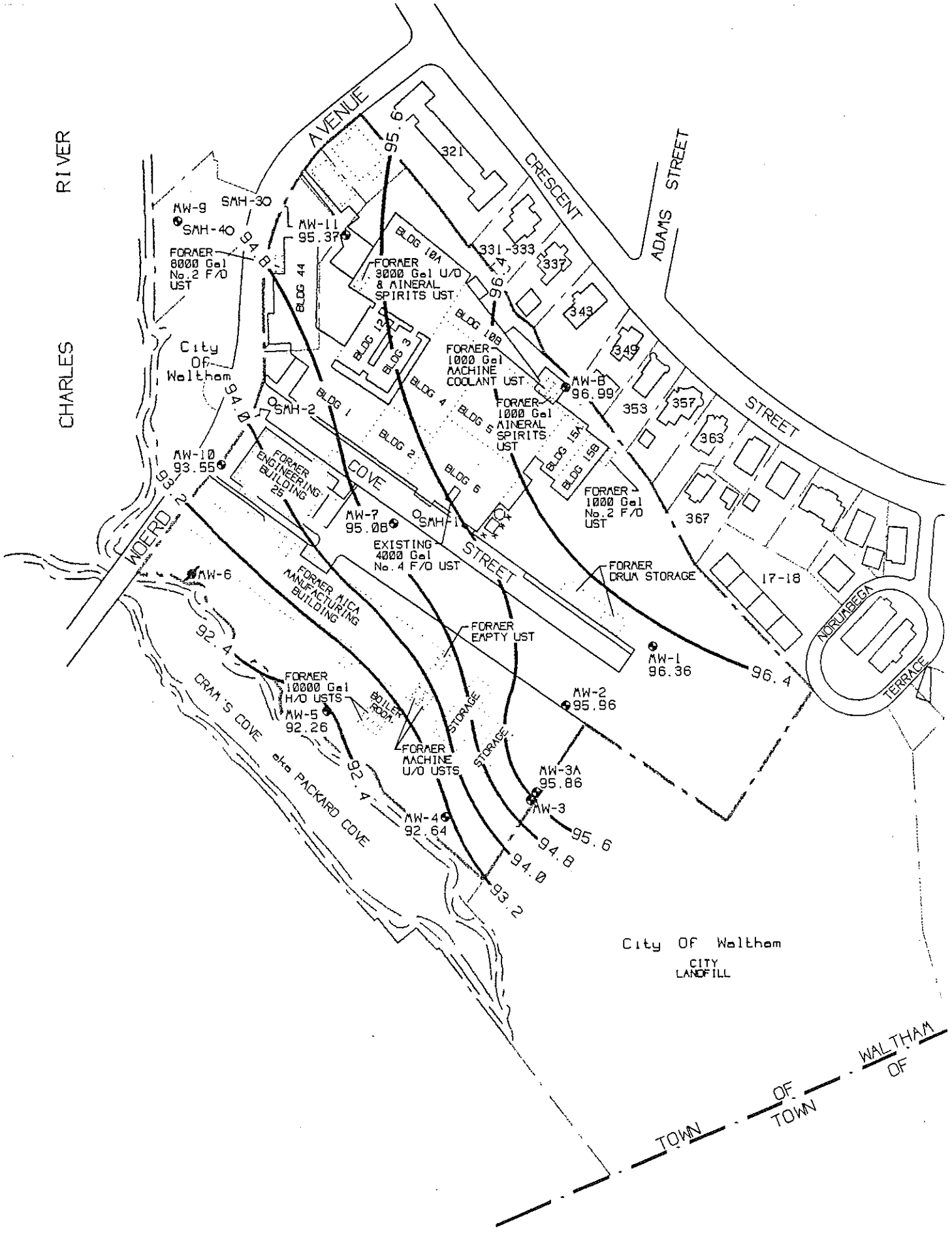
NEWTON

Handex

398 CEDAR HILL STREET MARLBORO, MA 01752

FIGURE 2
SITE INFORMATION MAP

LOCATION	48 WOERD AVENUE
	WALTHAM, MA
JOB NO.	108226-01
SCALE	1" = 200' APPROX. 108226WT


CHARLES RIVER
AVENUE
CRESCENT
ADAMS STREET
STREET
COVE
WOERD
MW-9
SMH-30
SMH-40
MW-11
95.37
FORMER 8000 Gal No.2 F/O UST
FORMER 3000 Gal U/O & MINERAL SPIRITS UST
FORMER 1000 Gal MACHINE COOLANT UST
FORMER 1000 Gal MINERAL SPIRITS UST
FORMER 1000 Gal No.2 F/O UST
MW-8
96.99
City Of Waltham
SMH-2
MW-10
93.55
FORMER ENGINEERING BUILDING 28
MW-7
95.08
SMH-1
EXISTING 4000 Gal No.4 F/O UST
FORMER DRUM STORAGE
FORMER MICA MANUFACTURING BUILDING
FORMER EMPTY UST
MW-6
MW-1
96.36
MW-2
95.96
FORMER 10000 Gal H/O USTS
MW-5
92.26
BOILER ROOM
STORAGE
FORMER MACHINE U/O USTS
MW-3A
95.86
MW-3
MW-4
92.64
CRAM'S COVE
aka PACKARD COVE
City Of Waltham
CITY LANDFILL
TOWN OF WALTHAM
TOWN OF WALTHAM
BLDG 1
BLDG 2
BLDG 3
BLDG 4
BLDG 5
BLDG 6
BLDG 10A
BLDG 10B
BLDG 12
BLDG 15A
BLDG 15B
BLDG 44
321
331-333
337
343
349
353
357
363
367
17-18
NORUMBEGA TERRACE
95.6
96.4
94.8
94.0
93.2
92.4

LEGEND

MW-2	MONITORING WELL
MW-6	DESTROYED MONITORING WELL
GP-19	GEOPROBE LOCATION
	PROPERTY BOUNDARY APPROX.
	SITE PROPERTY BOUNDARY APPROX.

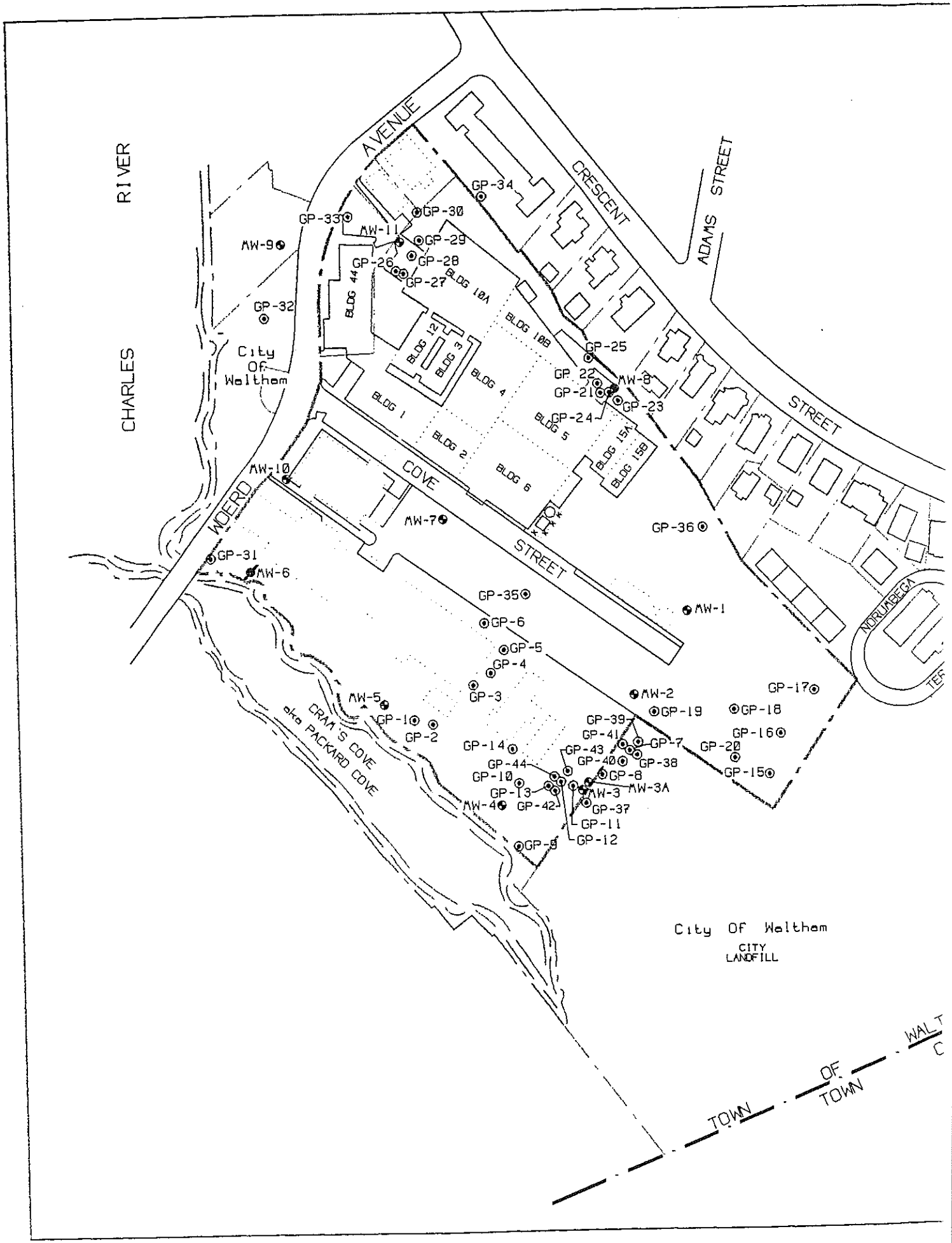
NEWTON

Handex

398 CEDAR HILL STREET MARLBORO, MA 01752

FIGURE 3
SOIL BORING LOCATIONS

LOCATION	48 WOERD AVENUE WALTHAM, MA
JOB NO.	108226-01
SCALE	1" = 200' APPROX. 108226GP


RIVER
CHARLES
AVENUE
CRESCENT
ADAMS STREET
STREET
COVE
WOERD
NORUMBEGA
City Of Waltham
BLDG 44
BLDG 10A
BLDG 10B
BLDG 12
BLDG 3
BLDG 4
BLDG 1
BLDG 2
BLDG 5
BLDG 6
BLDG 15A
BLDG 15B
GP-34
GP-33
GP-30
MW-11
GP-29
GP-28
GP-26
GP-27
MW-9
GP-32
GP-25
GP-22
MW-8
GP-21
GP-23
GP-24
MW-10
MW-7
GP-36
GP-31
MW-6
GP-35
MW-1
GP-6
GP-5
GP-4
GP-3
MW-2
GP-17
GP-19
GP-18
MW-5
GP-1
GP-2
GP-39
GP-41
GP-7
GP-16
GP-20
GP-14
GP-43
GP-44
GP-40
GP-38
GP-10
GP-8
GP-15
GP-13
MW-3
MW-3A
MW-4
GP-42
GP-37
GP-11
GP-12
GP-9
CRAM'S COVE
aka PACKARD COVE
City Of Waltham
CITY LANDFILL
TOWN OF WALTHAM

LEGEND

MW-2 ⊕	MONITORING WELL
MW-6 ⊕	DESTROYED MONITORING WELL
GP-19 ⊙	GEOPROBE LOCATION
▨	ACTIVITY & USE LIMITATION (AUL PORTIONS #1 & #2)
——— - ———	PROPERTY BOUNDARY APPROX.
——— ▪ ———	SITE PROPERTY BOUNDARY APPROX.

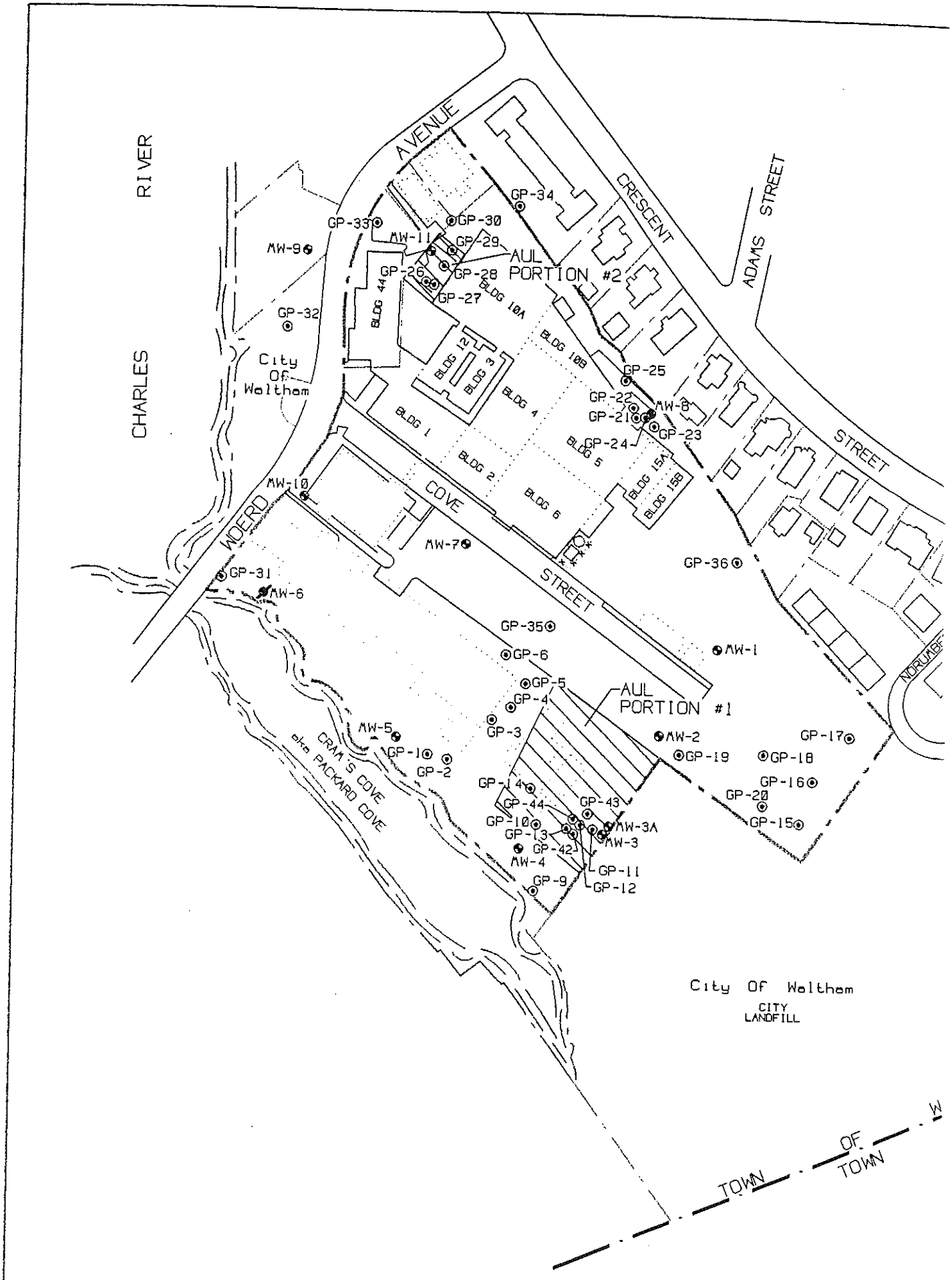
NEWTON

Handex

398 CEDAR HILL STREET MARLBORO, MA 01752

FIGURE 4
ACTIVITY & USE LIMITATION LOCATIONS

LOCATION	48 WOERD AVENUE WALTHAM, MA
JOB NO.	108226-01
SCALE	1" = 200' APPROX. 108226A1


RIVER
CHARLES
AVENUE
CRESCENT
ADAMS STREET
STREET
COVE
WOERD
GP-34
GP-33
GP-30
MW-11
GP-29
GP-28
GP-26
GP-27
MW-9
GP-32
City Of Waltham
AUL PORTION #2
BLDG 44
BLDG 10A
BLDG 12
BLDG 3
BLDG 10B
BLDG 4
BLDG 1
BLDG 2
BLDG 6
BLDG 5
BLDG 15A
BLDG 15B
GP-25
GP-22
GP-21
MW-8
GP-23
GP-24
MW-10
MW-7
GP-36
GP-31
MW-6
GP-35
GP-6
GP-5
GP-4
GP-3
AUL PORTION #1
MW-1
MW-2
GP-17
GP-19
GP-18
GP-16
GP-20
GP-15
MW-5
GP-1
GP-2
CRAM'S COVE
aka PACKARD COVE
GP-14
GP-44
GP-43
GP-10
GP-13
GP-42
MW-4
MW-3A
MW-3
GP-11
GP-12
GP-9
City Of Waltham
CITY LANDFILL
TOWN OF TOWN

LEGEND

MW-2	MONITORING WELL
MW-6	DESTROYED MONITORING WELL
GP-19	GEOPROBE LOCATION
	PROPERTY BOUNDARY APPROX.
	SITE PROPERTY BOUNDARY APPROX.

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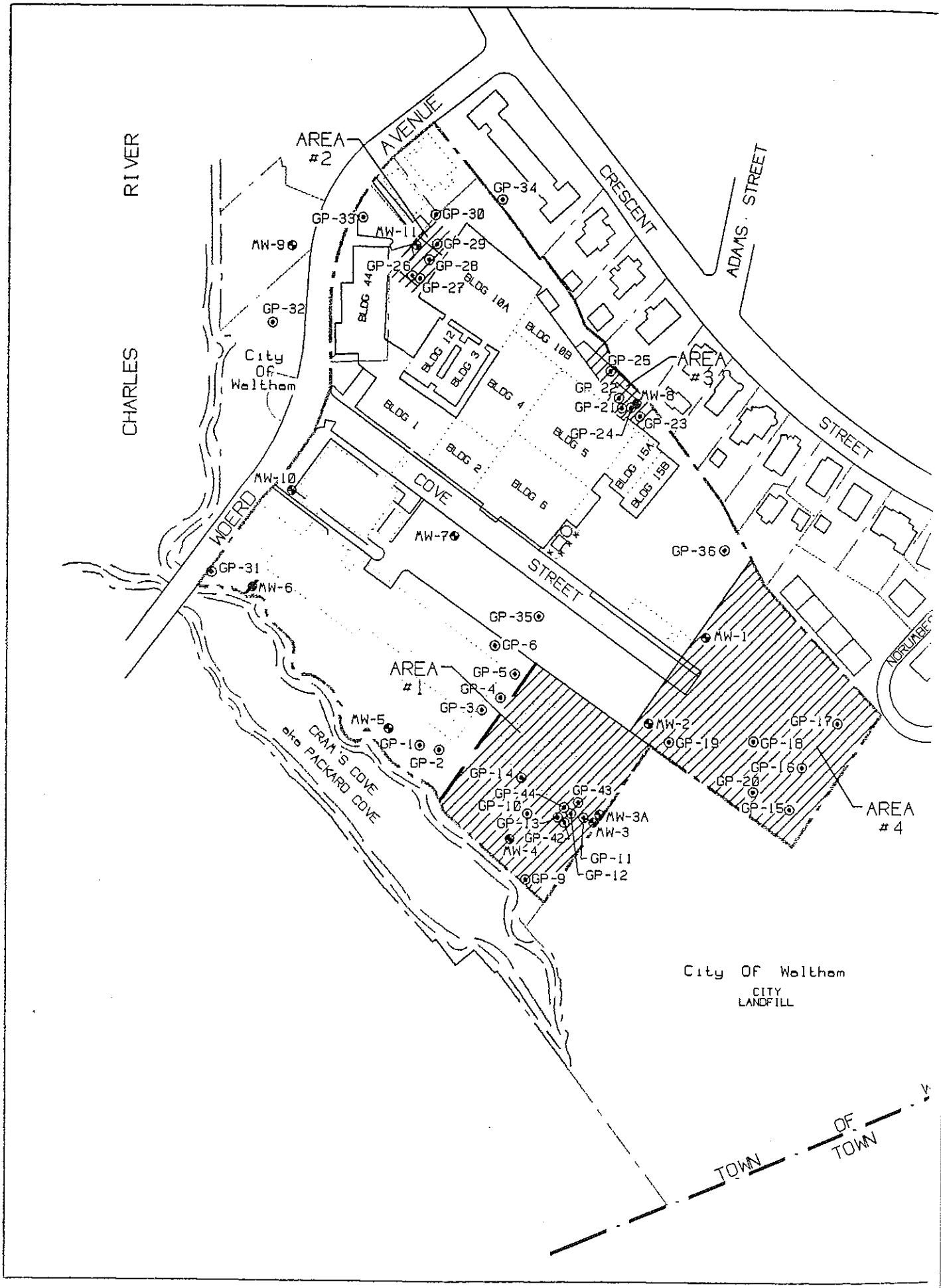
Handex

398 CEDAR HILL STREET MARLBORO, MA 01752

FIGURE 5

POTENTIAL EXPOSURE AREAS

LOCATION	48 WOERD AVENUE
	WALTHAM, MA
JOB NO.	108226-01
SCALE	1" = 200' APPROX. 10822651


CHARLES RIVER
AREA #2
AVENUE
CRESCENT
ADAMS STREET
STREET
City Of Waltham
BLDG 44
BLDG 10A
BLDG 10B
BLDG 12
BLDG 3
BLDG 4
BLDG 1
BLDG 2
BLDG 5
BLDG 6
BLDG 15A
BLDG 15B
AREA #3
COVE
WOERD
STREET
NORUMBEGA
AREA #1
CRAM'S COVE
aka PACKARD COVE
AREA #4
City Of Waltham
CITY LANDFILL
TOWN OF
TOWN
GP-1
GP-2
GP-3
GP-4
GP-5
GP-6
GP-7
GP-8
GP-9
GP-10
GP-11
GP-12
GP-13
GP-14
GP-15
GP-16
GP-17
GP-18
GP-19
GP-20
GP-21
GP-22
GP-23
GP-24
GP-25
GP-26
GP-27
GP-28
GP-29
GP-30
GP-31
GP-32
GP-33
GP-34
GP-35
GP-36
GP-42
GP-43
GP-44
MW-1
MW-2
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MW-3A
MW-4
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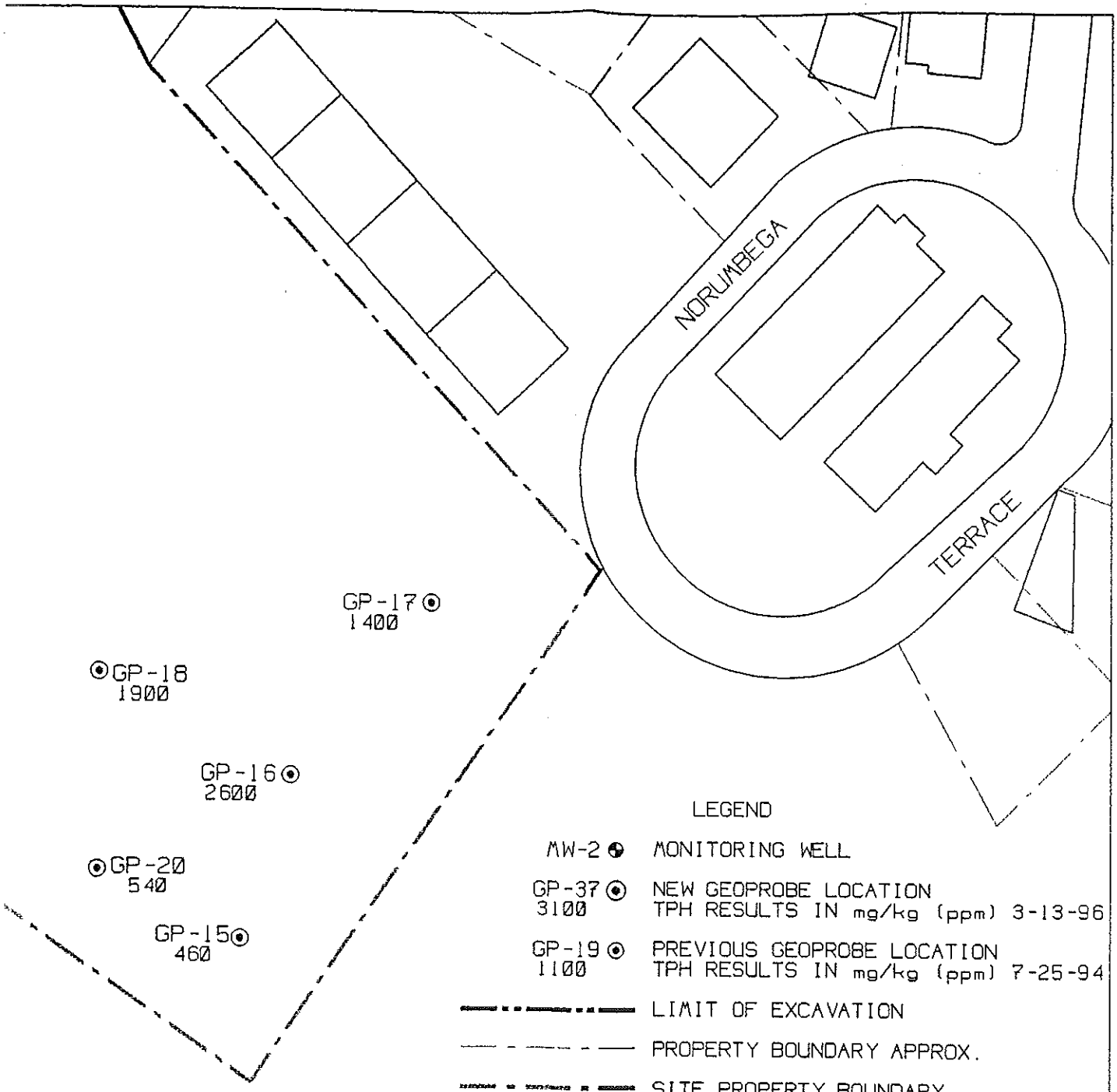
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11



LEGEND

MW-2	MONITORING WELL
GP-37 3100	NEW GEOPROBE LOCATION TPH RESULTS IN mg/kg (ppm) 3-13-96
GP-19 1100	PREVIOUS GEOPROBE LOCATION TPH RESULTS IN mg/kg (ppm) 7-25-94
	LIMIT OF EXCAVATION
	PROPERTY BOUNDARY APPROX.
	SITE PROPERTY BOUNDARY APPROX.

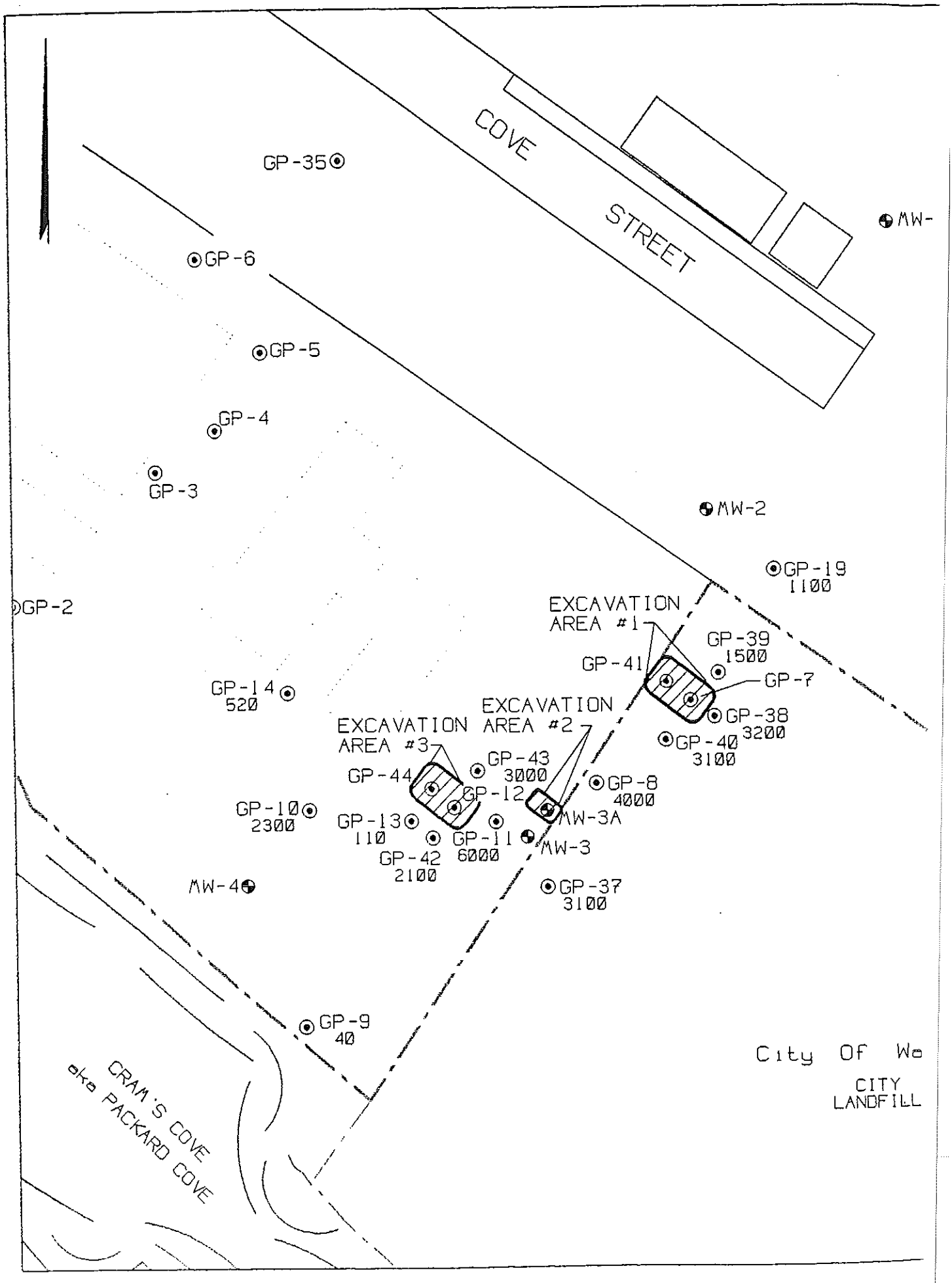
DATA COLLECTED ON 7-24-94 & 3-13-96

Handex

398 CEDAR HILL STREET MARLBORO, MA 01752

FIGURE 6
RELEASE ABATEMENT MEASURE
SOIL EXCAVATION LOCATIONS

LOCATION	48 WOERD AVENUE WALTHAM, MA
JOB NO.	108226-01
SCALE	1" = 60' APPROX. 108226SE


COVE
STREET
GP-35
MW-
GP-6
GP-5
GP-4
GP-3
MW-2
GP-19
1100
GP-2
EXCAVATION
AREA #1
GP-39
1500
GP-41
GP-7
GP-14
520
EXCAVATION
AREA #2
EXCAVATION
AREA #3
GP-38
3200
GP-40
3100
GP-43
3000
GP-44
GP-8
4000
GP-12
GP-10
2300
GP-13
110
MW-3A
GP-11
6000
MW-3
GP-42
2100
MW-4
GP-37
3100
GP-9
40
City Of We
CITY
LANDFILL
CRAM'S COVE
aka PACKARD COVE

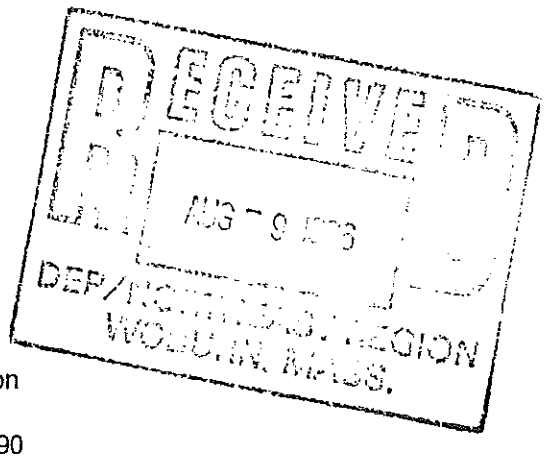
Appendix F

"Method 3 Risk Characterization and Supporting Documentation, Parker Hannifin Corporation," prepared by Handex of New England, August 9, 1996.

METHOD 3 RISK CHARACTERIZATION
AND
SUPPORTING DOCUMENTATION

Parker Hannifin Corporation
Nichols Aircraft Division
48 Woerd Avenue
Waltham, Massachusetts
MA DEP Case #3-3260

August 9, 1996



Prepared For:

Parker Hannifin Corporation
17325 Euclid Avenue
Cleveland, Ohio 44112-1290

Prepared By:

Handex of New England, Inc.
398 Cedar Hill Street
Marlboro, MA 01752

Handex®

TABLE OF CONTENTS

RISK CHARACTERIZATION

1.0 INTRODUCTION

As part of a Class A-3 Response Action Outcome (RAO) pursuant to the Massachusetts Contingency Plan (MCP), Handex of New England, Inc. (Handex) has performed this Method 3 Risk Characterization for the Parker Hannifin Corporation, Nichols Aircraft Division property located at 48 Woerd Avenue in Waltham, Massachusetts. The risk assessment was conducted in accordance with the Massachusetts Department of Environmental Protection (DEPs) "Guidance For Disposal Site Risk Characterization in Support of the Massachusetts Contingency Plan"(DEP, 1995). The risk assessment relies on information presented in a Phase I (1987) and Phase II Site Assessment (1990) conducted by TWM Northeast/Normandeau Engineers, Inc. and Phase II Site Investigation (1994) and Class A-3 RAO (1996) conducted by Handex.

The purpose of the risk characterization is to evaluate the potential risk to health, safety, public welfare and the environment which may be posed by oil or hazardous materials (OHM) which were detected in environmental media at the site. This evaluation is based on potential human exposure under current and future foreseeable site uses and conditions. Risks are estimated for the potential human receptors based on assumptions regarding the characteristics of the receptor groups, the types of OHM detected in different environmental media, and the amount of exposure in terms of how often and how much a person may be exposed to site-related contaminants. The risks are also based on the implementation of an Activity and Use Limitation (AUL) which is discussed in detail later in this document. This risk characterization consists of the following components:

Hazard Identification
Exposure Assessment
Dose-Response Assessment
Risk Characterization
Risk Characterization Uncertainty Analysis
Safety & Public Welfare Risk Characterization
Stage I Environmental Screening

2.0 SITE DESCRIPTION

The subject site is located at 48 Woerd Avenue in the City of Waltham, Massachusetts and consists of approximately 11.5 acres of land. The property boundaries of the subject site were determined using City of Waltham Assessor's Map (Map 76, Lots 20-28) and are shown on Figure 2, Site Information Map. Figure 1, Locus Map, illustrates the site in relation to surrounding topography and drainage. Cove Street bisects the site from east to west. The Nichols Aircraft Division manufacturing building is located in the northern portion of the site and abuts residential properties consisting of condominiums and apartments. The southern portion of the site is an open space which previously contained

a Mica processing building, an engineering building, two storage buildings and a boiler building. All of the facilities on the southern portion of the site were demolished and removed in 1995.

3.0 SURROUNDING PROPERTIES

The site is situated within an area of Waltham with dense residential and commercial development. The northern portion of the site is bound by residential properties to the north, a former City of Waltham municipal landfill to the east, Cove Street to the south and Woerd Avenue to the west. The southern portion of the site is bounded by the former City of Waltham Landfill to the east, Crams Cove (an embayment of the Charles River) to the south, Woerd Avenue to the west and Cove Street to the north. The Charles River is located approximately 50 feet west of the site.

4.0 REGULATORY STATUS

The site was listed by the Massachusetts Department of Environmental Protection (DEP) as a Location to be Investigated on July 12, 1990, based on the discovery of volatile organic compounds (VOCs) and metals in shallow groundwater and soil in the southwest portion of the property. A Release Abatement Measure Plan was submitted to the DEP on May 3, 1996 to excavate petroleum impacted soil. A Downgradient Property Status Opinion was filed with the DEP on June 18, 1996.

5.0 CURRENT AND FUTURE FORESEEABLE SITE USES

The Parker Nichols Aircraft Division manufacturing building is currently located on the northern portion of the site. The western portion of the site is currently open space consisting of grass and wooded areas. Parker Hannifin has future plans of moving the Nichols Aircraft Division to another location, demolishing the existing buildings and selling the entire property. Possible future uses of the site would be for commercial and/or industrial purposes. Future outdoor recreational, residential and child day-care services is restricted for portions of the property by an Activity and Use Limitation (AUL). The AUL is described in Section 6.0.

6.0 ACTIVITY AND USE LIMITATION (AUL)

An AUL, pursuant to 310 CMR 40.1070, has been filed for portions of this property. The AUL has been filed to restrict current and future human exposure to OHM impacted subsurface soil at the site. In reducing human exposure to site OHM, the overall potential harm to the public is reduced.

The AUL has been applied to two portions of the property (hereinafter referred to as "Portions of the Property"). The Portions of the Property, designated as AUL Portion "1" and AUL Portion "2" are shown on Figure 4, Activity and Use Limitation Location.

In general, the AUL prevents future site development for residential, outdoor recreational and child-care purposes on Portions of the Property. By restricting residential, outdoor recreational and child-care type uses, potentially sensitive human receptors (i.e. children) and potential high-impact exposure scenarios (i.e. children playing in contaminated soil) are eliminated from the risk assessment analysis.

Further land-use restrictions are also applied to Portions of the Property. Portions of the Property contain PAH concentrations in soil which are above Soil Category 3 (S-3) standards as listed in 310 CMR 40.0975(6)(c). Additional land use restrictions on Portions of the Property are applied to address potential human exposures from construction activities (soil excavation) and unauthorized site visitors such as neighborhood residents. AUL Portion "1" and "2" are enclosed by a chain-linked fence which will be maintained and secured. Any future soil excavation work conducted on Portions of the Property will be performed under the supervision of a Licensed Site Professional (LSP). Construction workers involved with soil excavation on Portions of the Property will be required, at a minimum, to wear Level "D" personal protective equipment (PPE) pursuant to 29 CFR 1910.120. PPE grades would be based on appropriate site monitoring. Utilization of appropriate PPE will prevent human exposure to OHM impacted soil.

7.0 SOIL CATEGORIES

Based on the information summarized in Table 40.933(9) of the MCP regulation, Soil Categories S-1 and S-3 apply to different areas of the site. A majority of subsurface soil at the site is classified as S-3 due to uses of the site, accessibility of the soil and implementation of an AUL. The southern part of the site, apart from AUL Portion #1 is an open grassy field. This portion of the property is not AUL restricted so future residential use is possible. In addition, the grass covered field is currently accessible to trespassers and site visitors. S-1 soil category is applicable for these reasons.

8.0 GROUNDWATER CATEGORIES

The groundwater categories for this site were determined pursuant to 310 CMR 40.0932. Based on the available information, Groundwater Category 1 (GW-1) is not relevant to the groundwater beneath this site. All public water in the area is supplied by the Massachusetts Water Resources Authority (MWRA) and there are no known private water supply wells in the vicinity of the site.

The groundwater beneath the site is located less than 15 feet below grade and within 30 feet of an existing building. As a result, Groundwater Category 2 (GW-2) is relevant to the northern portion of the site. The southern portion of the site is currently open space and GW-2 does not apply to this area. All groundwater is assumed to eventually discharge to surface water, therefore, Groundwater Category 3 (GW-3) is also relevant to the site.

9.0 HAZARD IDENTIFICATION

9.1 Identification of Oil and/or Hazardous Materials

OHM detected in groundwater and on-site subsurface soils are presented in Tables 1 through 5. The OHM can be grouped into four categories; volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), metals and total petroleum hydrocarbons (TPH). PAHs are a class of compounds consisting of three or more fused aromatic rings. PAHs are products of incomplete combustion of organic materials and are components of heavy lubricating oils. Specific PAH compounds are listed in Table 3. VOCs detected in on-site soil and groundwater are chemicals commonly found in petroleum hydrocarbons (i.e. benzene) as well as metal degreasing products (i.e., trichloroethylene). Specific VOCs detected at the site are presented in Tables 1 and 4. Metals detected in on-site environmental media are presented in Tables 2 and 5. TPH represents a quantitative measurement of gross petroleum hydrocarbon concentrations in environmental samples and does not identify specific compounds. Fingerprint analysis of petroleum in on-site soil samples identified the petroleum as primarily heavy lubricating oil with some gasoline. A copy of the fingerprint analysis is attached as Appendix A. TPH concentrations are presented in Table 5.

9.2 Source of OHM Release

There are many suspected sources of OHM to the subsurface. VOCs in groundwater and soil are likely a result of historical on-site manufacturing activities and the abutting landfill formerly operated by the City of Waltham. Metals in groundwater and soil are attributed to a combination of natural occurring levels, releases from historical manufacturing activities and the abutting landfill. A Downgradient Property Status Opinion, pursuant to 310 CMR 40.0174, was submitted to the current owners of the landfill regarding the elevated silver concentrations in groundwater on the northeast portion of the site. PAHs and TPH in subsurface soils are attributable to former underground storage tanks and fill material which are widespread beneath the site and surrounding area. The former USTs contained heating oil, waste oil, and mineral spirits.

9.3 Extent of Contamination

Historical groundwater VOC quality data presented in Table 1 indicates that GW-2 and GW-3 groundwater standards have not been exceeded since 1988. The horizontal extent of VOC impacted groundwater does not appear to extend beyond the site boundaries. The extent of dissolved metals in groundwater appears to incorporate both the former Woerd Avenue Landfill and the site. Groundwater sampling conducted in March 1996 indicated that dissolved silver exceeded the GW-3 standard in wells MW-3A and MW-4. The most recent groundwater sample collected from MW-4 on June 13, 1996 indicated a silver concentration of < 7.0 μg/l which is below the GW-3 standard. The extent of silver in groundwater downgradient of MW-4 is not fully defined, however, the most recent groundwater sample collected from MW-4 suggests that dissolved silver does not exist at concentrations higher than those detected in MW-3A and MW-4 downgradient of MW-4.

The highest levels of PAHs and TPH are located in the eastern portion of the site near the former landfill, as shown on Figure 3. The impacted soil is located at depths ranging from 2 to 12 feet below grade. The site contains a considerable amount of fill material; site specific background levels of metals, PAHs and TPH are discussed in Section 6.4. Two areas of elevated PAHs also exist near a former waste oil/mineral spirits USTs located in the northwest corner of the property (shown as Exposure Area #2 on Figure 5) and near a former mineral spirits UST located in the northeast portion of the site (shown as Exposure Area #3 on Figure 5). The PAHs are located at depths ranging from 2 to 6 feet below grade in Exposure Areas #2 and #3.

9.4 Background OHM Concentrations

Subsurface investigations have revealed that a majority of the site is underlain layers of fill material consisting of wood, ash, cinders and building debris. The fill material is more prominent in the eastern portion of the site and decreases from easterly to westerly across the site. The identification of fill material is critical in determining background concentrations of OHM at the site. The MCP defines "background" as those levels of oil and hazardous material that would exist in the absence of the disposal site of concern which are:

(a) ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern; and

(b) attributable to geologic or ecologic conditions, atmospheric deposition of industrial processes or engine emissions, fill materials containing wood or coal ash, releases to groundwater from a public water supply system, and/or petroleum residues that are incidental to the normal operation of motor vehicles.

The western portion of the site is underlain with fill material at depths ranging from 1 to 12 feet below grade. The fill consists of ash and wood debris. Soil borings GP-35 and GP-36 in the central portion of the site revealed fill material at depths between 1 and 9 feet which consisted of ash and fill debris. Soil boring GP-31 in the southwest corner of the site revealed fill materials at depths of 1 to 5 feet. On the western side of the site, the fill material decreases in thickness from 4 feet thick to 1 feet in a south to north direction across the site. Some borings along the northern portion of the site did not contain fill material (soil borings GP-21 through GP-25). Based on subsurface lithology, the following sample locations were chosen to represent background: GP-15 through GP-20, GP-31, GP-32, GP-34, GP-35 and GP-36. The background samples were selected based on the presence of fill material in the subsurface as well as an upgradient location on the property that was representative of background. Soil samples collected from the background soil boring locations were analyzed for PAHs, heavy metals and TPH. The compounds detected in these borings represent background concentrations of OHM related to historic fill materials. Table 6 summarizes soil quality data collected from the background soil sample locations including average and median concentrations. All soil boring locations are shown on Figure 3 and soil boring logs are attached as Appendix B.

Subsurface soil at the site which do not contain fill material were classified as native material. Soil borings considered to contain exclusively native material include GP-21 through GP-25 and GP-33. DEP derived OHM background levels for urban areas were utilized as background concentrations in the native material. OHM detected in soil borings GP-21 through GP-25 and GP-33 consisted primarily of PAHs. The DEP derived background concentrations of PAHs is 0.5 mg/kg.

9.5 Chemicals of Concern

Chemicals of Concern (COCs) for the human health Risk Characterization may be identified by: a) comparing OHM levels against available or applicable "background" values, b) eliminating OHM with low detection frequencies, and c) eliminating OHM that are considered laboratory contaminants and not related to the OHM release. In addition, OHM that are not detected above the laboratory reporting limit may also be removed from further consideration as a COC.

9.5.1 COC - Subsurface Soil

Historically detected OHM in subsurface soil include the following:

PAHs	VOCs	Metals
acenaphthene	benzene	arsenic
acenaphthylene	chlorobenzene	barium
anthracene	1,2-dichlorobenzene	cadmium
benzo(a)anthracene	1,1-dichloroethene	chromium
benzo(a)pyrene	ethylbenzene	lead
benzo(b)fluoranthene	tetrachloroethylene	mercury
benzo(k)fluoranthene	toluene	selenium
benzo(ghi)perylene	1,1,1-trichloroethane	silver
chrysene	trichloroethylene	
dibenzo(ah)anthracene	vinyl chloride	
fluoranthene	xylenes	
fluorene		
indeno(123-cd)pyrene		
naphthalene		
pyrene		
phenanthrene		

In addition to the above criteria, COCs in soil for the human health risk characterization were chosen based on the implementation of an AUL, as described in Section 6.0. The AUL eliminates current and future human exposure to subsurface soil in Exposure Areas 1 and 2. The calculation of site specific background concentrations of OHM, as described in Section 9.4, determined that all OHM detected in soil in Exposure Area 4 were consistent with background. With the elimination of three of the four potential exposure areas, only OHM detected in Exposure Area 3 were considered COCs for the risk assessment. Chemicals of Concern in subsurface soil that were evaluated throughout the risk assessment include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene. Analytical data for these COCs are summarized in Table 7, including range and mean concentrations. All other PAHs in Exposure Area #3 were below the laboratory analysis method detection limit (MDL) and were not considered further in this risk characterization.

VOCs in soil were analyzed in two soil samples (GP-22 and GP-25) in Exposure Area #3. All VOCs were below the laboratory analysis MDL and therefore, all VOCs were removed from the risk characterization involving exposure to soils.

Metals were not analyzed in soil in Exposure Area #3. Metals resulting from site activities in this area were not expected and therefore not included in the risk assessment. All OHM detected in soil were evaluated as part of a Method 3 Stage I Environmental Screening (Section 14.0).

9.5.2 COC - Groundwater

Historically detected OHM in site groundwater include the following:

Volatile Organic Compounds	Metals (total and dissolved)
acetone	antimony
benzene	arsenic
chlorobenzene	barium
chloroform	cadmium
1,1-dichloroethane	chromium
1,2-dichloroethane	copper
1,2-dichlorethenes	lead
ethylbenzene	mercury
methylene chloride	nickel
tetrachloroethene	selenium
1,1,1-trichloroethane	silver
trichloroethene	zinc
trichlorofluoromethane	beryllium
toluene	
xylenes	
vinyl chloride	
1,4-dichlorobenzene	
1,2-dichlorobenzene	
cis-1,2-dichloroethane	
chloroethane	
methyl tertiary butyl ether	

Groundwater Categories for this site were determined to be GW-2 and GW-3. Human exposure to OHM in groundwater is limited to potential volatilization from groundwater to ambient air.

VOCs in groundwater were evaluated from 1987 to 1994. VOCs that were detected above the method detection limit during the last two rounds of groundwater sampling (1993 and 1994) were selected as COCs. All other VOCs were dropped from the risk assessment as they have not been detected in site groundwater since 1988 or earlier. VOCs selected as COCs include acetone, 1,1-dichloroethane, ethylbenzene, trichloroethene, toluene, xylenes, cis-1,2-dichloroethene, methyl tertiary butyl ether and vinyl chloride.

Metals detected in groundwater were not chosen as COCs as there is no potential direct contact with groundwater and metals are not volatile.

9.6 Toxicity Profiles

A description of the potential health effects associated with each chemical of concern is

provided in Appendix C of this risk assessment and summarized in Table 8. The toxicity profiles provide a summary of the potential adverse human health affects which may be associated with exposure to a particular contaminant.

10.0 DOSE-RESPONSE

The purpose of the dose-response assessment under the MCP is to quantitatively describe the relationship between the dose of a compound and the potential for increased incidence of adverse effects. Table 9 summarizes the USEPA carcinogen classification and health criteria for each COC. The compounds are classified by the USEPA as noncarcinogenic or potentially carcinogenic, based on human and/or laboratory animal data. The health criteria in the dose-response assessment were then used in the risk characterization.

10.1 Noncarcinogenic Assessment

For non-carcinogenic health effects, it is believed that a dose (or exposure) level exists at and below which no adverse health effects would be expected. Such a level is referred to as a threshold dose. Although a threshold dose may be impossible to determine, it is possible to approximate this dose in a health-protective manner by identifying a sub-threshold dose. The sub-threshold dose is typically derived from the No Observable Adverse Effects Level (NOAEL) of an animal study by application of uncertainty factors (UF) and a modifying factor (MF). Uncertainty Factors are applied to account for interspecies variation, exposure duration and protection of sensitive populations. An additional UF may be applied if the toxicological study identified a Lowest Observable Adverse Effects Level (LOAEL), rather than a NOAEL. Each UF is typically equal to a factor of ten, and the product of all the UFs may be as high as 10,000. The MF may be applied to reflect additional uncertainties in the critical study and other items not addressed by the UFs. The value to the MF is greater than zero and less than or equal to ten with a default value of one. The sub-threshold dose in units of mg/kg/day to which daily exposure of a human population is likely to be free of appreciable risk of adverse health effects during a lifetime is termed a Reference Dose (RfD). The RfD for each COC at the site is presented in Table 9.

10.2 Carcinogenic Assessment

The dose-response assessment for carcinogens assumes that there is no threshold dose for carcinogenicity (i.e. there is no dose of a carcinogenic substance which is associated with zero risk). The evaluation of carcinogenic effects is a weight-of-evidence determination whether a compound is a human or animal carcinogen based on human and/or animal data. The system for characterizing the overall weight of evidence for a chemical's carcinogenicity developed by USEPA is based on the availability of animal, human and other supportive data. The weight of evidence classification rates the likelihood that an agent is a human carcinogen. The quality of evidence from human studies, the quality of evidence from

animal studies and other supportive information such as mutagenicity data and structure-activity data are major factors considered in characterizing the overall weight of evidence. USEPA lists carcinogens into five broad categories which are summarized below:

> Group A - Human Carcinogen: This category indicates there is sufficient human data from epidemiology studies to support a causal association between an chemical and human cancer;
>
> Group B - Probable Human Carcinogen: Group B1 indicates there is limited epidemiology data suggesting carcinogenicity to humans and Group B2, there is sufficient evidence of carcinogenicity in animals.
>
> Group C - Possible Human Carcinogen: Group C indicates there is limited animal carcinogenicity data;
>
> Group D - Not Classified: This category indicates that animal carcinogenicity data is inadequate or not available.
>
> Group E - No Evidence of Carcinogenicity to Humans: This category indicates that there is evidence of non-carcinogenicity in animal or epidemiology studies.

10.3 Uncertainty in the Dose-Response Assessment

Major sources of uncertainty concerning the dose-response assessment include:

1. For chemicals causing systemic effects, the RfD is used as a basis for comparison. The RfD is a threshold value that compensates for uncertainty through the application of safety factors. As described in Section 10.1, these safety factors (uncertainty factors) may lower the NOAEL by as much as 10,000. Due to the margin of safety built into the RfD value, exceeding the number has no immediate meaning concerning specific health effects, the frequency of effects or the magnitude of effects. Exceedance of the RfD value should serve as a warning that the potential for unacceptable exposure does exist and precautions should be taken to limit exposure.

2. There are many uncertainties associated with the estimates of risk from carcinogens. Human epidemiology studies utilized in estimating carcinogenic risks have well documented uncertainties inherent in the process. The difficulty in using animal studies to estimate human carcinogenicity is also well documented. In particular, the procedure of extrapolating high doses over a short period (12 to 24 months) in test animals to low doses over a long period (75 years) in humans.

11.0 EXPOSURE ASSESSMENT

The purpose of the exposure assessment is to evaluate the magnitude, frequency and duration of potential human contact with OHM in each medium at the site. The assessment includes identification of potential human receptors, exposure points, and exposure routes associated with both the current and reasonably foreseeable future uses of the site. The potential receptors which were evaluated include current and future on-site factory workers, future on-site residents, potential construction workers and potential utility line workers. Exposure point concentrations were calculated based on site data, as described in Section 11.4. Average Daily Doses (ADD) were calculated using the calculated exposure point concentrations and specific exposure scenarios which estimate the intake of each compound via each route of exposure.

11.1 Identification of Potential Human Receptors

The current and reasonably foreseeable site uses are discussed in Section 5.0. Parker Hannifin has filed an AUL on portions of the property which will limit human exposure to subsurface soil. Current site uses and conditions in conjunction with the AUL will limit on-site employees and site visitors from being exposed to subsurface soils. The AUL limits future development of portions of the property for residential purposes, but not the entire property. Potential future receptors include current and future on-site factory workers, future on-site residents, potential construction workers and potential utility line workers.

11.2 Exposure Profiles

11.2.1 Future On-Site Resident - Child: Future foreseeable site use could result in residential scenarios outside the two AUL portions of the property. A future resident child could be exposed to subsurface soil. Contact with groundwater is not expected. The risk assessment for the child will evaluate potential future dermal contact, incidental ingestion and inhalation of fugitive dust.

A child, 1 to 8 years old, is assumed to be exposed to soil in his/her yard. The child is assumed to play in their yard from April 1 to October 1 (130 days/year) for an average of 6 hours per day. The exposure is assumed to occur over a 7 year period. The childs hands, arms, legs and feet are assumed to be exposed to the soil. The child is assumed to ingest 100 mg of soil during each event. The exposure assumptions are summarized in Table 10.

11.2.2 Future On-Site Resident - Adult: A future resident adult could be exposed to subsurface soil. Contact with groundwater is not expected. The risk assessment for the adult will evaluate potential future dermal contact, incidental ingestion and inhalation of fugitive dust from OHM impacted soil.

An adult, aged 18 to 43 years old, is assumed to be exposed to soil in his/her yard during gardening and/or recreation activities. The adult is assumed to work in their yard from

April 1 to October 1 (130 days/year) for an average of 3 hours per day. The exposure is assumed to occur over a 25 year period. The adults hands, forearms, lower legs and feet are assumed to be exposed to the soil. The adult is assumed to ingest 50 mg of soil per event. The exposure assumptions are summarized in Table 11

11.2.3 Construction Workers: Construction workers (18-25 years old) could be exposed to contaminants in soil and air during future redevelopment of the site. The risk assessment for the construction worker evaluates dermal contact with soils, incidental ingestion of soils, and inhalation of fugitive dusts. It is assumed that excavation work conducted below the water table would include dewatering and treatment of groundwater. Exposure to groundwater would therefore be negligible.

The construction worker may be involved in activities for the length of the construction project: conservatively assumed to be 1 year. The worker works 8 hours per day for 7 months (April, May, June, July, August, September, October). The workers hands, forearms, lower legs and feet would be exposed to the soil which roughly translates to 30% of the skin area exposed. The incidental soil ingestion rate for this receptor is assumed to be 100 mg/day which is higher than the average adult ingestion rate. A higher rate is selected for this receptor group as they are in direct contact with soil during work. The exposure assumptions for this scenario are summarized in Table 12.

11.2.4 Subsurface Utility Line Worker: Due to the nature of the work done by a utility worker, there is a potential exposure pathway associated with the excavation of soils during work on future installed underground utilities (water, sewer, natural gas). The subsurface utility line worker could be exposed to subsurface soils (> 2 feet) when repairing the utilities on the site. The risk assessment for the subsurface utility line worker evaluates dermal contact with soils, incidental ingestion of soils, and inhalation of fugitive dusts. It is assumed that any work conducted below the water table would include dewatering and treatment of groundwater. Exposure to groundwater would therefore be negligible.

The worker repairing the utility line may do so every year over a 25 year period, and each year would work 8 hours a day for 10 days to complete the repairs. Conservatively, it is assumed that the workers hands, forearms, lower legs and feet would be exposed to the soil which roughly translates to 30 % of the skin area. The incidental soil ingestion rate for this receptor is assumed to be 100 mg/day which is higher than the average adult ingestion rate. A higher rate is selected for this receptor group as they are in direct contact with soil during work. The exposure assumptions for this scenario are summarized in Table 13.

11.2.5 On-site Worker: Current and future on-site workers could potentially be exposed to OHM vapors that have volatilized from groundwater to indoor air. Direct exposure to groundwater or subsurface soil is not expected. The risk assessment evaluates potential inhalation of OHM vapors. The on-site worker is assumed to be exposed to the OHM vapors 5 days/week for 8 hours per day over a 50 week work year (2 weeks vacation). The factory worker is assumed to work at the same job for 25 years. The exposure assumptions

are summarized in Table 14.

11.3 Estimating Average Daily Doses (ADD)

Daily doses are calculated for noncarcinogenic and potentially carcinogenic compounds for each exposure route through which uptake might occur. Separate ADDs are calculated for ingestion, inhalation and dermal contact routes of exposure, where appropriate. The ADD is estimated according to the general equation:

$$ADD = \frac{\text{Total Amount of Chemical Intake}}{\text{(Body weight)(Averaging Period)}}$$

Two ADDs are calculated for each exposure route; $ADD_{chronic}$ and ADD_{life}. The $ADD_{chronic}$ is used to evaluate systemic effects and represents the chemical intake during the exposure period and is calculated as the average daily dose over the period of exposure (typically 1 to 7 years). The ADD_{life} is used to evaluate carcinogenic effects and represents the chemical intake averaged over a 75-year lifetime. The equations for calculating the ADD and the exposure assumptions used in the ADD equations are listed for each receptor group in Appendix D, Average Daily Dose/Risk Estimate Spreadsheets.

11.4 Exposure Point Concentrations: Exposure point concentrations of contaminants in soil were evaluated for four discrete areas on the site. Each area (Area #1 through Area #4) is shown on Figure 5 and discussed below.

11.4.1 Exposure Area #1: Area #1 is located in the southeast portion of the site and abutting the former Woerd Avenue landfill. An AUL was implemented for Area #1, referred to as AUL Portion #1 on Figure 4. As part of the AUL, the area was enclosed in a chain-linked fence and will be monitored and secured. In addition, a 3 foot cover of clean fill material and vegetation will be maintained to limit erosion. Future excavation work will be conducted utilizing personal protective equipment under the supervision of an Licensed Site Professional (LSP). Future land use will be restricted to commercial/industrial activities. As a result of the AUL, there are no current or future foreseeable human exposures to contaminants in soil in Area #1. Volatilization of dissolved VOCs from groundwater to indoor air is a potential future exposure pathway. The highest levels of VOCs detected in groundwater at the site were utilized to estimate indoor air levels as discussed in Section 11.4.5.

Potential migration of OHM in the subsurface downgradient of AUL Portion #1 was evaluated. PAHs, metals, VOCs and TPH impacted soil is located at depths of 2 feet to 12 feet below grade. Groundwater is approximately 8 feet below grade in this area. Leaching of PAHs and TPH to groundwater, with subsequent migration downgradient of Area #1, is considered minimal due to total organic carbon (TOC) levels in soil ranging from 260,000 to 470,000 mg/kg. High TOC levels in conjunction with the soil sorption coefficients and low solubility of the PAH and TPH compounds will greatly inhibit movement of OHM in

the subsurface. Migration of VOCs is also expected to be inhibited due to the TOC levels in soil. Metals are generally insoluble and immobile from soil to groundwater.

11.4.2 Exposure Area #2: Area #2 is a portion of the property located on the northwestern side of the site that formally contained a used oil underground storage tank. Subsurface soil in Area #2 is impacted with PAHs and metals. An AUL is implemented for the entire Area #2, referred to as AUL Portion #2 in Figure 4. The AUL is comprised of maintaining secured fencing and/or an impermeable surface (asphalt). The AUL will restrict trespassers and require future excavation work to be conducted utilizing the appropriate personal protective equipment under the supervision of an LSP. Future site use will be limited to commercial/industrial. As a result of the AUL, there are no current or future foreseeable human exposures to subsurface soil. Volatilization of dissolved VOCs from groundwater to indoor air is a potential future exposure pathway. The highest levels of VOCs detected in groundwater at the site were utilized to estimate indoor air levels as discussed in Section 11.4.5.

11.4.3 Exposure Area #3: Area #3 is a portion of the property located on the north central part of the site that formally contained machine coolant and mineral spirits underground storage tanks. There are no AUL restrictions on Area #3 and OHM detected in soil is not consistent with site specific background concentrations. Exposure point concentrations in subsurface soil are presented in Table 15 and consist of average concentrations of samples collected from soil borings GP-21 through GP-25. Concentrations of COCs below laboratory analytical method detection limits (MDL) were averaged using 1/2 the detection limit. Groundwater quality data from Area #3 (MW-8) indicated levels of volatile organic compounds were below laboratory analytical MDLs. Dissolved metals in samples collected from MW-8 were also below laboratory analytical MDLs.

11.4.4 Exposure Area #4: Area #4 is located in the north, northeasterly portion of the site. The exposure point concentrations of PAHs, TPH, and metals in soil are presented in Table 15 and are average concentrations of samples collected from soil borings GP-15 through GP-20. The exposure point concentrations in Area #4 are considered to be consistent with background as soil borings GP-15 through GP-20 are included as part of the background data set and no releases to the subsurface are known to have occurred in this portion of the site. As a result, the evaluation of human exposure to OHM impacted soil in this area is not be required. Exposure to groundwater is not expected in Area #4. There are no drinking water wells on the site and the depth to water is approximately 6 feet below grade. Volatilization of dissolved VOCs from groundwater to indoor air is a potential future exposure pathway. The highest levels of VOCs detected in groundwater at the site were utilized to estimate indoor air levels as discussed in Section 11.4.5.

11.4.5 Modeling - VOC Migration from Groundwater to Indoor Air

The transport of VOCs from groundwater to enclosed space (indoor air) was estimated by utilizing a model developed by P.C. Johnson and R.A. Ettinger[1]. The Johnson and Ettinger vapor transport model has been utilized by the MADEP to develop GW-2 groundwater standards in the Massachusetts Contingency Plan and by the American Society For Testing and Materials (ASTM) in their development of the "Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites" (E-1739-95). The vapor transport model was utilized in this risk assessment to estimate COC vapor concentrations in indoor air of a current and future foreseeable commercial/industrial facility, based on dissolved COC levels in groundwater. To be conservative, the highest concentrations of each COC detected in groundwater, as opposed to an average concentration, was utilized in the model. Some basic assumptions of the vapor transport model include the following:

a constant dissolved chemical concentration in groundwater;

equilibrium partitioning between dissolved chemicals in groundwater and chemical vapors at the groundwater table;

steady state vapor and liquid-phase diffusion through the capillary fringe, vadose zone, and foundation cracks;

no loss of chemical as it diffuses towards ground surface (i.e. no biodegradation) and;

steady, well-mixed atmospheric dispersion of the emanating vapors within the enclosed space, where the convective transport into the building through foundation cracks or openings is negligible in comparison with diffusive transport.

Site specific input variables include total soil porosity, capillary fringe thickness and vadose zone thickness. The soil porosity was estimated to be 0.33 based on the subsurface lithology (primarily sand and gravel)[2]. The average depth to water at the site is approximately 5.0 feet below grade. The summation of the capillary fringe (rise) thickness and vadose zone thickness will equal the depth to water. The capillary rise in the soil is dependent upon the pore size. As the pore size decreases in soil, the capillary rise tends to increase. For example, the capillary rise in coarse sand ranges from 0.4 to 0.6 feet, whereas in clay, the capillary rise ranges from 25 to 75 feet[3]. For this site, the capillary fringe is estimated to

[1] ASTM, "Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites", E-1739-95, American Society For Testing and Materials.

[2] Freeze, Allan R. and Cherry, John A., "Groundwater", 1979, Prentice-Hall, Inc., Englewood Cliffs, NJ.

[3] Das, Braja M., "Principles of Geotechnical Engineering, Second Edition", 1990, PWS-Kent Publishing Co., Boston, MA.

range from 0.4 to 4 feet based on subsurface lithology. To be conservative, a capillary thickness of 1.0 foot will be used. The resulting vadose zone thickness is 4.0 feet. Using a smaller capillary fringe thickness in the vapor migration model will estimate higher indoor air vapor concentrations. Appendix E summarizes the vapor modeling equations and associated input parameters.

The chemicals of concern utilized in the vapor migration model and the resulting indoor air concentration (exposure point concentrations) are summarized in Table 16.

11.5 Uncertainty in the Exposure Assessment

Sources of uncertainty in the exposure assessment include the following:

1. Many assumptions are made to develop estimates of dose. In this risk assessment the major assumptions, considered conservative in nature, are estimates of the amount of soil incidentally ingested, inhaled or contacting the skin. Normal protective clothing such as gloves, boots and full length pants would greatly reduce the exposed skin surface area.

2. It is assumed that the same construction worker and utility line worker would be involved throughout each of work periods. This is a reasonable but conservative assumption in that different work crews would most likely be involved in various aspects of the construction and utility line work.

12.0 RISK CHARACTERIZATION

The risk characterization is the final step of the human health risk characterization process. In this step, the results of the Hazard Identification, Dose-Response Assessment and Exposure Assessment are combined to estimate the potential cancer and non-cancer risk associated with a receptor's exposure to the compounds of concern. The mathematical model for each exposure scenario including exposure parameter values, calculated dose and non-carcinogenic/carcinogenic risk are shown in Appendix D. A brief description of the methodology which was used to calculate noncarcinogenic and potential carcinogenic risks is presented below.

12.1 Methodology for Estimating Risk

To estimate the noncarcinogenic risk, the chronic Average Daily Dose ($ADD_{chronic}$) is divided by the appropriate chronic or subchronic RfD. The resulting ratio is known as a Hazard Index (HI). According to MADEP guidance, an HI of 1.0 (100% of the RfD) or less is considered acceptable.

To estimate carcinogenic risks, the carcinogenic potency factor is multiplied by the lifetime Average Daily Dose (ADD_{life}). The resulting value gives the Excess Lifetime Carcinogenic

Risk (ELCR) (i.e. risks above the background carcinogenic risk from all other events associated with daily living) due to the exposure of concern. Significant carcinogenic risks are identified by the MADEP as those greater than 1 in 100,000 (1×10^{-5}). A Hazard Index of 1.0 or greater or an ELCR 1×10^{-5} does not mean that adverse effects will necessarily occur because of the conservative factors used to calculate the toxicity values (as discussed in Sections 10.1 and 10.2).

12.2 Risk Characterization Results - Human Health

12.2.1 Current Site Use - Hazard Index The Activity and Use Limitation along with current site use is not considered to result in human exposure to soil or groundwater at the site under current conditions. Potential current and future exposure to COC vapors resulting from COC migration from groundwater to indoor air was evaluated for an on-site worker. The Hazard Index for an on-site work scenario is 0.033, well below the DEP HI risk limit of 1.0.

12.2.2 Current Site Use - Excess Lifetime Cancer Risk: Carcinogenic risks are based on exposure to carcinogenic COC vapors in indoor air. The ELCR for the on-site worker scenario is 3.9×10^{-6} which is less than the DEP ELCR risk limit of 1.0×10^{-5}.

12.2.3 Reasonably Foreseeable Site Use - Hazard Index: Under reasonably foreseeable site use, this risk assessment evaluated a hypothetical future on-site resident, a construction worker involved in construction related activities and a utility line worker involved with repair of underground utilities. The potential receptors were assumed to be exposed to COC in soil through incidental ingestion, dermal contact and inhalation of fugitive dust. Groundwater was not considered a potential exposure point. The HI for the residential scenarios are 7.3×10^{-4} and 1.6×10^{-4} for the child and adult respectively. The HI for the construction worker scenario is 5.5×10^{-4} and the utility worker is 5.0×10^{-5} . All HI estimates are considered an "insignificant" risk as defined by the MCP.

12.2.4 Reasonably Foreseeable Site Use - Excess Lifetime Cancer Risk: The risk assessment evaluated potential exposure to carcinogenic COCs and their associated health risks. The hypothetical exposed population is the same as discussed in Section 12.2.3. The ELCR for the residential scenarios are 3.0×10^{-6} and 2.0×10^{-6} for the child and adult, respectively. The ELCR for the construction worker and utility line worker is 4.0×10^{-7} and 6.0×10^{-7}, respectively. Under the conservative assumptions of the dose-response assessment and future land use exposure scenarios, the risk estimates for all the exposure scenarios are below the MCP risk limit of 1×10^{-5}. All HI and ELCR risk estimates are summarized in Section 12.4, Table 18.

12.3 Identification of Applicable or Suitably Analogous Public Health Standards, Guidelines and Policies

The purpose of this section is to identify potentially applicable or suitably analogous public

health standards, guidelines and policies that may be used to further characterize the site. Potentially applicable standards are compared against exposure point concentrations as another means of evaluating risk. For exposure to subsurface soils, there are currently no federal or state guidelines or suitably analogous standards for chemicals in soil. Contaminants in soil were compared against site specific and DEP derived background levels (summarized in Table 15). Groundwater at the site is not used as a source of drinking water and therefore, drinking water standards are not applicable. A discussion of the potential surface water impacts and associated environmental risk evaluation is discussed in Section 14.0.

12.4 Risk Assessment Conclusions

This risk assessment estimated non-carcinogenic and carcinogenic risks associated with current and reasonably foreseeable site use. The risk estimates are summarized below.

TABLE 17 - HAZARD INDEX AND EXCESS LIFETIME CANCER RISK SUMMARY

Exposure Scenario	Hazard Index	ELCR
#1 - Future On-site Resident (Child)	7.3×10^{-4}	3.0×10^{-6}
#2 - Future On-site Resident (Adult)	1.6×10^{-4}	2.0×10^{-6}
#3 - Future Construction Worker	5.5×10^{-4}	4.0×10^{-7}
#4 - Future Utility Line Worker	4.9×10^{-5}	6.0×10^{-7}
#5 - Current/Future On-site Factory Worker	0.033	4.0×10^{-6}
MCP Risk Limits	1.0	1×10^{-5}

The Hazard Index risk estimates calculated for the hypothetical exposed populations are orders of magnitude lower than the MCP risk limit of 1.0. The Excess Lifetime Cancer Risks calculated for the hypothetical exposed population are less than the MCP carcinogenic risk limit of 1×10^{-5}. The criteria for a conclusion of a condition of No Significant Risk has been satisfied for the site.

12.5 Uncertainties in the Risk Characterization

The risk characterization incorporates the hazard evaluation, exposure assessment and dose-response assessment to estimate total site risk. The uncertainties in the risk characterization are an accumulation of uncertainties in the entire risk assessment process (discussed in Sections 10.3 and 11.5). Where uncertainty exists, conservative parameter estimates are used. These conservative estimates combine to create a conservative estimate of the Hazard

Index and Excess Lifetime Cancer Risk that are likely to overestimate the actual risk associated with exposures to OHM at the site. Consequently, the results of the analysis should not be taken as a characterization of absolute risk, but should be used as a tool for evaluating potential risk associated with exposure to OHM at the site.

13.0 SAFETY AND PUBLIC WELFARE RISK CHARACTERIZATION

In addition to potential human health risks, the risks to safety and public welfare must be addressed at each site. Although extensive guidance is not presently available from the DEP, this section summarizes current and reasonably foreseeable conditions related to these considerations. Based on site conditions, the site does not appear to pose a safety hazard or a threat to public welfare. Current subsurface soil concentrations of OHM in soil and groundwater are lower that the Upper Concentration Limit (UCL) promulgated in the MCP. There are no open pits or lagoons, no rusting or deteriorating hazardous waste drums and no reports of odors emanating from the site.

14.0 STAGE I ENVIRONMENTAL SCREENING

A Stage I Environmental Screening, pursuant to 310 CMR 40.0095(3), was conducted for this location. As shown on Figure 2, the site is within 50 feet of the Charles River and abuts Crams Cove (an embayment of the Charles River). The Charles River is presently classified as a Class B river and has a designated use as a warm water fishery, and primary and secondary contact recreation. This portion of the Charles River is not designated for use as a municipal water supply. An evaluation of current and potential impacts to surrounding environmental receptors is presented below.

14.1 Potential Impacts to Aquatic Habitats and Organisms

14.1.1 Evidence of Current or Potential Future Exposure

Current or past visible evidence of OHM impacted sediments, surface water or wetlands from the disposal site have not occurred based on review of Waltham Board of Health and Conservation Commission files and environmental assessments conducted since 1987. Surface water samples (SW-1 and SW-2) were collected from Crams Cove in 1987 and 1988 by TWM Northeast/Normandeau Engineers, Inc (TWMNE). The surface water samples were analyzed for pH, specific conductance, priority pollutant metals and volatile organic compounds. A summary of the analytical data is presented in the Phase II report prepared by TWMNE. Surface water quality data presented in the TWMNE report indicate no impact to Crams Cove, and associated aquatic organisms, from environmental conditions at the site.

14.1.2 Potential Groundwater Migration

The apparent groundwater flow direction across the site is in a southwesterly direction. OHM impacted subsurface soil located in the saturated zone (below 8 feet) is approximately 100 feet upgradient of Crams Cove. The contaminants of potential environmental concern are polycyclic aromatic hydrocarbons, metals, VOCs and total petroleum hydrocarbons. The potential for leaching and subsequent migration of these OHM through groundwater was evaluated by determining the composition of the subsurface and the physical characteristics of the OHM. Total organic carbon concentrations were analyzed for two soil samples collected from SB-37 and SB-41. TOC concentrations ranged from 260,000 and 460,000 mg/kg. The physical properties of PAHs indicate very low water solubilities and high organic carbon partition coefficients (K_{oc}). Minimal concentrations of PAHs will dissolve in groundwater and the high K_{oc} values indicate strong sorption to organic carbon. These characteristics suggests negligible migration potential of PAHs to Crams Cove. TOC in soil is also expected to inhibit migration of VOCs from soil to groundwater. TPH at the site has been determined to consist primarily of heavy lubricating oils with some gasoline. The primary constituents of heavy lubricating oils are PAHs and long chain hydrocarbons. The physical characteristics of the TPH are expected to be similar to PAHs resulting in minimal migration potential. Metals are relatively insoluble and immobile from soil to groundwater. Current levels of OHM in groundwater near Crams Cove were evaluated by sampling monitoring well MW-4 On June 13, 1996. The groundwater sample was analyzed for PAHs and dissolved silver. Analytical results indicated non-detectable levels of both PAHs and silver. Based on information presented in this section, potential impacts to aquatic habitats and organisms through groundwater migration is considered minimal.

14.1.3 Potential Surface Runoff

OHM impacted soil is located at depths greater than three feet below grade in most areas of the site. The potential for runoff of sediment to Crams Cove is not a potential migration pathway due to the depth of OHM and the maintenance of vegetation as part of the Activity and Use Limitation (Section 6.0).

14.2 Potential Impacts to Terrestrial Organisms and Habitats

14.2.1 Potential Impacts to Surficial Soil

The depth of OHM impacted soil is greater than three feet deep in most areas on the site. In certain sections of Exposure Area #1, the OHM impacted soil was detected at depths of approximately 1.0 to 1.5 feet below grade. Soil borings where OHM was detected at shallow depths include GP-38, GP-39 and GP-40. Detected OHM included PAHs and TPH. The area in which GP-38, 39 and 40 are located is densely vegetated with trees, shrubs and bushes. The dense vegetation will inhibit erosion of the top one foot of protective cover. In addition, the MADEP GIS Map, attached as Appendix F, indicates that there are no Areas of Critical Environmental Concern near the site.

14.2.2 Potential Impacts to Vegetation

Potential impacts to vegetation at the site was evaluated during numerous site visits and there was no visible evidence of stressed vegetation.

14.3 Potential Impacts to Wetlands Habitats

Wetlands, as defined by 310 CMR 10.00, are present along the banks of Crams Cove and the Charles River. There are no known impacts to wetlands habitats from environmental conditions at the site. As discussed in Section 14.1.2, there is minimal potential for migration of OHM in groundwater to environmental receptors located within Crams Cove. In addition, the MADEP GIS Map indicates that there are no NHESP Estimated Habitats of Rare Wetlands Wildlife in the area of the site.

14.4 Stage I Environmental Screening Conclusions

The Stage I Environmental Screening conclusions are summarized below:

1. There is no evidence of past or present releases to environmental receptors.

2. There is negligible groundwater migration potential of OHM to environmental receptors.

3. There is minimal potential for surface runoff of OHM to environmental receptors.

4. There is no visible evidence of stressed vegetation due to OHM at the site.

5. Environmental conditions at the site supports a conclusion that there is minimal potential for impacts to aquatic and terrestrial habitats and organisms.

Based on the Stage I Environmental Screening, a condition of No Significant Risk to environmental receptors has been met for this location.

15.0 CONCLUSIONS

The following conclusions were reached based on the Method 3 Risk Characterization of site conditions at 48 Woerd Avenue in Waltham, Massachusetts:

1. A Method 3 Human Health Risk Characterization determined that non-carcinogenic and carcinogenic risks for current and future site uses are less than the promulgated MCP risk criteria

2. The site does not pose a risk to safety and public welfare.

3. A Stage I Environmental Screening concluded that a condition of No Significant Risk to environmental receptors exists.

4. A Condition of No Significant Risk to human health and the environment exists.

16.0 REFERENCES

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MADEP, Bureau of Waste Site Cleanup and Office of Research and Standards, "Guidance for Disposal Site Risk Characterization in Support of the Massachusetts Contingency Plan", BWSC/ORS-95-141, July 1995.

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U.S. EPA, Office of Health and Environmental Assessment, "Exposure Factors Handbook", EPA/600/8-89/043, March 1990.

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Appendix G

Pertinent Correspondence

CITY OF WALTHAM
MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS
25 LEXINGTON STREET
WALTHAM, MASSACHUSETTS 02154
EDWARD F. DELANEY, P.E.
DIRECTOR OF PUBLIC WORKS

August 13, 1970

Stanley T. Oley, Health Agent
Waltham Board of Health
25 Lexington Street
Waltham, Massachusetts 02154

Dear Mr. Oley:

Thank you for sending me a copy of Dr. Sawyer's letter of August 6 regarding the Moord Avenue dump.

As you know, we make arrangements on a regular basis to seal the exposed faces of rubbish with clean fill so as to minimize infestation of rodents and vermine.

I have made arrangements for such filling to take place within a week.

Very truly yours,

Edward F. Delaney, P. E.
Director of Public Works

EFD:k

cc Edward J. Sawyer, M. D.
Com. of Health, Newton

State Dept. of Public Health
Public Works Director - Newton

HEALTH DEPARTMENT

TELEPHONE
244-4700

City of Newton, Massachusetts
Incorporated 1873
CITY HALL
COMMONWEALTH AVENUE AND WALNUT STREET
NEWTON CENTRE 02159

Edward J. Sawyer, M.D.
COMMISSIONER OF HEALTH

August 6, 1970

Stanley T. Oley, Director
Waltham Health Department
25 Lexington Street
Waltham, Massachusetts 02154

Dear Mr. Oley:

Several complaints have been received by this department regarding the probability of roaches emanating from the Waltham City Dump, off of Moody Street.

Inspection revealed that this dumping ground is not being operated or maintained in a manner as to protect the public health. This dumping area facing the Newton Municipal Incinerator is exposed and certainly is conducive to the breeding and harboring of rodents, flies, and other vermin.

Please take any necessary action so as to eliminate this health nuisance.

Very truly yours,

Edward J. Sawyer, M.D.
Edward J. Sawyer, M.D.
Acting Commissioner of Health

PDM:mh

cc: State Department of Public Health
Public Works Director - Newton

NOV 2 1970

THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

STATE OFFICE BUILDING, GOVERNMENT CENTER

100 CAMBRIDGE STREET, BOSTON 02202

October 28, 1970

Honorable Arthur J. Clark
Mayor of the City of Waltham
City Hall
Waltham, Massachusetts 02154

Re: Charles River, Waltham
Pollution Caused by City
Dumping

Dear Mayor Clark:

This Division has received numerous complaints concerning pollution of the Charles River being caused by the Waltham City Dump. This is a condition in contravention of the standards adopted by this Division under authority of the Massachusetts Clean Waters Act of 1966.

Under authority of Chapter 704 of the Acts of 1970 which further amended Chapter 21 of the General Laws you are hereby ordered to have this condition corrected. A copy of the order is attached hereto.

I shall be pleased to have members of my staff discuss this problem with you and your consulting engineer when he has been engaged.

Very truly yours,

Thomas C. McMahon
Director

TCM:WAS:af
Board of Health, Waltham
Department of Public Health, 600 Washington Street, Boston

Comm. of Mass

CITY SOLICITOR

FEB 4 1971

BY _____

To: Thomas C. McMahon, Director
Division of Water Pollution Control

From: William A. Slagle, Designated Hearing Officer

FEB 4 1971

Date: January 28, 1971

Subject: Adjudicatory Hearing - City of Waltham

On January 8, 1971 I (being duly designated by the Director) sat as presiding hearing officer in the matter of the Division of Water Pollution Control and the City of Waltham (herein called the Respondent). Representing the Division were Ellsworth T. Johnson, General Counsel, who acted as counsel for the Division, and Messrs. Sabin M. Lord, Jr., M.S., Donald L. Corey, P.E., and Peter C. Moleux, who testified as witnesses called by the Division. Representing the City of Waltham were Attorney William J. Bannan, Jr., City Solicitor; and Edward F. Delaney, Director of Public Works; and Alan H. McClennen, Planning Director, who testified as witnesses called by the said City.

Witnesses called by the Division outlined the scope of the alleged problem as it relates to the Waltham municipal dump and displayed charts and pictures purportedly illustrating the condition which the Division alleges is in contravention of the Water Quality Standards adopted by the Division. Analyses of samples taken in 1967 and November 1970 were later submitted as evidence.

Counsel for the City of Waltham objected to submission as an exhibit of samples taken in 1967, submission of evidence taken subsequent to the date of the Order (October 28, 1970), and then moved for dismissal of the Order on the basis that there was insufficient evidence to substantiate the Findings of Fact.

I recommend that the objections to submission of evidence taken in 1967 and in November 1970 be overruled. In my opinion, the Division was demonstrating that this is a continuing violation and was, in fact, continuing even after the date of the Order. I pointed out to the respondent the language of Section 44 of Chapter 21 of the General Laws which states in part: "Whenever it appears to the director that there is a discharge. . . which is causing or contributing to or is likely to cause or contribute to a

condition in contravention of the standards of water quality. . ." (emphasis added). I further recommend that the respondent's motion for dismissal be denied on the basis that the Division did, in my opinion, from other substantial evidence submitted tending to prove that oil wastes and solids were emanating from the Waltham municipal dump into Crams Cove, an extension to and part of the Charles River.

After due and full consideration of the arguments and evidence presented by both parties, it is my opinion that the Order dated October 28, 1970 and issued by you, as Director of the Division of Water Pollution Control, is proper and based upon substantial evidence submitted tending to prove that the said effluents tended to reduce the quality of the waters known as the Charles River at said location below the assigned classification. I, therefore, recommend no change in said Order.

I would point out to you that the first item in the Order requires the City to have engaged a consulting engineer by December 1, 1970. If you concur in my above findings and recommendations, you might consider February 15, 1971 as the date to set for the City of Waltham to engage a consulting engineer. No other changes in the original Order are recommended.

Respectfully submitted,

William A. Slagle, P.E.
Designated Hearing Officer

cc: Attorney William J. Bannan, Jr., Solicitor for the City of Waltham

(The Respondent is hereby notified that it has ten days from receipt of this preliminary findings and recommended order within which to file written objections pursuant to the Rules and Regulations of this Division pertaining to adjudicatory hearings.)

A True Copy Attest:

Henry D. Shanks, Clerk

The Commonwealth of Massachusetts
Water Resources Commission
Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

OFFICE OF THE DIRECTOR
DIVISION OF WATER
POLLUTION CONTROL

April 5, 1971

Honorable Arthur J. Clark
Mayor
City Hall
Waltham, Massachusetts

RE: Waltham - Charles River -
Waltham Dump - Pollution
Abatement Program
Memorandum of Agreement

Dear Mayor Clark:

This letter is to summarize the meeting held in this office on March 30, 1971 with Mr. Edward Delaney, Public Works Director of Waltham.

At this meeting, several aspects of a pollution abatement program for the Waltham Dump were discussed. The first topic, and the one most easily implemented would be the removal of the material which has been thrown or has fallen into Cram's Cove. This would include tires, shopping carts, boxes, appliances, etc. It was agreed that this project could be initiated and completed within 30 days.

The second subject to be discussed was the extension of the now existing storm drain (City of Newton's) up to the rear of the Eagle Signal Property. This drain would have to have tight joints to prevent leaching of material directly into the drain. Once this drain is in place and connected, clean fill material should encase this structure. A permit from the Department of Natural Resources, Division of Conservation Services would be required to fill the wetland area surrounding the drain.

The face of the dump on the Cove, extending from the New England Mica Co., to the rear of the Eagle Signal Company should be graded or sloped, covered with clean landfill or loam, and planted.

The following implementation agreement has been drawn up to further clarify the steps necessary to correct the situation at the dump site:

1. The requirement to hire a consulting engineer in the original order is hereby waived;
2. Removal of all debris from Cram's Cove to be completed by May 15, 1971;
3. Submission of final plans and specifications by May 15, 1971 for:
   (a) facing the dump (including slope, cover material, extent of area to be covered,
   (b) extension of the existing storm drain;
4. Completion of the following by August 15, 1971:
   (a) storm drain extension,
   (b) facing of the dump.

It is noted that the extension of the above mentioned storm drain is contingent upon the following:

1. Legal authority to extend this drain.
2. Proper application and licensing from the Division of Conservation Services,
3. Necessary easement rights.

Will you please acknowledge receipt of this letter, that this may be a memorandum of agreement and that you intend to comply with the implementation agreement as stated above.

Very truly yours,

Thomas C. McMahon

Thomas C. McMahon
Director

TCM/SML/cf

The Commonwealth of Massachusetts
Department of Public Health

NORTHEASTERN REGIONAL OFFICE
TEWKSBURY HOSPITAL
TEWKSBURY 01876

TEL: 617-851-7261

March 14, 1972

Notice of Violation of
the "Regulations for
the Disposal of Solid
Wastes by Sanitary
Landfill"

Re: Waltham - Solid Waste
Violation of Regulations

Public Works Department
Waltham, Massachusetts

Inspection by the Department on March 8, 1972 of the solid waste disposal facility located off Woerd Street has established the following violations of the "Regulations for the Disposal of Solid Waste by Sanitary Landfill," as adopted under the provisions of Section 150A of Chapter 111 of the Massachusetts General Laws, as most recently amended by Chapter 839 of the Acts of 1970: (A copy of said Regulations is enclosed.)

Regulations Violated

Reg. 3	-	Submission of plans
Reg. 6	-	Gover material
Reg. 10.1	-	Access roads
Reg. 10.3	-	Signs
Reg. 11.4	-	Deposition of refuse
Reg. 12.3	-	Maintenance and general cleanliness
Reg. 14	-	Spreading and compacting of refuse
Reg. 15	-	Depths of cover; daily, intermediate, final
Reg. 18.3	-	Removal of salvaged materials
Reg. 20.1	-	Vector control
Reg. 21.1	-	Drainage of surface water

Re: Waltham - Solid Waste
Violation of Regulations

Requirements for Compliance

You are required to take such appropriate steps as may be necessary to abate the conditions which violate the aforementioned regulations.

It is further required that you inform the Department in writing, on or before March 31, 1972 of action you have taken or intend to take to stop violation of said regulations.

Failure to take action in this matter can cause the Department to take further legal steps.

Issued by

Kenneth A. Tarbell
Regional Sanitary Engineer

The Commonwealth of Massachusetts
Department of Public Health

NORTHEASTERN REGIONAL OFFICE
TEWKSBURY HOSPITAL
TEWKSBURY 01876

TEL: 617-851-7261

March 14, 1972

Public Works Department
City Hall
Waltham, Massachusetts

Re: Waltham - Solid Wastes - Violation of the "Regulations for the Disposal of Solid Wastes by Sanitary Landfill

Gentlemen:

An inspection by this Department of the refuse disposal site located off Woerd Street and operated by or under the control of your agency, has established that there exist violations of the "Regulations for the Disposal of Solid Wastes by Sanitary Landfill" as adopted under the provisions of Section 150A of Chapter 111 of the Massachusetts General Laws.

Accordingly, the Department issues the enclosed citation, which states the regulations violated and the Department's requirements for compliance with the above mentioned regulations.

Should you wish to discuss this matter further, please contact the Regional Health Office.

Very truly yours,

Kenneth A. Tarbell

Kenneth A. Tarbell
Regional Engineer

KAT/Ejac/mj

cc: Board of Health, Waltham, Mass.
Metropolitan Boston Air Pollution Control District, 600 Washington Street
Boston, Massachusetts

CITY OF WALTHAM

MASSACHUSETTS

EDWARD F. DELANEY, P.E.
DIRECTOR OF PUBLIC WORKS

DEPARTMENT OF PUBLIC WORKS

April 27, 1972

Honorable Arthur J. Clark
Mayor of the City of Waltham
City Hall
Waltham, Massachusetts

Dear Mayor Clark:

I am enclosing a statement which summarizes the various aspects of the solid waste problem which must be resolved in the near future.

I will be pleased to meet with you and the City Council tonight to discuss the matter in depth.

Very truly yours,

Edward F. Delaney

Edward F. Delaney, P. E.
Director of Public Works

EFD:k
Encl.

cc: City Councillors

THE SOLID WASTE PROBLEM

It is no exaggeration to say that the solid waste problem has reached crisis proportions in Waltham. However, this fact has been alleged so many times in the past that skeptics tend to regard the present situation as just another minor nuisance that will soon pass. Nothing could be further from the truth. The purpose of this paper is to define the problem and outline possible solutions together with realistic cost figures. Let us consider the various elements of the problem.

The Incinerator

Waltham is under a state-wide order to abate air pollution by the installation of proper pollution control devices. As you know, our incinerator is 25 years old and has done yeoman service in the past. However, it has reached its maximum capacity and actually gone beyond its useful economic life. The cost of air pollution control devices is estimated at $450,000 to $500,000. In addition, another $100,000 may be necessary for other improvements. There is no way that we can economically justify such expenditures.

The Woerd Avenue Dump

The dump has been an eyesore for as long as anyone can remember. In addition, we have been cited by the State Department of Public Health for failure to comply with a number of their provisions for sanitary landfills.

A recent survey indicates a life expectancy of approximately one year at Woerd Avenue.

In order to comply with state regulations we must, among other things, cover the entire completed portion of the dump and provide daily cover for the active portion of the fill. In the next year, this will require approximately 45,000 cubic yards of fill at an estimated cost of $100,000.

Alternatives

(a) The Incinerator

We have been negotiating with Newton for the use of their incinerator to burn our rubbish. Public Works Director Pratt has stated that he can safely handle only 100 tons per day of Waltham's rubbish. The present charge is $6.00 per ton and Mr. Pratt has recommended to Mayor Mann that the price be increased to $10.00 per ton. In terms of cost to Waltham this means somewhere between $150,000 and $200,000 per year. We would still be responsible for handling 50 cubic yards of residue daily. Of course, we would have to continue to operate our own incinerator on a reduced tonnage basis. This would mean a reduction in personnel of about 8 men representing $65,000 in salary. Under such conditions, I would recommend that our daily burn be held to 50 tons. It might then be possible to gain permission from the state to operate at the reduced rate without making extensive alterations.

(b) Another Dump

The only available area in Waltham with a reasonable capacity for the future is the Sawyer Road dump. There are approximately 25 acres with a life expectancy in excess of 10 years.

An area selected as the site for a disposal facility must first be approved by the local Board of Health. Any aggrieved party, including the City, can appeal their decision to the state Department of Public Health. It is almost certain that any decision will be appealed.

To be approved by the state, the facility must meet all current standards. The cost to Waltham would be as follows:

1) Preparation of plans	$20,000
2) Preparation of site, clearing, excavation, etc.	50,000
3) Purchase of Equipment	
(a) Front End Loader	56,000
(b) Compactor	58,000
(c) Truck	11,000
(d) Garage with sanitary facilities	25,000
	$220,000

The annual operating cost of the sanitary landfill will be approximately $50,000 per year.

Summary

If Waltham elects to use the Newton Incinerator and operate a new sanitary landfill, the capital costs will be approximately $320,000 and the net increased annual operating costs will run between $120,000 and $170,000 per year.

OFFICE OF THE DIRECTOR
DIVISION OF WATER
POLLUTION CONTROL

The Commonwealth of Massachusetts

Water Resources Commission

Leverett Saltonstall Building, Government Center
100 Cambridge Street, Boston 02202

May 10, 1973

Director of Public Works
City of Waltham
25 Lexington Street
Waltham, Massachusetts 02154

Re: Waltham - CHS
Waltham Dump
Docket #213

Dear Sir:

It is our understanding that your City has fully complied with our Division Order of April 27, 1971.

To complete our records, please confirm the above information by summarizing the measures that were taken. A reply letter within two weeks will be appreciated.

Very truly yours,

Thomas C. McMahon

Thomas C. McMahon
Director

TCM/JHP/lmw

CITY OF WALTHAM

MASSACHUSETTS

EDWARD F. DELANEY, P.E.
DIRECTOR OF PUBLIC WORKS

DEPARTMENT OF PUBLIC WORKS

May 16, 1973

COPY

Mr. Thomas C. McMahon, Director
Water Resources Commission
100 Cambridge Street
Boston, Massachusetts 02202

Re: Waltham - CHS
Waltham Dump
Docket #213

Dear Sir:

The City of Waltham has fully complied with your order of April 27, 1971.

As indicated on the plan previously sent to you, we extended an existing culvert several hundred feet and filled over the culvert; we made a general cleanup of Cram's Cove removing the accumulated debris of several decades; and we covered the south slope of the Woerd Avenue dump to prevent possible leaching into the cove.

You may be interested to learn that as of April 21, 1973 the gates of the Woerd Avenue dump were closed forever. The dump has been completely covered with clean fill in accordance with the requirements of the State Department of Public Health.

Very truly yours,

Edward F. Delaney, P. E.
Director of Public Works

EFD:k

CITY OF WALTHAM

MASSACHUSETTS

EDWARD F. DELANEY, P.E.
DIRECTOR OF PUBLIC WORKS

DEPARTMENT OF PUBLIC WORKS

May 22, 1974

COPY

Honorable Arthur J. Clark
Mayor of the City of Waltham
City Hall
Waltham, Mass. 02154

Dear Mayor Clark:

I respectfully request that the sum of Forty Thousand ($40,000.) Dollars be appropriated to Account RE 02 C 06, Collection and Disposal of Rubbish.

This money is necessary to carry continuing expenses of rubbish disposal for the balance of the fiscal year. The funds will be used to pay Reclamation Systems, Inc., in Cambridge for rubbish disposal and Howard Disposal Division of SCA for disposal of incinerator residue.

Very truly yours,

Edward F. Delaney, P. E.
Director of Public Works

EFD:co

cc: Mayor
Auditor

CITY OF WALTHAM

MASSACHUSETTS

November 11, 1974

MOTION

Motion... that Mayor Clark in conjunction with Mayor Mann, of Newton, be requested to clearly state the conditions of the refuse disposal agreement between the two cities to allay any misconceptions regarding this major step of cooperation in such an important aspect of City Government... that the information be presented to the City Council at the Committee of the Whole meeting on Nov. 18, 1974.

Co-chairman Newton-Waltham
Regional Refuse Disposal Dist.
Councillor Ward 8

Councillor At-Large

Councillor Ward 7

Read and Adopted: November 11, 1974

A TRUE COPY ATTEST:

Joseph S. Cromeley

CITY CLERK

Waltham
3-3260

CITY OF WALTHAM

MASSACHUSETTS

ROBERT J. BROPHY
CITY SOLICITOR

LAW DEPARTMENT

ASSISTANT CITY SOLICITORS
JOHN B. CERVONE
ROBERT F. PILICY
PATRICIA A. AZADI

STAFF ATTORNEYS
ROBERT M. HORACK
CHERYL L. LUDWIG
PATRICIA HARRIS TEICHER

July 31, 1990

John J. Fitzgerald, P.E.
Chief, Site Management Section
The Commonwealth of Massachusetts
Department of Environmental Protection
Metropolitan Boston - Northeast Region
5 Commonwealth Avenue
Woburn, MA 01801

RE: Waltham property
Woerd Avenue and Moody Street

Dear Mr. Fitzgerald:

This Office has received information, data, and/or a report which indicates that oil and/or hazardous materials may have been released on property located at 48 Woerd Avenue, Waltham, Massachusetts; a parcel which directly abuts property owned by the City of Waltham. Further that the preliminary engineering report conducted for the 48 Woerd Avenue parcel makes various references to the parcel owned by the City of Waltham and indicates the existence of potential contaminants in groundwater monitoring wells located in proximity to the property line which separates the City owned parcel from the parcel located at 48 Woerd Avenue. While the City has no present knowledge that oil and/or hazardous materials exist or have been released at the location referenced above, it was the concern of this Office that the engineering report submitted for the 48 Woerd Avenue parcel may be deemed by your agency as constructive notice of potential environmental conditions on the property owned by the City, thus triggering the mandatory reporting requirements under G.L.M. c.21E, Section 7. This Office would request at this time guidance and/or a directive from your office on whether the duties and obligations under G.L.M. c.21E have been triggered by the circumstances set out above, and if so, what response your office would expect from the City.

Any assistance you may provide this Office is appreciated, and please feel free to contact this Office if you require additional information regarding this matter.

Very truly yours,

Robert J. Brophy
City Solicitor

RJB/nk

cc: John J. Fitzgerald, P.E.
Chief, Site Management Branch, DEP

Madeline Snow
Dept. of Environmental Protection
BWSC, One Winter Street, Boston, MA

Hon. William F. Stanley
Mayor, City of Waltham

Edward F. Delaney, Director Public Works Department,
City of Waltham

Walter S. Sweder, Jr.
Director of Public Health, City of Waltham

Waltham
3-3260

TELEPHONE CONVERSATION NOTES
MASS DEQE/NERO/DSHW

SITE REFERENCE WALTHAM, PARKER HANNIFAN DATE 9/20/91

SUBJECT 48 CORP. 3-3260 WOERD AVENUE TIME 3:50 PM

FROM IDA BARBOUDI REPRESENTING NERO/BWSC

TO ROBERT J. BROPHY REPRESENTING WALTHAM CITY SOLICITOR

DISCUSSION The implications made in a January 1990 TWM Northeast report that a source of contaminants found on the 48 Woerd St property may be on a City owned site (a former landfill) appear to be inconclusive at this time. Unless in future, further information is obtained, the City of Waltham need not take any further action with this regard.

ACTION REQUIRED/REFERRED TO

City of Waltham, Massachusetts

Woerd Avenue Landfill
Comprehensive Site Assessment
Scope of Work

May 1997

Contents

List of Figures

Section 1
Introduction

1.1 Purpose of Project

The Consultant retained by City of Waltham, Massachusetts (the "City" or "Waltham"), prepared this Scope of Work for the Comprehensive Site Assessment (CSA) at the Woerd Avenue Landfill (the "landfill"). The CSA is to be conducted in accordance with the Solid Waste Management Regulations (310 CMR 19.000), administered by the Massachusetts Department of Environmental Protection (DEP).

The purpose of a CSA is to obtain an understanding of the site geology and hydrogeology; evaluate air, soil, groundwater, surface water, and sediment quality in an effort to identify contamination associated with the landfill; and, based on this information, evaluate possible risks to human health and the environment. The data collected is used to ensure proper landfill monitoring, remediation, and closure. The CSA data will also provide basis for evaluation of landfill reuse alternatives such as construction of athletic fields on top of the closed landfill.

This submittal provides the scope of work for the CSA to be approved by DEP. This scope was prepared to meet the requirements outlined in 310 CMR 19.000 and DEP's Landfill Technical Guidance Manual (revised September 1993). The proposed CSA field program will not begin until DEP approval of this Scope of Work is attained. The approved sampling program will serve as the environmental monitoring program for the landfill during the duration of the CSA.

The approach to the CSA work is to collect adequate environmental monitoring data for the Woerd Avenue Landfill to determine the impacts of the landfill on human health, safety and the environment. This data will be analyzed and evaluated, and a qualitative risk assessment will be prepared. Based on the outcome of this risk assessment, closure plans to complete capping of the site will be prepared that address any significant impact and the requirements of 310 CMR 19.000. This CSA project consists of three primary parts as discussed in Section 1.3. Part 1 includes the development of this CSA scope of work; Part 2 includes the field investigations; and Part 3 includes the data analysis and report preparation.

For Part 2 of the CSA, the Consultant proposed to install several new groundwater monitoring wells, collect and analyze four rounds of water quality monitoring for groundwater and surface water, collect landfill gas samples for laboratory analysis, and determine the local geologic characteristics. During Part 3, the CSA report including summaries of the available environmental data including all four rounds of water quality testing, evaluate and analyze the data, and the qualitative baseline risk assessment will be prepared. This work will be presented in a Draft Final CSA report which will be submitted to DEP for review and approval.

1.2 Project Schedule

The Consultant proposes the following schedule for completion of the CSA for the landfill:

- Submit ISA and CSA Scope of Work ..... May 1, 1997
- Receive DEP Approval of ISA and CSA Scope of Work ..... July 1, 1997

- Commence Work on CSA ..... August, 1997
- Complete Drilling Program ..... September 1, 1997
- Quarterly Sampling Rounds
  - — First Round ..... September 1997
  - — Second Round ..... December 1997
  - — Third Round ..... March 1998
  - — Fourth Round ..... June 1998
- Submit Draft CSA Report ..... September 1998

Section 2
Scope of Work

2.1 Introduction

This CSA Scope of Work has been developed with consideration of available site information and previous reports. Additionally, the Scope of Work has been developed to comply with DEP's Solid Waste Management Regulations (310 CMR 19.000). Specifically, the CSA Scope of Work tasks described herein follow the "Outline for Solid Waste Site Assessment" presented in DEP's "Landfill Technical Guidance Manual" (revised September 1993).

2.2 Task 1.0 - Initial Site Assessment Summary

Provided below is a brief summary of key issues concerning the landfill as summarized in the ISA:

- *Site Description.* The landfill site is approximately 8.69 acres in size. The abutting Moody Street playground consists of an additional 2.4 acres. The landfill portion of the site is wooded with several paths. The site is abutted by residential and industrial properties, the Moody Street playground and the inactive incinerator for the City of Newton.

- *Site Operational Status.* The landfill no longer receives any solid waste for disposal and has not been active since 1973. There was no evidence of ongoing illegal dumping at the landfill site.

- *Site History.* The landfill originally began operating for the disposal of coal ashes from home heating furnaces in about 1912. By 1935, an estimated 35,000 tons of ashes were dumped there annually. When the Waltham incinerator opened in 1946, the landfill began accepting incinerator residue and other non-combustible wastes. As other city dumps began to close in the 1950's, the landfill because the major disposal site for non-combustible items.

  In the early 1970s, the City began to receive complaints about the conditions at the landfill After correcting problems identified by the Department of Public Health the City closed the landfill on April 21, 1973. At that time, the landfill was reportedly covered with clean fill in accordance with the current regulations.

- *Previous Sampling and Analysis.* There has been no historic sampling of groundwater, surface water and sediments specifically at the landfill site. There has been a limited sampling program at the adjacent Parker Hannifan site under the requirements of the Massachusetts Contingency Plan (MCP, 310 CMR 40.000). The limited sampling and analysis program is summarized in the ISA.

- *Geologic and Hydrogeologic Setting.* There is no surficial geology map for the Waltham site from the United States Geologic Service (USGS). Mapping completed for the City of Newton in the area of the landfill determined that the site is underlain by glacial till which was defined as compact and generally impervious mixture of clay, silt, gravel, cobbles and boulders deposited by ice. The statewide mapping completed by Zen et al has the landfill located within an area of Cambridge Argillite.

Woerd Avenue Landfill
Waltham, Massachusetts

Figure 2-1
Site Locus Plan

- *Site-2.* This is the sidegradient couplet which will be located between the landfill site and the Parker Hannifan site. This location will monitor any contamination moving between the landfill and the industrial site as well as provide a sidegradient monitoring location.

- *Site-3.* This site will be located along Cram's Cove adjacent to the water line. It is likely that since landfill operations extended into the Cove, that this well couplet will be screened below waste. However, it is the only location to monitor groundwater quality immediately before it discharges into the Cove.

- *Site-4.* This site is located along the southwestern corner of the landfill and will provide another downgradient monitoring location.

The Consultant will receive the appropriate approvals from the Waltham Conservation Commission for the installation of these monitoring wells.

The sampling program is summarized in Section 2.6 below and Appendix B to this document. All overburden wells will have a ten-foot screen length and be 2-inches in nominal diameter.

During the drilling program, the Engineer will collect visual samples with a split spoon sampler as part of the drilling program at five foot intervals on the deeper well locations. These samples will be classified and stored in drillers jars. The Engineer will also perform jar headspace analysis on these samples. It is not proposed to collect any soil samples for laboratory analysis as part of the drilling program.

In addition to the four monitoring well couplets, the Consultant will also install three landfill gas monitoring wells. The locations of the landfill gas monitoring wells is shown on Figure 2-2.

The Engineer will also collect four surface water samples from the vicinity of the site. Two of the samples, SW-1 and SW-2, will be collected from Cram's Cove. The other two samples will be from the swales which drain from the landfill behind the Newton incinerator as well as the swale which drains towards Cram's Cove. The Engineer will collect four sediment samples from approximately the same locations as the surface water samples.

2. **Locus map indicating the proposed locations listed above.**

All proposed well and surface water locations noted above are shown on Figure 2-2 attached.

Following installation of all monitoring wells, an elevation and location survey will be conducted. The survey will include all wells and other monitoring points, including surface water stations, leachate sample points, and air sampling stations. All locations will be added to the base map prepared for the CSA report.

3. **Drilling methods and field procedures.**

Drilling methods, well installation guidelines, and associated field procedures are presented in the work plan and guidance document (Appendix A).

In addition to the new monitoring wells at the site, the Consultant proposes to collect four surface water samples and four sediment samples in the vicinity of the landfill. The location of the surface water samples are shown on Figure 2-2. The locations were selected to provide a representative impact of the site on wetlands and surface water quality.

2.6.1 Groundwater and Surface Water Sampling

All monitoring wells and surface water sampling locations are to be sampled quarterly for four rounds. All groundwater and surface water samples will be analyzed for the following parameters:

- pH, specific conductance, temperature, and dissolved oxygen (field measured)
- Alkalinity
- Chemical Oxygen Demand (COD)
- Iron
- Barium
- "RCRA-8 Metals (arsenic, cadmium, chromium, copper, lead, mercury, selenium, and silver)
- Zinc
- Chlorides
- Sulfate
- Chlorides
- Nitrate nitrogen
- Total dissolved solids (TDS)
- Manganese
- Total cyanide
- Volatile Organic Compounds (VOC) using EPA Method 8260

Note that for the first round of sampling, water samples will be analyzed for total metals. If the results indicate the presence of metals above Maximum Contaminant Levels (MCLs), the subsequent round will be field filtered and analyzed for dissolved metals. If the analytical results of the second round are below the respective MCLs, total metal analysis will be conducted on subsequent sampling rounds.

During each sampling round, a water level elevation survey will be conducted to include all well and surface water stations. Water contour maps will be prepared for each round and included in the CSA report.

2.6.2 Sediment Sampling and Analysis

As discussed above, the Consultant proposes to collect one round of four sediment samples during the initial water quality round from the same locations as the surface water samples. The sample locations are indicated on the attached Figure 2-2.

Collected samples will be delivered to a DEP-approved laboratory for analysis of the following parameters:

- Total metals by appropriate EPA Methods;
- Pesticides and PCBs by EPA Method 8080;
- Volatile Organic Compounds by EPA Method 8260;

Appendix A

Work Plan and Guidance Document for Boring and Monitoring Well Installations

Appendix A
Work Plan and Guidance Document for Boring and Monitoring Well Installations

1.0 Introduction

The following sections provide a discussion on the boring and monitoring well installation methods to be used in conducting this field investigation. Soil and groundwater sample collection procedures, and soil classification and logging guidelines are presented in Appendix B. The specific locations for monitoring well installations at the Woerd Avenue Landfill are as shown on Figure 2-2.

The purpose of this section is to provide guidance for conducting borings and installing monitoring wells. The procedures do not cover all variations that may occur during the collection of samples or installation of monitoring wells. The methodology selected for use during the field investigation has been based on available information for the specific area being investigated.

1.1 Mobilization

Prior to drilling at the site, several steps are to be taken in order to select the most appropriate boring method and associated field procedures. At a minimum, prior to implementation of a drilling program, the following issues are to be considered and key personnel made fully aware of the relationship of these issues to the site under investigation.

- Pertinent sections of the DEP Publication No. WSC-310-91 (Standard References for Monitoring Wells), other regulations governing how, where or when the hole is drilled (e.g., property rights, permits, utilities) and the use of certain equipment compatible with the site's conditions and needs of the investigation.

- Background research of available data on the site, including both surface and subsurface geological and hydrogeological data, physical and chemical characteristics and available information on utilities such as sources of electricity and water.

- Health and Safety Plan content; aspects related to the specific site area (e.g., emergency responses, chain of commands, alternative routes in and out of the site and information on chemicals/pollutants on site, personal protective clothing/gear and equipment that may be used on the site).

- Selection of field methodologies specified for all drilling and sampling activities and execution of the drilling contract.

- Details of field procedures for sample collection, the implementation and decontamination of field equipment, etc.

- The prevention of spreading contaminants, maintenance of sample integrity and the minimization of disruptions to existing conditions and long-term impacts are specific

considerations which are common to all drilling programs at or near a landfill. To ensure sampling results accurately describe the conditions present, all materials to be furnished in performing work must be new and all equipment to be used must be in good working order.

The following section provides general information on the selected drilling method.

1.2 Boring and Drilling Operations

1.2.1 Task Team

- Field Investigation Team
- Drilling Subcontractor and Crew

1.2.2 Equipment

The Consultant Field Investigation Team Equipment

1. A copy of the Guidance Documents and CSA Scope of Work
2. A copy of the Subcontractors Agreement (Contract)
3. Field log books
4. Personal protective equipment and clothing as required by Health and Safety Plan
5. Organic Vapor Analyzer (OVA) or photoionization detector (HNu)
6. Stainless steel sampling knife
7. Headspace analysis containers
8. Field decontamination supplies (alconox, deionized/distilled water, 10% nitric acid solution, acetone, paper towels, trash bags)
9. Aluminum foil
10. Stakes and marking flags
11. 100-foot steel tape
12. Soil sample containers, packaging as required by the laboratory Chain-of-Custody Records, Traffic Reports, sample tags, and other paperwork
13. Sample coolers
14. Scrub brushes
15. Camera and film
16. Squirt bottles
17. Galvanized or plastic tubs
18. Plastic pails/buckets
19. Vermiculite or equivalent packing material
20. Stainless steel pans or bowls
21. Scale big enough to weigh a 24-inch long, nominal 3-inch diameter split-spoon sampler.

Drilling Subcontractor's Equipment

All drilling equipment and auxiliary supplies will be supplied by the drilling subcontractor. The drilling rig, augers, and auxiliary equipment will be steam cleaned prior to being brought to the site, at designated areas prior to each boring and before leaving the site. Prior to initiating activities, the

subcontractor shall supply a list of equipment that he proposes to use along with a tentative work schedule which identifies equipment that will be provided at various times according to the needs of certain activities.

1.2.3 Drilling Hole Location

Procedure

1. The general location(s) of the proposed monitoring wells are as shown on Figure 2-2.

2. A visit to the site with the driller at, or prior to if possible, the initiation of activities to check specific drilling locations for acceptability. The following will be considered:

   - Access coordination with the Client or other property owners if necessary.
   - The site checked for drilling equipment accessibility.
   - The site area checked for water supply, space, absence of overhead utilities.
   - Normally, the drilling contractor will be responsible to check for physical evidence of underground utilities such as gas or waterlines, sewers, telephone or electrical cables. While no conflict with such utilities is expected at the proposed drilling sites, the drilling contractor is to make his own determination in this regard. The driller should obtain any permits required for drilling and the field representative should verify that permits have been obtained.

3. Even if no physical evidence of underground utilities is observed, all appropriate companies must be contacted to ensure that no utilities actually exist.

4. If any of the designated sites are not suitable, a relocated site must be checked to ensure that the new location will fulfill the original intent for the exploration. The relocation is preferably one which will not require obtaining another permit. DEP will be notified of any proposed change in monitoring well location.

5. The exact locations selected for drilling are to be staked with a clearly visible marker (i.e., fluorescent orange lath, flagging, etc.) and labeled with the proper drill hole number.

6. All holes are to be checked to ensure that they are properly located and labeled both on the final Site Plan and in the field.

7. Establish a tentative schedule to survey the location and elevations of new monitoring wells and other sampling points.

8. The drilling equipment is to be escorted to the site.

1.2.4 Hollow-Stem Augers (Helical Augers)

Description

Hollow-stem augers are a type of powered auger used primarily to advance the borehole when soil sampling is required. The hollow-stem auger consists of: (1), a section of seamless steel tube with a spiral flight to which are attached a finger-type cutter head at the bottom and an adapter cap at the top, and (2) a center drill stem composed of drill rods to which are attached a center plug with a drag bit at the bottom and an adapter at the top. The adapters at the top of the drill stem and auger flight are designed to allow the auger to advance with the plug in place. As the hole is drilled, additional lengths of hollow-stem flights and center stem are added. The center stem and plug may be removed at any time during the drilling to permit disturbed, undisturbed, or core sampling below the bottom of the cutter head by using the hollow-stem flights as casing. This process also permits the use of augering in loose deposits below the water table. Where this technique is used in unconsolidated material below the water table, fluids of known chemical quality may be needed to control groundwater inflow. Undisturbed samples taken in this manner may be more useful than those taken from a cased hole, since the disturbance caused by advancing the auger is much less than that caused by driving the casing. Augers of this type are available with hollow stems having inside diameters from 2-3/4 to 6 inches. An auger diameter of 4.25 inches is required for this drilling program.

Application

The use of hollow-stem augers is advantageous because drilling fluids are needed only under special circumstances when advancing a borehole. The augers also allow direct access for soil sampling through the hollow inner part of the auger stem.

The depths to which hollow-stem augers can bore are limited by the geologic formation and depth to groundwater. Hollow-stem augers are used primarily in formations that do not cave or have large boulders.

Upon reaching the desired depth, a small-diameter casing and screen can be set inside the hollow stem to produce a monitoring well. The augers are removed by section while the well screen and risers are held in place.

Typically, one 5-foot section of auger is removed at a time. In incompetent formations, the borehole surrounding the screen may be allowed to cave around the screen, or a clean sand or gravel pack may be installed as the augers are withdrawn. Once the screen is properly covered (usually to 2 feet above the top of the screen), a clay (bentonite) seal is installed. As a final step, grout or other impermeable material is tremied in place on top of the clay seal to ground level as the remaining auger sections are removed. Careful installation of clay and/or grout seals is essential, especially in areas where multiple aquifers are encountered.

Allowing the formation to collapse around the well may damage the screen and/or risers. Depending on formation material, sand or gravel pack may provide a better performing well.

1.2.5 Split-Spoon Samples

Description

A detailed discussion of split spoon sampling is included in Appendix B. As the actual collection of the samples is accomplished during the borehole advancement, a reference to the basic procedure to be followed is presented below.

1. Split-spoon samples will be collected in accordance with ASTM D1586-67 (1984), Method for Penetration Test and Split-Barrel Sampling of Soils. Split-spoon (nominal 2-inch diameter) samples will be collected at 5-foot intervals when drilling in overburden materials.

2. The locations at which geotechnical samples are to be collected will be as directed in the field. At locations where geotechnical samples are taken, split-spoon samplers (nominal 3-inch diameter) which appear to recover 24 inches of soil will be weighed before the spoons are opened. If a 24-inch soil recovery is confirmed, the bulk density of the soil will be computed based on the dimensions of the split-spoon (24 inches long, 3 inches in diameter) and the value noted in the field log book.

3. Formation samples will be described in accordance with Burmeister using the description definitions based on the modified Wentworth Scale.

1.2.6 Soil Logging

Soil logging includes keeping a detailed record of drilling (or excavating) and a geological description of materials on a prepared form. Geological logs are used for all types of drilling and exploratory excavations and include descriptions of both soil and rock. General guidance for logging soils and rock is provided below.

Methods

When drilling in soils or unconsolidated deposits, the log should be kept on a standard borehole log form (see Figure A-1).

The following basic information should be entered on the heading of each log sheet:

- Project name and number,
- Boring or well number,
- Location (approximate in relation to an identifiable landmark--will be surveyed),
- Elevation (approximate at the time--will be surveyed),
- Name of drilling contractor,
- Drilling method and equipment,
- Water level, and
- Start and finish (time and date).

			Boring no:
Client			Project no:
Contractor		Date started	Completed
Method	Casing size	PID	Protect'n level
Ground el.	Soil drilled	Rock drilled	▽ Below grnd
Logged by	Ch'd by	Date	Site

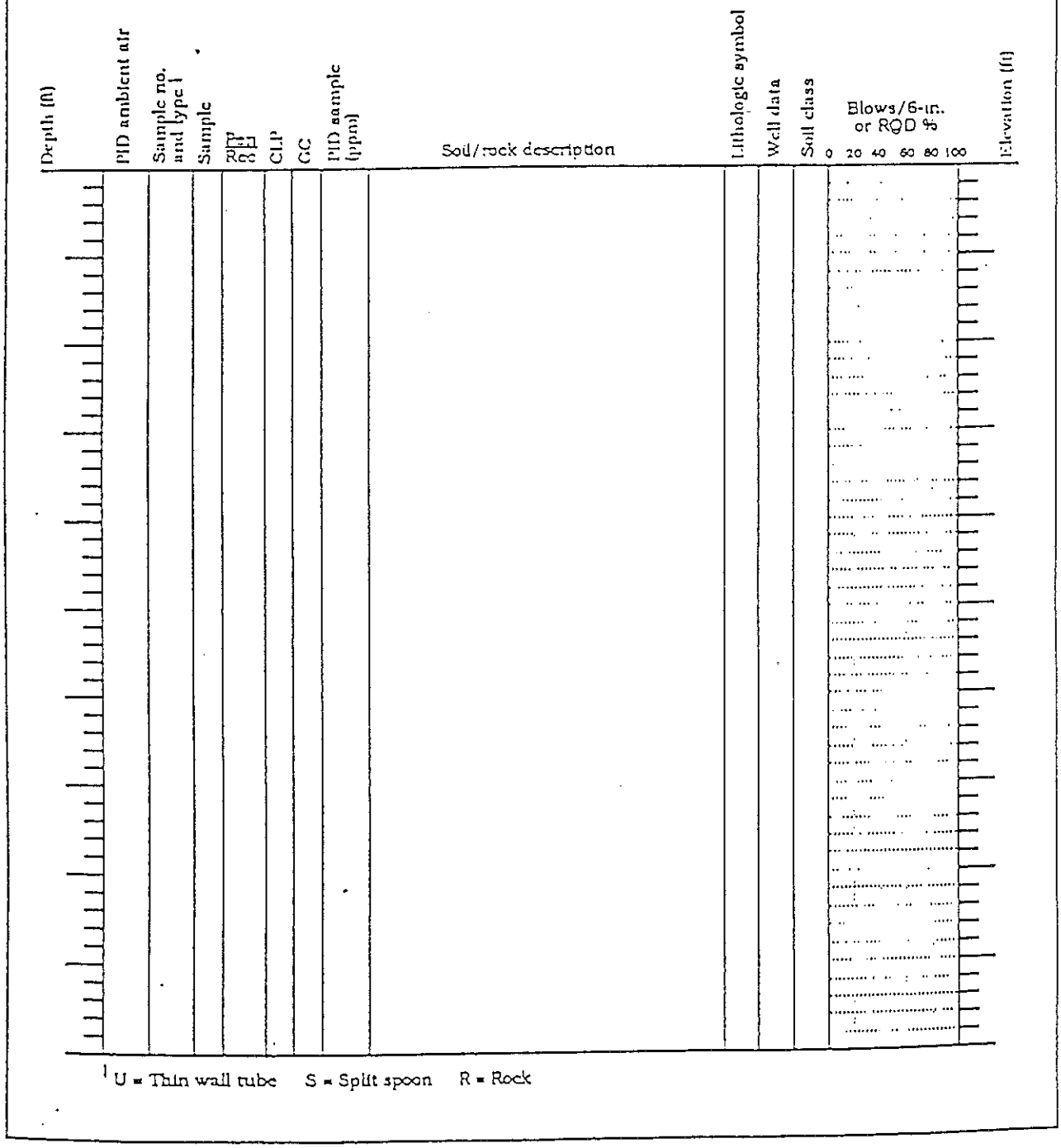


Figure A-1
Field Boring Log

The following technical information is recorded on the logs:

- Name of logger,
- Depth of sample below surface,
- Sample interval,
- Sample type and number,
- Length of sample recovered,
- Standard penetration test (ASTM D1586) results if applicable,
- Soil description and classification,
- Graphic soil symbols, and
- HNu/OVA readings.

In addition to the items listed above, all pertinent observations about drilling rate, equipment operation, or unusual conditions should be noted. Such information might include the following:

- Size of casing used and method of installation;
- Rig reactions such as chatter, rod drops, and bouncing;
- Drilling rate changes;
- Depth and percentage of fluid losses;
- Changes in fluid color or consistency;
- Material changes;
- Zones of caving or heaving; and/or
- Zones where circulation is lost or water production is observed.

Soil Description

The Burmeister system of soil description should be used to describe soils. Because the Burmeister system relies heavily on handling the soil, care should be taken in areas of significant soil contamination. For some purposes, an additional, or alternate description of soils (well logging) may be appropriate in accordance with the Unified Soil Classification System (USCS) as described in ASTM D2487-69 (1975): Test Method for Classification of Soils for Engineering Purposes. The approach and format should generally conform to ASTM D2488-69 (1975): Recommended Practice of Description of Soils (Visual-Manual Procedure).

1.2.7 General Rock Coring Guidelines

Introduction

It is anticipated there will be no rock coring during the project. However, if bedrock is encountered, the following procedures will be utilized. Rock coring techniques are used to obtain a continuous sample of rock at the project site for field logging and to provide samples of intact rock for laboratory testing should such subsequent testing be required. Additional information about the rock mass is available by careful observation of rig performance during drilling, drilling rate, bit wear, and loss of drilling fluid.

Procedure

1. Prior to commencing the field explorations, the site geologist should specify the following items:

   - Location of rock-coring explorations
   - Depth of rock-core penetration.
   - Length of core-run (usually 5 feet).
   - Specific rock-coring procedures.

2. The site geologist should identify the locations of rock-core explorations with survey stakes and flagging. Locations of the explorations should be approximately determined by the Field Geologist using pocket-transit and pace method and should be plotted on the site base map.

3. The site geologist should indicate the information to be recorded during the rock-coring operation. The recorded information should include but not necessarily be limited to the following:

   - Drill rate (minutes per foot),
   - Type and size of bit,
   - Core number,
   - Depth range,
   - Core recovery (inches), and
   - Rock Quality Designation (RQD in percent).

4. The rock core should be classified by the site geologist using a rock classification system established for the program.

5. There is no universal core barrel or drilling equipment for rock coring. The geologic and topographic conditions as well as the requirements of the project will, in most instances, control the type of equipment to be employed. The use of double-tube barrel, with a split inner tube would be required for most, if not all, rock coring on the project.

   The following factors can result in good core production and should be observed during rock coring.

   5.1 Prepare a level and stable drilling platform before commencing the boring.

   5.2 Keep the drill stem as nearly vertical as possible. On deep core holes, true alignment of the casing is critical. The driller may elect to use a heavy drilling mud instead of casing to support the borehole walls; this procedure is not as desirable under some conditions, but acceptable if satisfactory information is obtained. In the present investigation, the hollow stem augers are expected to provide a satisfactory means for supporting the borehole wells.

   5.3 Wash the casing out thoroughly before inserting the core barrel.

5.4 Inspect the selected core barrel and bit for wear, general cleanliness, and free movement of all parts. Reject any barrel or bit that appears unsatisfactory.

5.5 Pump recirculated drill fluid down the drill rods and observe a return flow before commencing drilling operations.

5.6 Carefully measure all lengths of rod, core barrel, and stick-up through all phases of drilling for accurate depth determination.

5.7 Drill with minimal vertical pressure and rotation. Most rigs are equipped with a selection of gear ratios and a variable hydraulically controlled feed mechanism. Driller expertise in selecting the correct combination of speed and feed rate is invaluable.

5.8 Water return should be no more than just sufficient to bring the borehole cuttings to the surface.

5.9 Place the core carefully in the core box from left to right, top to bottom.

5.10 If 100 percent recovery was not obtained, the borehole should be sounded to determine if the missing core still remains in the bottom of the borehole.

1.2.8 Core Logging

Note: The record of core logging is to be documented on the borehole log - See Figure A-1.

Procedure

1. Record the depth of the top and the bottom of the core run.
2. Record the core recovery (CR) of each run. The percentage of core recovered is:

$$CR = \frac{\text{Total length of core recovered}}{\text{Total length of core drilled}} \times 100$$

3. Designate areas of suspected core loss based on drill behavior and rock quality. Core loss is often indicated by: fragmented core, polishing, circular core ends, rounded edges on core pieces, or immediately beneath hard fragments in soft rock. Routinely placing core loss at the top or bottom of the core run can lead to significant errors during evaluation. Note the reason for core loss, i.e., soft rock - washed away hard rock ground up by drilling, or malfunction of equipment during drilling.

4. Often a length of core is left at the bottom of the hole and recovered during the next core run. Unless properly handled, this condition may lead to significant errors. The preferred method to correct this situation is to carefully inspect the upper part of the recovered core for marks made by the core catcher or drill bit during the previous run. If they are identified, break the core and insert the run marker at the proper location.

5. Log the core in as much detail as possible depending upon the local geology and project requirements. The description should include:

   - Rock type;
   - Color;
   - Grain size;
   - Mineralogy;
   - Bedding thickness, dip and type (i.e., stylolitic or shale partings); and
   - Natural joints and fractures including frequency, dip, second, any coatings or fillings. A graphical representation of these features may also be desirable.

   Additional data in sedimentary rocks include:

   - Sorting,
   - Cementation,
   - Density or compaction, and
   - Rounding.

6. Additional notes

   a. Log the core as quickly as possible after removal from the hole. Some materials may degrade rapidly upon exposure, resulting in apparently poor rock, which was not actually present in the subsurface.

   b. Check each core end carefully, and try to determine if the fracture is natural or mechanical in origin. Mechanical fractures often can be identified by their orientation, the absence of secondary coatings or filling and slickensides, and its fit with the adjacent core piece. If doubt exists, consider it a natural fracture. If it is determined that the fracture is mechanical, ignore it and consider the two pieces of core as a single piece.

References

Law, J.W., 1951. Examination of Well Cuttings. Golden. Colorado Sch. of Mines.

1.2.9 Borings Not Completed as Wells

Borings that are not completed as wells shall be abandoned in accordance with DEP Publication No. WSC-310-91 (Standard Reference for Monitoring Wells).

1.3 Monitoring Well Installation

Monitoring wells are constructed to collect groundwater samples that, upon analysis, can be used to delineate a contaminant plume and track movement of specific chemical or biological constituents. A secondary consideration is the determination of the physical characteristics of the groundwater flow system to establish flow direction, transmissivity, quantity, etc. The spatial and vertical locations of monitoring wells are important. Of equal importance are the design and construction of

monitoring wells to yield reliable samples. An understanding of the chemistry of suspected pollutants and geological setting in which the monitoring well has been constructed plays a major role in determining the drilling technique and materials used.

1.3.1 Well Design

Well borings are to have an inside diameter of at least 2 inches larger than the outside diameter of the casing and screen to ensure that a tremie may be properly used. All wells at the landfill will be 2 inches in nominal diameter.

Procedure

1. Determine the exact screen interval and total depth of the monitoring well. Calculate the quantity of slotted casing or screen, blank casing, sealing materials, gravel pack and cement necessary to complete the well.

2. A cementing company handbook similar to the one published by either Halliburton or Dowell can be used to calculate the quantities of grave pack, sealing materials and cement. If one of these is not available then figure the volume of the borehole (<pi> rB2 x L) minus the volume of the casing (<pi> rC2 x L) to yield volume per linear foot.

   A cubic foot of silica sand weighs 100 pounds. Frequently silica sand is packaged in 100 pound sacks; however, it may be purchased and delivered in bulk quantities. A five-gallon bucket is equal to 0.67 cubic feet. Dividing the determined or calculated volume between the well bore and the outside of the casing(s) into 0.67 cubic feet per bucket will yield approximately the number of feet per bucket of silica sand. Dividing the total interval of the intended gravel pack by the number of feet per bucket of gravel pack will yield approximately how many buckets of gravel will be required. This same method can be used if the silica sand arrives in 1-cubic-foot sacks (100 lbs) except the final value is approximately the number of feet per sack of silica sand.

   Cement usually comes in 94-pound sacks and can be mixed in the field to obtain volumes between 0.88 cubic feet per sack to 1.50 cubic foot per sack. The calculation to determine the amount of cement needed for seals, caps or plugs is governed by the volume of mixture per sack desired. This volume should be specified either in the project proposal or the drillers' contract. Determine the amount of cement in the same manner as the silica sand calculation for the gravel pack.

   Clay seals are routinely placed above the gravel or filter pack and below the cement or grout cap or plug. The clay seals are generally a bentonite clay and before swelling (in the borehole) have the form of 1/4" to ½" tablets. A common type of bentonite tablets are American Colloid Volclay Tablets. The tablets generally come in plastic containers of 20 and 50 pounds but can also arrive in boxes or cloth sacks.

   The volume of the bentonite tablets needed for a specific seal thickness is calculated in the same manner as was done for the gravel pack and cement requirements.

These methods of estimating the quantity of materials to be used in any specific well completion are crude at best. There may exist portions of the bore hole that are of a larger diameter, due to erosion during drilling, or sections of a somewhat smaller diameter due to swelling conditions; the estimated quantities may be either too little or too much. Measure all materials twice during the well construction. First, when estimating the quantity of supplies needed for well completion, second, during well construction.

3. Documentation is imperative. Drilling data is to be recorded on the Soil Boring Log Record. Daily activities of the drill crew and supervisor are essential for keeping within cost guidelines and to identify potential completion problems. Record daily field activities in the field book. A well completion diagram including the details of well installation is to be completed for each well (see Figure A-2).

Record rig activities during the drilling of the well. Document:

- Start-up and shut-down time for the day;
- Problems encountered during the day, e.g. slow drilling, thunder storms, down time due to maintenance, waiting on water, injuries and important conversations, decisions made during the day, or any other item which slows or stops drilling;
- Visitors at the site;
- Problems with swelling clays or caving sand or gravel;
- Type of bit(s) and materials used (bentonite, foam, etc.) and quantity used during drilling; and
- Record of time spent by driller in other activities such as steam cleaning or authorized standby time.

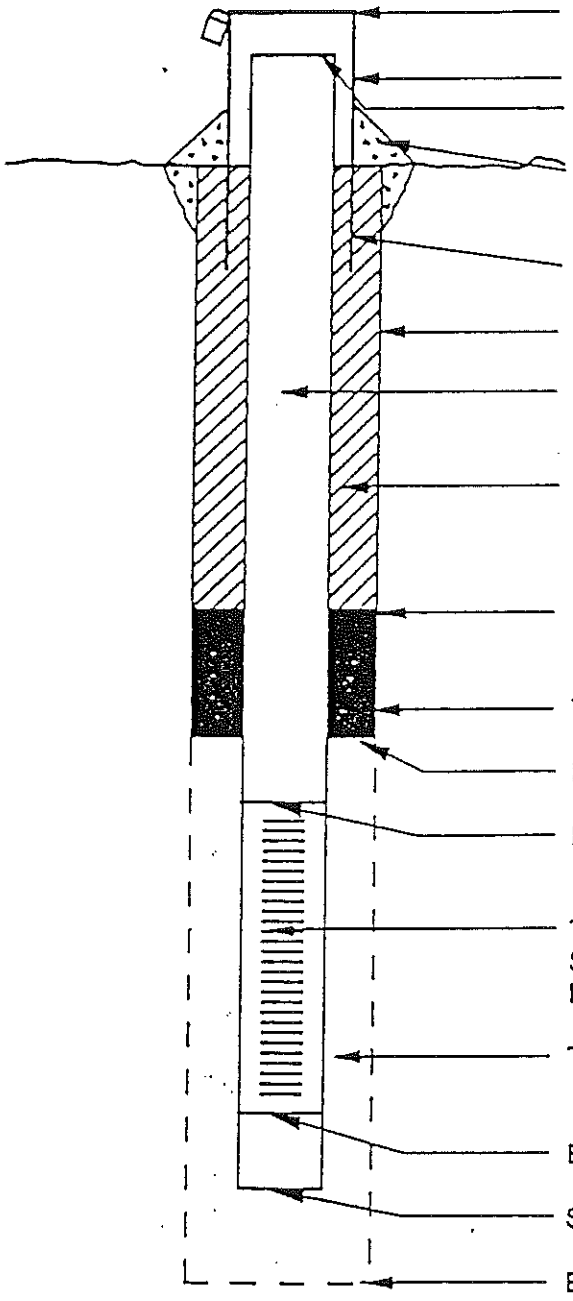
Additional data listed below is to be included in the field book.

- Hole size,
- Type of drilling,
- Drilling fluid,
- Penetration rate,
- Circulation losses or gains,
- Drill behavior,
- Drillers observations, and
- Sampling intervals.

Project _____ Location _____ Driller _____

Project No. _____ Boring _____ Drilling Method _____

Elevation _____ Date _____ Development Method _____



Elevation of Top of Surface Casing: _____

Stick up of Casing Above Ground Surface: _____

Elevation Top of Riser: _____

Type of Surface Seal: _____

_____

I.D. of Surface Casing: _____

Diameter of Hole: _____

Riser Pipe I.D.: _____

Type of Riser Pipe: _____

Type of Backfill: _____

_____

_____

Elevation/Depth Top of Seal: _____

_____

Type of Seal: _____

Elevation/Depth Top of Sand: _____

Elevation/Depth Top of Screen: _____

Type of Screen: _____

Slot Size x Length: _____

I.D. Screen: _____

Type of Sand Pack: _____

_____

Elevation/Depth Bottom of Screen: _____

Sediment Sump with Plug: _____

Elevation/Depth Bottom of Hole: _____

Figure A-2.1
Overburden Monitoring Wellform

The description of unconsolidated deposits is to be described on the boring log (see Figure A-1). If coring through rock is conducted, then record lithologic character versus depth data as completely and as accurately as possible as the material changes. Depending on rock type, these descriptions typically include:

- Lithology/rock type;
- Color;
- Mineralogy, including secondary mineralizations;
- Degree of cementation, density, and compaction;
- Any physical characteristics of the rock such as bedding or fractures;
- Percent recovery of the core; and
- The rock quality designation (RQD), which is the length of core pieces greater than 4 inches divided by the total length of the core recovered.

Additional notes:

1. Log the core or cuttings as quickly as possible after removal from the hole. Some materials may degrade rapidly upon exposure, resulting in apparently poor rock, which was not actually present in the subsurface.

2. Check each core carefully to determine if the fracture is natural or mechanical in origin. Mechanical fractures often can be identified by their orientation, the absence of secondary coatings or filling and slickensides, and its fit with the adjacent core piece. If doubt exists, consider it a natural fracture. If it is determined that the fracture is mechanical, ignore it and consider the two pieces of core as a single piece.

3. The total depth intended of the drill hole should be determined and conveyed to the driller as early as possible - preferably before drilling begins. However, this is not always the case and every effort should be made to determine borehole depth as soon as practicable.

1.3.2 Well Construction

Well Casing

Well casing and risers must be constructed of materials sufficient for the required monitoring period. Well casing shall be a minimum two-inch (2") ID, flush-joint, threaded riser. The casing should be provided in 5- or 10-foot lengths. For most purposes, Schedule 40 PVC is generally a suitable material. Solvents or glues should not be used during construction.

Well Screen

Well screens shall be two-inch (2") ID, flush-joint, threaded, Schedule 40 PVC for this specific program. In some instances, the selection of slot size for the screen depends on the geologic materials at the screened interval. For this drilling program, because of the expected high percentage of fines in the soil, the screen slot size will be 0.010-in (10-slot). The maximum length of the well screen shall be ten feet.

A bottom plug or cap will be fitted at the base of each well. If a high percentage of fines in soils is observed, a silt trap is recommended at the base of the screen.

Protective Casings

Each well casing shall be fitted with a threaded, vented cap.

All wells will be completed with a protective steel casing with a hinged, locking steel cover. A weep hole must be drilled at the base of the protective casing for drainage. A concrete surface well seal, designed to prevent freeze/thaw damage, must be constructed during installation of the protective casing. Wells should be marked with a number following installation. In addition to marking the exterior of the protective casing, the number shall be affixed to the interior of the cover by embossing with a metal die. The protective casing will be locked and a padlock with duplicate keys provided.

All wells completed on a paved or traveled area shall be completed with a roadbox cover. None are anticipated for this program.

Filter Pack

The filter pack surrounding the well screen must consist of clean inert, siliceous material of a suitable grain size for the screen slot size. All wells shall be completed with a uniform coarse-grained silica sand to be approved prior to use by the field representative.

The sand pack must be placed in the annular space around the well screen and would normally extend to no more than two feet above the top, and at least one foot below the bottom of the screen.

The sand pack must be checked frequently for proper placement. A finer grained sand pack material (100 percent passing the N. 30 sieve and less than two percent passing the N. 200 sieve), six inches thick, should be used as the top of the sand pack between the sand and the bentonite seal.

Bentonite Pellet Seal

Bentonite pellets, of 1/4-inch size, as manufactured by the Volclay Division of American Colloid Company, or approved equivalent, shall be used to seal the annulus above the filter pack in monitoring wells. Bentonite must be placed above the sand pack using the tremie method to form a seal at least one foot thick.

Cement/Bentonite Grout

The annulus above the bentonite seal in all wells shall be sealed with cement/bentonite grout. The cement/bentonite grout must be placed under pressure using a tremie or other approved method.

Procedure for Installation:

1. Final Design of Casing - Screen String(s). If there is any doubt about the final design of the casing string, based on data from an adjacent monitoring well or the individual drill holes scheduled for completion, verify the design with the field supervisor.

2. Installing Casing - Screen String(s)

   2.1 Plastic or Polyvinyl chloride (PVC) Casing. Join all casing (blank and screen) by screwing male ends to female ends. After joining and screwing, the string is suspended and lowered into the borehole. Hold the string in tension until completion of the filter material placement, bentonite pellet installation and tremie grouting.

   Seal the bottom of the casing-screen string with a cap, screwed permanently in place.

   2.2 Casing Installation Record. A complete casing-screen string tally is kept by both the field geologist/engineer and the subcontractor.

3. Installing Filter Material (gravel pack)

   3.1 Place the filter material downhole by pouring slowly. Check the height of the filter material periodically. If it is of suitable diameter and depth, use a tremie pipe to install filter materials. The length of tremie pipe should end no more than 20 feet above the bottom of the hole, or the bottom of the interval to receive the filter pack. Gradually lift the tremie pipe and remove sections, as the filter material being placed in the hole rises.

   3.2 Place the filter material continuously at a rate which prevents bridging in the borehole.

   3.3 The filter material shall be installed to levels pre-determined by the field geologist/engineer. The exact depth for each well is determined from the final well design. However, generally the top of the filter material will not be more than 2 feet above the top of the screened interval.

   3.4 Following placement of the filter material "sound" or "tag" this depth to ensure it is at the prescribed level.

4. Installing Bentonite Pellet Seals (Blanket). Following installation of the filter material, place a bentonite pellet blanket seal on top of the filter material to prevent contamination of the filter pack by the grout.

   4.1 The actual amount of the annulus which is filled with bentonite pellets may vary from completion to completion but, generally 2 feet (not less than 1 foot) and, if possible, approximately 3 feet of the annulus should be filled with bentonite by gravity feed from the surface.

   4.2 Following placement of the bentonite pellets, the depth is tagged to ensure they are at the desired level.

   4.3 For very shallow wells completed in an unconsolidated formation where a bentonite seal and grouting would serve no useful function, the sand pack around the screen may be extended to the concrete employed for setting the protective surface casing.

5. Grouting

   5.1 The annular space above the bentonite pellets is grouted as directed by the field supervisor.

   5.2 The grouted volume of annular space will vary from completion to completion. Generally, if the annular space exceeds approximately 20 feet then the grouting is done in more than one stage. Take care to ensure that the grout does not displace the bentonite seal or exceed (in weight) the collapse strength of the casing.

   5.3 Mixing Grout. The methods of mixing grout in the field are numerous. The first concern is that the slurry mixture is fluid enough for placement and heavy enough to give the desired strength and sealing properties required. Reference to the table from Halliburton Cementing Tables (1979) or some other suitable source for the amount of water per sack, and then measure accurately into a large tub (water trough) or steel pit. Mix the correct number of bags of cement with the water at a rate which prevents, clotting or settling out of dry, unmixed cement. Usually this procedure is accomplished with a portable pump which sucks the water or cement mixture in and then expels it under pressure through a hose which is used in a jetting fashion at the opposite end of the tank, pit or trough.

   Grout also can be mixed using a shovel or hoe. Generally, the grout is placed on the side of the tub, the bag is ruptured, and the cement is slowly added to the water. If the cement has hard spots place on a screen of approximately 1/4" mesh attached to some type of frame which is placed across the mixing tub. The cement is then "filtered" for the larger; hard pieces or blocks.

   Calcium chloride reduces the curing time for the grout. If used, it should be added in a volume (near the end of the mixing stage) approximately 2 to 4 percent calcium chloride. Less than 2 percent is of little use and in excess of 4 percent will not decrease the curing time beyond an optimum period. However, an excess (greater than 4 percent) will not harm the system either.

   Sometimes it is also desirable to mix approximately 2 percent bentonite with the cement. This percentage of bentonite offsets shrinkage in the grout when it hardens.

6. Monitoring Well Design.

   Design details for overburden monitoring wells are as shown on Figure A-2.

1.3.3 Well Development

Introduction

All completed wells must be developed in order to facilitate unobstructed and continuous ground water flow into the well.

Well development is the process of cleaning the face of the borehole. During any drilling process, the side of the borehole becomes smeared with drilling mud, clays or other fines. This plugging action substantially reduces the permeability and retards the movement of water into the well screen. If these fines are not removed, especially in formations having low permeability, it then becomes difficult and time-consuming to remove sufficient water from the well before obtaining a fresh groundwater sample, because the water cannot flow easily into the well. The entire vertical screened interval must be developed.

Development is required for the following reasons:

- To restore the natural permeability of the formation adjacent to the borehole to permit the water to flow easily into the screened zone.

- To remove the clay, silt and other fines from the formation so that during subsequent sampling the water will not be turbid or contain suspended matter which can easily interfere with chemical analysis.

The development process is best accomplished for monitoring wells by causing the natural formation water inside the well screen to move vigorously in and out through the screen in order to agitate the clay and silt, and move these fines into the screen.

Generalized Procedure

1. *Surge Block* - A surge block is a round plunger with pliable edges such as belting that will not catch on the well screen. Moving the surge block forcefully up and down inside the well screen causes the water to surge in and out through the screen accomplishing the desired cleaning action.

   Surge blocks are commonly used with cable-tool drilling rigs, but are not easily used by other types of drilling rigs.

2. *Bailer* - A bailer sufficiently heavy that it will sink rapidly through the water can be raised and lowered through the well screen. The resulting agitating action of the water is similar to that caused by a surge block. The bailer, however, has the added advantage of removing the fines each time it is brought to the surface and dumped. Bailers can be custom-made for small diameter wells, and can be hand-operated in shallow wells.

3. *Surging and Pumping* - Starting and stopping a pump so that the water is alternately pulled into the well through the screen and backflushed through the screen is an effective development method. Periodically pumping to the surface will remove the fines from the well and permit checking the progress to assure that development is complete. An adaptation of this method that the Consultant has successfully used is the employment of a Waterra pump combined with a surge disk. The pump consists of tubing to which a check valve is affixed to the bottom end. The pumping is achieved by alternately lowering and raising the tubing in the well. The surging action is achieved by a disk attached to the tubing just above the check valve.

4. *Compressed Air* - Compressed air pumped down a pipe inside the well casing can be used to blow water out of the monitoring well. If air is applied to the well intermittently and for short periods then the water is only raised inside the casing rather than blown out and will fall back down the casing causing the desired backwashing action. Also, blowing the water out will remove the fines brought into the screen by the agitating action.

Specific Procedure Proposed

At the Rumford Avenue Landfill, well development shall be performed by surging and pumping, using a Waterra pump.

References:

Johnson Division, UOP Inc. 1975. Ground water and wells. Minnesota. Johnson Division, UOP Inc.

Lohman, S.W. 1972. Ground water hydraulics. Professional paper 708. Washington. U.S. Geological Survey.

Massachusetts DEP, Revised September 1993. "Landfill Technical Guidance Manual."

U.S. Environmental Protection Agency. 1976. Manual of water well construction procedures. EPA-570/9-75-001. Washington. EPA.

1.3.4 Permeability Tests Overburden Soils

Rising head or falling head permeability tests (slug tests) can be performed in wells to determine the hydraulic characteristics of the soil materials. The Hvorslev technique can be used to determine the in situ hydraulic conductivity (K) of the unconfined materials.

Procedures

1. *Instantaneous Recharge.* The equations used to analyze a slug test assume an instantaneous recharge or discharge from the well. Therefore, the "slug" of water should be introduced into the well casing as rapidly as possible. Wells with water levels below 50 feet are better tested by methods described in paragraph 2. If an adequate depth of water is available to accommodate the installation of both a liquid level transducer and a water displacement object, the methods as described in paragraph 2 may also be employed with wells where water levels are closer to the surface than 50 ft.

   Instantaneous recharge to the well is approximated by rapidly pouring into the casing the volume (V) of water calculated in paragraph 1. The drop in water level is then monitored closely by a transducer. If water cannot be poured into the casing without spilling, a funnel should be used to insure that the entire measured volume gets into the well. When all the water is in the casing, $t = 0$. Water level readings should be taken in intervals as short as possible (no more than 5 second intervals at the beginning) and gradually increased as the rate of drop decreases. Monitoring should continue until the water level has stabilized to 90

percent of the original head. Values for H (where H equals the head inside the well at time t after injection or removal of the "slug," above or below initial head) are calculated by subtracting each water level reading from the initial Ho reading.

Instantaneous discharge from the well is approximated by bailing or pumping water from the well. The well can be pumped dry or to a known head by monitoring water level during evaluation. If satisfactory results are not obtained using this method, testing would be repeated using the alternate method described below. The water level in the well is monitored as the well recovers, until the water level has reached 90% of the initial head (prior to evacuation).

2. *Suspended Weight.* In wells where the static water level is deeper than 50 ft, the slug of water takes too long to travel down the casing for the recharge to even approximate instantaneous. These wells are better tested by introduction or withdrawal of a suspended weighted object to known volume. Water level changes are monitored as in paragraph 1. The suspended object should be large enough to displace sufficient water to cause an easily measurable change in head (Ho).

   This method is also useful where the static water level is below the lift of a centrifugal pump and bailing does not achieve a significant lowering of the water level in the well being tested.

3. *Calculations.* Using the values of H recorded at repeated intervals, values for H/Ho are computed and plotted on semilogarithmic paper. H/Ho is plotted on the linear axis of the paper and time (t) in seconds, on the logarithmic scale. Any convenient scale is acceptable for plotting H/Ho since this number is dimensionless. Plot the values, and then curve match, superimposing the field value plot on plate 2 (see Reference), to define a match line for a value of t at Tt/rc2 = 1.0 (match point values of H/Ho are not needed). Determine transmissivity (T) using:

   $$T = 1.0\ rc2/t$$

   In addition, the storativity, S, is calculated using:

   $$S = rs2/rc2$$

   Where: the value is determined through curve matching of the type curves (see Reference).

   rs = radius of screen zone

Reference:

S.W. Lohman. 1972. Groundwater Hydraulics, Professional Paper 708. Washington, U.S. GPO.

1.3.5 Decontamination

Decontamination procedures for drilling and sampling equipment is as described in Appendix B.

2.0 Installation of Gas Monitoring Wells

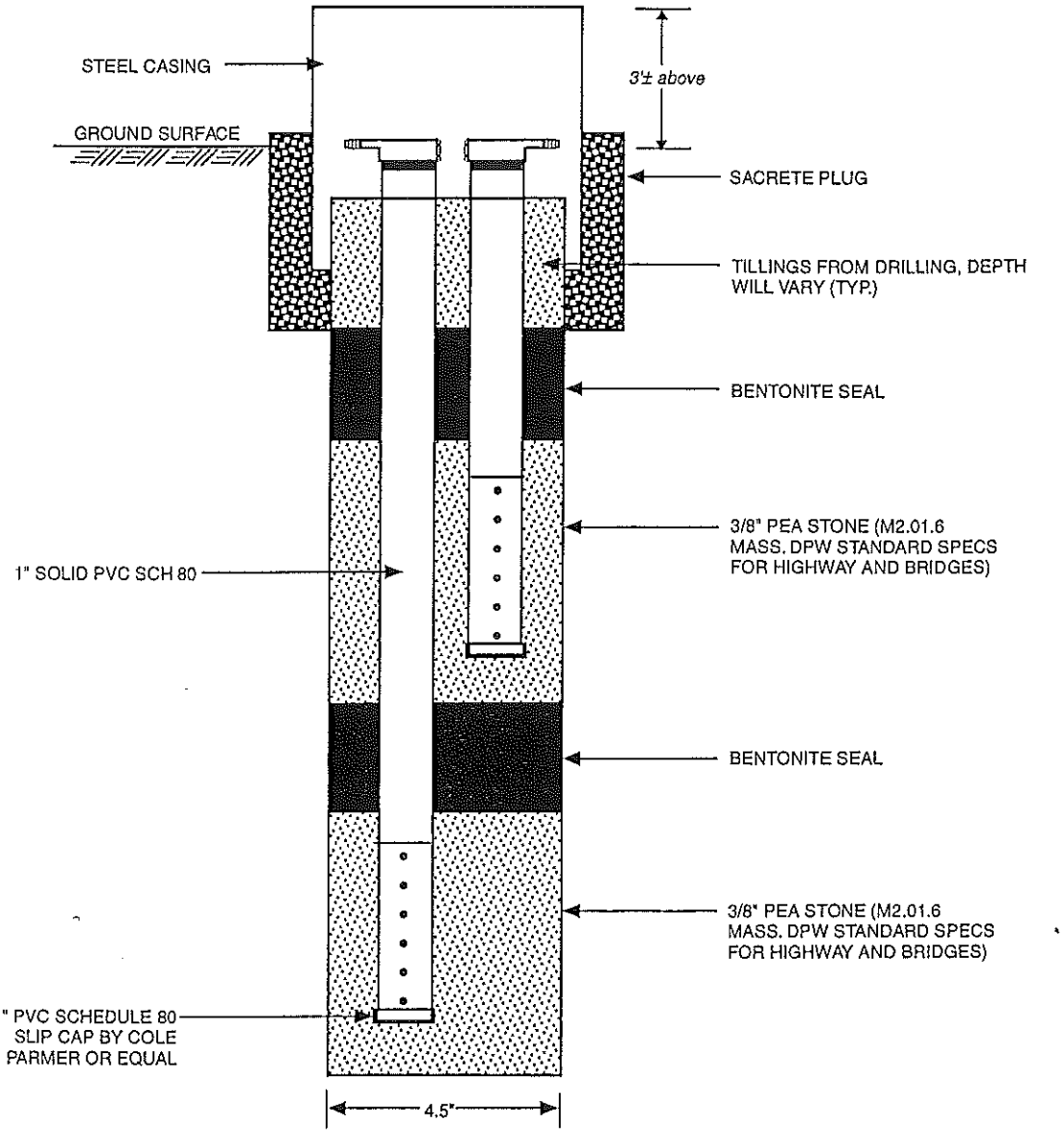
The gas monitoring wells will be installed in general accordance with the procedures outlined in Section 1.2 of Appendix A. A schematic well installation log for the landfill gas monitoring wells is shown on Figure A-3.

3.0 Field Log Book

3.1 Entries

The field log book entries will be as described below. Additional information to be recorded will be a daily detailed report which provides a complete description of all material encountered, number of feet drilled, number of hours on the job, shutdown due to breakdown, feet of casing set, and other pertinent data including:

- Date of entry,
- Names of all personnel at the site including times of entry and departures,
- Time of each entry,
- The reference point for all depth measurements,
- The depth at which each change of formation occurs,
- The total depth of the drilled borehole,
- Well yield during drilling and/or development with drawdown (if possible),
- Dates that field log book copies and borehole log forms are forwarded to the office and the name of the personnel receiving the package (A sample borehole log is shown on Figure A-1),
- The length and description of all casings used to construct the well,
- Types of materials (bentonite, cement, aluminum hydroxide) used to seal the annulus,
- A well construction diagram (Typical diagrams are as shown on Figures A-2 and A-3.), and
- Log entries for specific tasks during sampling procedures (as identified in Appendix B).
- At the completion of the day's activities, the record keeper is to sign the log and cross off the balance of the page; the following day's entries then starts on the following page.



City of Waltham, Massachusetts
Woerd Avenue Landfill

Figure A-3
Gas Monitoring Well Completion Logs

Appendix B

Work Plan and Guidance Document for Site Sampling

Appendix B
Work Plan and Guidance Document for Site Sampling

1.0 Introduction

The following sections provide a discussion of the equipment and procedures for field sampling in this investigation. Included are descriptions of equipment to be used, the methodology for decontamination of equipment, methodology of sampling and the parameters for which sampling is to be conducted.

The purpose of this section is to give the field sampling team an overall guidance of the sampling to take place, but it does not pretend to cover each and every problem that may be encountered during the actual conduct of sample collection and handling.

1.1 Mobilization

Prior to the start of field investigation activities, the following preparatory activities will be completed:

1. Key personnel are to review and discuss the Health and Safety Plan and the field procedures described in Appendix A - Work Plan and Guidance Documents for Boring and Monitoring Well Installations.

2. The Project Manager or his designee will ensure that all sample analyses have been scheduled through a DEP-certified laboratory.

3. The Project Manager or his designee will obtain sufficient sample containers and preservatives for the sample parameters identified. Additional sample bottles will be obtained and taken into the field as backup for potential bottle breakages.

4. The Project Manager or his designee will obtain laboratory prepared trip blanks and equipment blank water from the subcontracted analytical laboratory.

5. The Project Manager or his designee will schedule to have all required equipment available on site for field activities and make sure that all equipment has been properly calibrated, maintained, and decontaminated.

6. The Project Manager or his designee will obtain all materials required for personnel protection and equipment decontamination.

7. The Project Manager or his designee will insure that the field team is fully informed as to the laboratories to which field samples are to be delivered and procedures in connection with such delivery. If overnight delivery service is to be utilized, the Project Manager will ensure that every field team member is provided with written information that includes the direction to these offices, the hours of operation, and any special conditions required for sample shipment.

8. The Project Manager or his designee will make any other arrangements that may be required prior to field investigation activities, based on information that becomes available to him or the field team.

1.2 Soil Sampling

This section describes procedures to be followed in the collection and logging of soil samples during the course of the drilling program. It is not intended to submit any soil samples for chemical analyses; however, provisions will be made to have the necessary sampling equipment and bottles on-hand in case the need for soil chemical analysis is identified during the drilling program. If soil chemical analyses does become necessary, laboratory methods and parameters will be determined at that time.

1.2.1 Task Team

- Field Investigation Team
- Drilling Subcontractor and Crew

1.2.2 Equipment

The equipment necessary to carry out the investigation including most equipment necessary for sampling has been described in Appendix A. Additional items of equipment to complete the sampling program would include:

1. Appropriate sample bottles (obtained from laboratory),
2. Forms to accompany samples,
3. Ice (as appropriate for preservation of certain samples),
4. Sample coolers and/or appropriate containers for transport of samples to the laboratory.

1.2.3 Procedures

1. Soil borings will be advanced using the hollow stem auger or other appropriate method.

2. Split-spoon samples will be collected in accordance with ASTM D1586-67 (1984), Method for Penetration Test and Split-Barrel Sampling of Soils. Split-spoons (nominal 2-inch diameter) will be advanced continuously prior to obtaining soil samples.

3. The locations at which geotechnical samples are to be collected will be as directed in the field. At locations where geotechnical samples are taken, split-spoon samplers (nominal 3-inch diameter) which appear to recover 24 inches of soil will be weighed before the spoons are opened. If a 24-inch soil recovery is confirmed, the bulk density of the soil will be computed based on the dimensions of the split-spoon (24 inches long, 3 inches in diameter) and the value noted in the field log book.

4. Formation samples will be described in accordance with Burmeister using the description definitions based on the modified Wentworth Scale provided below:

(mm)	Grade Limits Sieve Series	U.S. Standard Grade Name
>2.26	>0.08	Gravel
1.00-2.36	0.04-0.08	Very Coarse Sand
0.500-1.00	0.02-0.04	Coarse Sand
0.250-0.500	0.01-0.02	Medium Sand
0.125-0.250x	0.005-0.01	Fine Sand
<0.075	<0.002	Silt

5. The most representative and least disturbed portion of the split-spoon sample shall be bisected with a decontaminated stainless steel knife.

6. The spoon will be quickly scanned with an HNu and/or OVA. Sample recovery shall be measured. All information will be entered in the field log book.

7. As described in Appendix A, all information pertaining to the borehole drilling and split spoon sampling will be recorded in a dedicated field log book, including, but not limited to, the date, time, weather, sample location identifier, blow counts, spoon advance and recovery. Geologic descriptions shall also be summarized on a test boring log. A sample boring log is presented in Appendix A.

8. Split-spoon samplers, sampling knives, and drilling equipment will be cleaned prior to and between uses as described in Section 2.0 herein.

1.3 Groundwater Sampling

1.3.1 Task Team

- Field Investigation Team

1.3.2 Equipment

1. Stainless steel measuring tape (100-foot)
2. Electric water level indicator
3. Metal or plastic buckets (5-gallon)
4. OVA or HNu
5. Field log books
6. Key to well locks
7. 2-inch and 4-inch submersible pump (3/4 HP)
8. 1/2-inch and 3/4-inch diameter ASTM "Drinking Water Grade" hose
9. 220-volt, 8-amp, 5000-watt generator

10. 1-1/2-inch-outside diameter teflon bailers with 5-foot teflon coated stainless steel leader, polypropylene (braided) rope
11. Plastic electrical line clamps (stay ties)
12. Drums or storage tank for purge water
13. Sample coolers
14. Vermiculite or equivalent packing material
15. Ice
16. Garbage can (plastic)
17. Utility knives
18. Scrub brushes
19. Polypropylene sheeting
20. Field decontamination supplies (alconox, deionized/distilled water, 10% nitric acid solution, acetone, paper towels, trash bags)
21. Sample containers, packaging as required by the laboratory, Chain-of-Custody Records, Traffic Reports, sample tags, and other paperwork
22. Pressure sprayer
23. Preservatives
24. pH paper
25. Personal protective equipment and clothing as required by Health and Safety Plan
26. Polypropylene rop
27. Field measurement instruments for pH, temperature, dissolved oxygen, conductivity, and turbidity of water (such as Horiba U-10 Water Quality Checker)
28. Paperwork
29. Camera and film

1.3.3 Procedures

1. Prior to initiating field activities, the field team will discuss the Health and Safety Plan and field procedures described herein. All monitoring and protective equipment shall be checked thoroughly at this time.

2. The bailers will be precleaned prior to entering the field.

3. Any pumps or tubing involved with these procedures shall be cleaned with tap water and non-phosphate, non-residual detergent and then rinsed with deionized/distilled water prior to pumping.

4. All water monitoring instrument probes will be rinsed with deionized/distilled water prior to their use at each monitoring well.

5. Upon arrival at each well, inspect the well for any damage, and condition of the well seal and locking device. Note any problems in the field notebook.

6. Air monitoring will be performed during the well opening, pumping, and sampling using a Photoionization Detector (11.7 ev lamp HNu) and Combustible Gas Indicator. Record readings and determine level of personnel protective equipment required by the Health and Safety Plan.

7. The static water level will be measured from the top of inner casing. The total depth of the well will also be measured.

8. The height and volume of the water in the well will be calculated. The volume of water to be purged (gallons) will be computed to equal three times the well volume.

9. Polypropylene sheeting will be placed on the ground around the monitoring well.

10. The sampler will change gloves prior to sampling at each monitoring well.

11. The sampler will avoid contact with all clean pumps, instrument probes, and sampling bailers and will not allow any equipment to touch the ground.

12. It is anticipated that at the landfill site, the wells are to be sampled with a bailer.

13. In the employment of a bailer for purging and/or sampling, a 5-foot teflon leader line will be attached to a dedicated polypropylene rope and fastened to the bailer. Enough line will be played out to submerge the bailer. The bailer line will not be allowed to contact the ground at any time.

14. Should a pump and an electrical generator be employed for purging prior to sampling, the generator shall be located downwind of the well to be sampled.

15. The temperature, pH, conductivity, turbidity, and dissolved oxygen of the pump discharge will be monitored. After three (3) casing volumes have been purged, evacuation will cease if these measurements have stabilized, such that these parameters vary less than 10 percent over the removal of two successive well volumes. Otherwise, purging will continue until these measurements stabilize or a maximum of 5 well volumes have been removed. If after five well volumes, the measurements have not stabilized within 10 percent, one additional well volume will be evacuated. All field monitoring equipment will be calibrated in the lab prior to using in the field.

16. The well shall be sampled within 3 hours of completion of the purging operation. If the well sits longer than 3 hours, it will be re-evacuated. If wells do not recharge sufficiently to collect all samples within 3 hours, then this requirement will not apply. All samples will be collected from a stainless steel bailer.

17. Sample bottle and preservation requirements are as provided in Table B-1.

Table B-1

18. The well will be locked before leaving the well location.

19. For each sample collected, Chain-of-Custody Records and Traffic Reports will be completed. Sample labels and tags will be attached to each sample container. Sample container lot and/or shipment numbers will be recorded in the field log book.

20. Ice and vermiculite will be added and the package will be sealed for delivery to the laboratory. The quantity of ice packed in the sample coolers containing samples requiring preservation to 4oC shall be sufficient to achieve and maintain the temperature of those samples at 4oC after collection and throughout transit.

21. For each shipment of samples, Chain-of-Custody Records and Traffic Reports will be grouped, packed in a waterproof bag, and included with the samples.

22. All samples to be shipped shall be done in accordance with DOT regulations specified for environmental samples. Two custody seals will be placed on the outside of each sample cooler.

23. All data obtained in the field, including sample location and number, date and time of sampling, well condition, depth to water, well depth, height of protective casing, amount of water bailed from the well, temperature, specific conductance, pH, dissolved oxygen, HNu and combustible gas indicator readings, number of samples collected and parameters to be analyzed, filtering techniques and any other observations made by the field personnel, shall be recorded in a field log book.

24. Each of the water quality sampling rounds will include the collection of 12 water samples (i.e., 8 groundwater samples and 4 surface water samples). QA/QC plans will include the following during each sampling round:

    - One trip blank to be provided by the laboratory for analysis of VOCs only,
    - One equipment blank to be analyzed for all water quality parameters, and
    - One duplicate sample to be analyzed for all water quality parameters and be submitted blind to the laboratory.

Sample Bottle Filling Procedures

Sample Bottle Filling for Volatile Organics

1. The cap will be removed from the two 40-ml glass vials. Care shall be taken to avoid contact with the inner surface of the caps.

2. The entire vial will be filled. The cap will be replaced making sure no air bubbles are present inside the vial. The sample shall be placed in the cooler on ice.

Sample Bottle Filling for Inorganics

1. Samples for total metals and cyanide analysis will be collected from each well. The sample for total metals will not be filtered during the first round but will be field filtered during the second round.

2. The sample bottles will be filled approximately 7/8 full and preserved.

3. The cap on each sample bottle shall be replaced and the bottle placed in the cooler on ice.

4. All appropriate data will be recorded in the field log book.

Sample Bottle Filling for Conventional Parameters

1. The cap will be removed from the container. Care shall be taken to avoid contact with the inner surface of the cap.

2. The entire container will be filled and the cap replaced. BOD, TDS, and fluoride sample containers shall be completely filled (no air space). All samples for laboratory analysis, except dissolved oxygen samples, shall be placed on ice in the cooler.

1.4 Surface Water Sampling

At locations where both surface water and sediment samples are collected, surface water samples will be collected first. In addition, downstream samples will be collected before upstream samples.

1.4.1 Task Team

- Field Investigation Team

1.4.2 Equipment

1. Sample containers, packaging as required by the laboratory, Chain-of-Custody Records, Traffic Reports, sample tags, and other paperwork
2. Sample coolers
3. Ice
4. Field log books
5. Vermiculite or equivalent packing material
6. Field measurement instruments for pH, temperature, dissolved oxygen, conductivity, and turbidity of water (such as Horiba U-10 Water Quality Checker)
7. HNu or OVA
8 Stainless steel tape measure and measuring rod
9. Preservatives
10. Personal protective clothing and equipment as required by the Health and Safety Plan and Procedures
11. Camera and film

12. Wooden stakes and flagging
13. Field decontamination supplies (alconox, deionized/distilled water 10% nitric acid solution, acetone, paper towels, trash bags)
14. Waders or hip boots

1.4.3 Procedures for Collecting Surface Water Samples

1. Prior to initiating any field activities, the field team will review and discuss, in detail, the Health and Safety Plan and procedures. All monitoring and protective equipment shall be checked thoroughly at this time.

2. Surface water samples will be taken at locations shown on Figure 2-2. Final sample locations will be determined in the field.

3. Surface water samples should not be collected within 48 hours after a precipitation event.

4. Prior to sampling at each location, the water monitoring equipment probes will be rinsed thoroughly with distilled/deionized water.

5. The following information will be recorded in the field log book:

   - Sample location, identification number, date, and time
   - Sample container log and/or shipment number
   - Water temperature, at the point and time of sampling
   - pH of water sampled (electrodes shall not be immersed in samples to be sent to laboratory; either duplicate samples may be obtained or on-site measurements may be taken)
   - Conductivity of water sample
   - Dissolved oxygen content of water sample
   - Wetted depth of stream
   - Description of flow rate, velocity, and other stream characteristics (fast-running verses stagnant)
   - Weather conditions
   - Precipitation information prior to sampling event (e.g., last rainfall date and total amount, if known)
   - Observable physical characteristics (odor, color, turbidity, multi-phase layering, precipitants)
   - Evidence of stressed or dead vegetation or dead animals
   - Photograph location, time, and frame number

6. The surface water samples shall be grab samples collected by submerging the sample containers below the surface of the water.

7. A wooden stake with colored flagging will be driven into the ground to the side of the sample location to mark each location.

8. Preparation of sample labels and tags, Chain-of-Custody Records, Traffic Records, shipping and handling, and sample bottle and preservation requirements are the same as those for groundwater samples.

9. QA/QC sample requirements are identified under the groundwater sampling section.

Sample Bottle Filling Procedures for Volatile Organics - Surface Water

1. The cap will be removed from the two 40-ml glass vials. Care shall be taken to avoid contact with the inner surface of the cap.

2. The entire vial will be immersed into the water just below the water surface, if possible, without disturbing the sediments, and the container will be completely filled. The cap on the sample bottle will be replaced making sure no air bubbles are present in the vial. The sample shall be placed in the cooler on ice.

Sample Bottle Filling Procedures for All Other Parameters - Surface Water

1. The cap will be removed from the bottle. Care shall be taken to avoid contact with the inner surface of the cap.

2. The container will be immersed in the stream so that the mouth of the bottle is just below the water surface.

3. The cap will be replaced on the sample bottle and the sample bottle placed in a cooler on ice.

4. The rest of the bottles will be filled by repeating steps 1 through 3.

5. All appropriate data will be recorded in a field logbook.

1.5 Sediment Sampling

1.5.1 Task Team

- Field Investigation Team

1.5.2 Equipment

1. Sample containers, packaging as required by the laboratory, Chain-of-Custody Records, Traffic Reports, sample tags, and other paperwork
2. Sample coolers
3. Ice
4. Field log books
5. Vermiculite or equivalent packing material
6. HNu or OVA
7. Stainless steel trowels, bowls, dredge, and spoons

8. Stainless steel tape measure and measuring rod
9. Preservatives
10. Personal protective clothing and equipment as required by the Health and Safety Plan and Procedures
11. Camera and film
12. Wooden stakes and flagging
13. Field decontamination supplies (alconox, deionized/distilled water 10% nitric acid solution, acetone, paper towels, trash bags)
14. Waders or hip boots

1.5.3 Procedures for Collecting Sediment Samples

1. Sediment samples will be obtained with a clean stainless steel trowel.

2. At each location, the sampling personnel will approach the designated sampling location from downstream.

3. The cap will be removed from the sample container. Care shall be taken to avoid contact with the inner surface of the cap.

4. The sample container will be scraped along the bottom of the stream (cross sectionally) to collect the sediment sample. If necessary a precleaned stainless steel trowel will be used to collect the sample.

5. Sediment samples collected for all analyses except volatile organic analysis shall be thoroughly mixed. Vegetative matter, rocks, twigs, and other debris shall be removed.

6. Native water on the top of the final sample shall not be removed. The bottle shall be sealed tightly.

7. The outside of the sample containers will be cleaned with tap water.

8. The samples will be placed in a cooler, on ice.

9. Each field duplicate and matrix spike/matrix spike duplicate sample shall be appropriately identified in the field log book as such and shall be labeled as such on the sample bottle labels, Chain-of-Custody Records, and Traffic Reports.

10. For each sample collected, sample labels and tags will be attached to each sample container. The Chain-of-Custody Records and Traffic Reports for each group of samples shipped to the laboratory will be completely filled out.

1.6 Leachate Sampling

1.6.1 Task Team

- Field Investigation Team

1.6.2 Equipment

Equipment necessary is identical to that listed in 1.4.2 for surface water sampling.

1.6.3 Procedures for Collecting Leachate Samples

The procedures for collecting leachate samples are identical to those in 1.4.3 for surface water sampling, except as noted below.

1. Leachate sample locations will be determined in the field, depending upon the presence of leachate seeps.

2. Leachate sampling will be conducted shortly after a precipitation event, when the leachate is flowing.

3. QA/QC plans for leachate sampling will be limited to the following:

   - One trip blank to be provided by the laboratory for analysis of VOCs by EPA Method 8260.

2.0 General Decontamination Procedures

Staging/decontamination areas will be set up at drainage areas as close to the monitoring wells as possible.

The following general decontamination procedures will be implemented during field investigation activities at the site:

1. Personal protective equipment: The required decontamination procedure for personal protective equipment is as follows:

   - Non-phosphate, non-residual detergent (alconox) rinse
   - Deionized/distilled water rinse
   - Air dry

2. Field monitoring equipment: Instruments shall be cleaned per manufacturer's instructions after each use. The pH meter and conductivity probes cannot be rinsed with solvents. These instruments will be rinsed after each use with deionized/distilled water only.

3. Well evacuation equipment: All tubing and evacuation equipment such as submersible pumps which are put into the borehole shall be rinsed with soapy (alconox) water and deionized/distilled water before use. All tubing must be dedicated to individual wells (i.e., tubing cannot be reused). If bailers are used to evacuate wells, they shall be decontaminated with the same procedure listed in item number 5, below.

4. Drilling equipment, excavation equipment, and other large pieces of equipment: All drilling (or excavation) and downhole equipment that comes in contact with the soil shall be steam cleaned before use, between and after each borehole (or test pit). This includes drill rods, bits and augers, dredges, backhoe, or any other large piece of equipment. Spent water from the steam cleaning of auger flights will be discharged to stormwater collection trenches through a screen and riprap system placed over the trenches. Sampling devices such as split-spoons shall be decontaminated between boreholes as per item 5, below. Within the same borehole, split-spoons will be decontaminated as per item 5, below.

5. Sampling Apparatus: All sampling apparatus shall be properly decontaminated prior to its use in the field to prevent cross-contamination. The required decontamination procedure for all sampling equipment is as follows:

   - Wash and scrub with non-phosphate detergent (alconox and water),
   - Deionized/distilled water rinse,
   - Methanol rinse,
   - Deionized/distilled water rinse,
   - Air dry, and
   - Wrap in aluminum foil (shiny side out) for transport. Bailer cord will be dedicated to individual wells.

Appendix C

Current Health and Safety Plan

HEALTH AND SAFETY PLAN FORM
CDM Health and Safety Program

This document is for the exclusive use of CDM and its subcontractors

CAMP DRESSER & McKEE INC.
PROJECT DOCUMENT #:

PROJECT NAME _____ PROJECT # _____ REGION NNR

JOBSITE ADDRESS _____

CLIENT _____
CLIENT CONTACT _____
CLIENT CONTACT PHONE # _____

( ) AMENDMENT TO EXISTING APPROVED H&SP?
( ) H&SP AMENDMENT NUMBER? _____ ( ) DATE EXISTING APPROVED H&SP _____

OBJECTIVES OF FIELD WORK:

TYPE: *Check as many as applicable*

Active	( )	Landfill	( )	Unknown	( )
Inactive	( )	Uncontrolled	( )	Military	( )
Secure	( )	Industrial	( )	Other (specify)	( )
Unsecured	( )	Recovery	( )		
Enclosed space	( )	Well Field	( )		

All requirements described in the CDM Health and Safety Assurance Manual for Haz. Waste Operations are incorporated in this health and safety plan by reference.

DESCRIPTION AND FEATURES: *Include principal operations and unusual features (containers, buildings, dikes, power lines, hillslopes, rivers,etc.)*

SURROUNDING POPULATION: ( ) Residential ( ) Industrial ( ) Rural ( ) Urban OTHER:

PRINTER ORIGINAL

THIS PAGE RESERVED FOR MAP *(Show Exclusion, Contamination Reduction, and Support Zones. Indicate evacuation and reassembly points.)*

HISTORY: *Summarize below. Include complaints from public, previous agency actions, known exposures or injuries, etc.*

WASTE TYPES: ( ) Liquid ( ) Solid ( ) Sludge ( ) Gas ( ) Unknown ( ) Other, specify:

WASTE CHARACTERISTICS: *Check as many as applicable.*

( ) Corrosive ( ) Flammable ( ) Radioactive
( ) Toxic ( ) Volatile ( ) Reactive
( ) Inert Gas ( ) Unknown ( ) Other, specify:

WORK ZONES: *Describe the Exclusion, Contamination Reduction, and Support Zones in terms on-site personnel will recognize*

CDM will observe a 50-foot radius area around any intrusive activity as an Exclusion Zone. A 20-foot radius are around the Exclusion Zone will serve as the Contamination Reduction Zone. The Support Zone will be the remainder of the site.

HAZARDS OF CONCERN:

( ) Heat Stress *attach guidelines*
( ) Cold Stress *attach guidelines*
( ) Explosive/Flammable
( ) Oxygen Deficient
( ) Radiological
( ) Biological
( ) Other - specify
( ) Noise
( ) Inorganic Chemicals
( ) Organic Chemicals
(X) Motorized Traffic
(X) Heavy Machinery
(X) Slips, Trips, & Falls

FACILITY'S DISPOSAL METHODS AND PRACTICES: *Summarize below.*

HAZARDOUS MATERIAL SUMMARY: *Circle waste type and estimate amounts by category.*

CHEMICALS: *Amount/Units:*	SOLIDS: *Amount/Units:*	SLUDGES: *Amount/Units:*	SOLVENTS: *Amount/Units:*	OILS: *Amount/Units:*	OTHER: *Amount/Units:*
Acids	Flyash	Paints	Halogenated (chloro, bromo) Solvents	Oily Wastes	Laboratory
Pickling Liquors	Milling/Mine Tailing	Pigments		Gasoline	Pharmaceutical
Caustics	Asbestos	Metals Sludges	Hydrocarbons	Diesel Oil	Hospital
Pesticides	Ferrous Smelter	POTW Sludge	Alcohols	Lubricants	Radiological
Dyes/Inks	Non-Ferrous Smelter	Aluminum	Ketones	PCBs	Municipal
Cyanides	Metals	Distillation Bottoms	Esters	Polynuclear Aromatics	Construction
Phenols	Other: *specify:*	Other: *specify:*	Ethers	Other *specify:*	Munitions
Halogens			Other *specify:*		Other *specify:*
PCBs					
Metals					
Dioxins					

OVERALL HAZARD EVALUATION: ( ) High ( ) Medium ( ) Low ( ) Unknown

JUSTIFICATION: Water quality testing has yet to detect significant Health and Safety hazards.

FIRE/EXPLOSION POTENTIAL: ( ) High ( ) Medium ( ) Low ( ) Unknown

BACKGROUND REVIEW: (X) Complete ( ) Incomplete

KNOWN CONTAMINANTS	HIGHEST OBSERVED CONCENTRATION *(specify units and media)*	PEL/TLV *ppm or mg/m3 (specify)*	IDLH *ppm or mg/m3 (specify)*	WARNING CONCENTRATION *(in ppm)*	SYMPTOMS/EFFECTS OF ACUTE EXPOSURE	PHOTO IONIZATION POTENTIAL

NA = Not Available NE = None Established U = Unknown

S = Soil SW = Surface Water T = Tailings W = Waste TK = Tanks SD = Sediment
A = Air GW = Ground Water SL = Sludge D = Drums L = Lagoons OFF = Off-Site

TASK DESCRIPTION/SPECIFIC TECHNIQUE/SITE LOCATION *(attach additional sheets as necessary)*	Type	Primary	Contingency	HAZARD & SCHEDULE
	Intrusive	A B C (D)	A B C D	Hi Med Low
	Non-intrusive	Modified	Exit Area	
	Intrusive	A B C (D)	A B C D	Hi Med Low
	Non-intrusive	Modified	Exit Area	
	Intrusive	A B C (D)	A B C D	Hi Med Low
	Non-intrusive	Modified	Exit Area	
	Intrusive	A B C (D)	A B C D	Hi Med Low
	Non-intrusive	Modified	Exit Area	
	Intrusive	A B C D	A B C D	Hi Med Low
	Non-intrusive	Modified	Exit Area	
	Intrusive	A B C D	A B C D	Hi Med Low
	Non-intrusive	Modified	Exit Area	

PERSONNEL AND RESPONSIBILITIES *(include subcontractors)*

NAME	FIRM/DIVISION	CDM HEALTH CLEARANCE	RESPONSIBILITIES	On Site?
	CDM/NNR			
	CDM/NNR			
	CDM/NNR			
	CDM/NNR			

PROTECTIVE EQUIPMENT: *Specify by task. Indicate type and/or material, as necessary. Group tasks if possible. Use copies of this sheet if needed.*

BLOCK A

TASKS: 1-2-3-4-5-6-7-8-9-10
LEVEL: A-B-C-D-Modified
(X) Primary ( ) Contingency

Respiratory: (X) Not needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not needed
(X) Safety Glasses:
( ) Face Shield:
( ) Goggles:
(X) Hard Hat:
( ) Other:

Boots: ( ) Not needed
(X) Steel-Toe (X) Steel Shank
( ) Rubber (X) Leather
( ) Overboots: Rubber / Latex

Prot. Clothing: ( ) Not needed
( ) Encapsulated Suit:
( ) Splash Suit
( ) Apron:
(x) Tyvek Coverall or
(X) Saranex Coverall or
(x) Cloth Coverall: or
(x) Other: pvc rainsuit

Gloves: ( ) Not needed
(X) Undergloves: PVC or
(X) Gloves: cotton or
(X) Overgloves: nitrile

Other: specify below

BLOCK B

TASKS: 1-2-3-4-5-6-7-8-9-10
LEVEL: A-B-C-D-Modified
( ) Primary (X) Contingency

Respiratory: (X) Not needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: (X) Not needed
( ) Safety Glasses:
( ) Face Shield:
( ) Goggles:
( ) Hard Hat:
( ) Other:

Boots: (X) Not needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots: Rubber/Latex

Prot. Clothing: (X) Not needed
( ) Encapsulated Suit:
( ) Splash Suit
( ) Apron:
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall: or
( ) Other: pvc rainsuit

Gloves: (X) Not needed
( ) Undergloves: and
( ) Gloves: cotton or
( ) Overgloves:

Other: specify below

EXIT SITE

BLOCK C

TASKS: 1-2-3-4-5-6-7-8-9-10
LEVEL: A-B-C-D-Modified
( ) Primary ( ) Contingency

Respiratory: ( ) Not needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not needed
( ) Safety Glasses:
( ) Face Shield:
( ) Goggles:
( ) Hard Hat:
( ) Other:

Boots: ( ) Not needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots:

Prot. Clothing: ( ) Not needed
( ) Encapsulated Suit:
( ) Splash Suit
( ) Apron:
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall:
( ) Other:

Gloves: ( ) Not needed
( ) Undergloves:
( ) Gloves:
( ) Overgloves:

Other: specify below

BLOCK D

TASKS: 1-2-3-4-5-6-7-8-9-10
LEVEL: A-B-C-D-Modified
( ) Primary ( ) Contingency

Respiratory: ( ) Not needed
( ) SCBA, Airline:
( ) APR:
( ) Cartridge:
( ) Escape Mask:
( ) Other:

Head and Eye: ( ) Not needed
( ) Safety Glasses:
( ) Face Shield:
( ) Goggles:
( ) Hard Hat:
( ) Other:

Boots: ( ) Not needed
( ) Steel-Toe ( ) Steel Shank
( ) Rubber ( ) Leather
( ) Overboots:

Prot. Clothing: ( ) Not needed
( ) Encapsulated Suit:
( ) Splash Suit
( ) Apron:
( ) Tyvek Coverall
( ) Saranex Coverall
( ) Cloth Coverall:
( ) Other:

Gloves: ( ) Not needed
( ) Undergloves:
( ) Gloves:
( ) Overgloves:

Other: specify below

MONITORING EQUIPMENT *Specify by task. Indicate type as necessary. Attach additional sheets if needed.*

INSTRUMENT	TASK	ACTION GUIDELINES		COMMENTS *(When and how will you use the monitor?)*
Combustible Gas Indicator	1-2-3-4-5-6-7-8	0-10% LEL 10-25% LEL >25% LEL 21.0% O2 <21.0% O2 <19.5% O2	*No explosion hazard* *Potential explosion hazard; notify SHSC* *Explosion hazard; interrupt task/evacuate* *Oxygen normal* *Oxygen deficient; notify SHSC* *Interrupt task/evacuate*	Team will continuously monitor while on-site.
Radiation Survey Meter	1-2-3-4-5-6-7-8			( ) Not Needed
Photoionization Detector 10.2 eV Lamp Type: OVM	1-2-3-4-5-6-7-8	*Specify:*		Team will continuously monitor while on-site.
Flame Ionization Detector Type_____	1-2-3-4-5-6-7-8	*Specify:*		( ) Not Needed
Detector Tubes/ Monitox Type_____ Type_____	1-2-3-4-5-6-7-8	*Specify:*		( ) Not Needed
Respirable Dust Monitor Type_____ Type_____	1-2-3-4-5-6-7-8	*Specify:*		If team notices visible concentrations of dust in air or windy, dry conditions that produce dusts, they will leave the area.
Other *Specify:*	1-2-3-4-5-6-7-8	*Specify:* If team notices unusual odors or irrition of the eye or throat, they will exit the area and call DHSC.		

DECONTAMINATION PROCEDURES

ATTACH SITE MAP INDICATING EXCLUSION, DECONTAMINATION, AND SUPPORT ZONES AS PAGE TWO

Personnel Decontamination *Summarize below or attach diagram;*	Sampling Equipment Decontamination *Summarize below or attach diagram;*	Heavy Equipment Decontamination *Summarize below or attach diagram;*
Team members will remove their protective clothing in the following order: - equipment drop - boot cover (if worn) removal - outer glove removal (if worn) - hard hat removal - surgical glove removal - hand and face wash ( ) Not Needed	<u>Reusable Sampling Equipment</u> will be decontaminated by - rinse with deionized distilled water - methanol rinse - final rinse with distilled water - air dry ( ) Not Needed	CDM will require drillers to decontaminate their eqiupment before it leaves the site, per the bid specification or: - wire brush to remove soil - clean with high pressure steam - water rinse - store in non-contaminated area ( ) Not Needed
Containment and Disposal Method Disposable protective equipment will be disposed of at the Town Transfer Station located on-site. ( ) Not Needed	Containment and Disposal Method All disposable sampling equipment will be disposed of at the Town Transfer Station. ( ) Not Needed	Containment and Disposal Method Disposable drilling equipment will be disposed of at the Town Transfer Station located on-site. ( ) Not Needed

EMERGENCY CONTACTS

Water Supply:
Site Telephone:
EPA Release Report #: 1-800/424-8802
CDM 24-Hour Emergency #: 1-800/SKY-PAGE 31821#
Facility Management:
Other (specify)
CHEMTREC Emergency #: 1-800/424-9300

CONTINGENCY PLANS: *Summarize below*

If work team observes hazards for which they have not prepared, they will withdraw from the area and call the health and safety manager. Employees will not enter or remain in the work area unless accompanied. CDM may rely on instruments operated by contractor personnel only upon HSM approval. Without regard to the instrument readings, personnel will leave site and upgrade their level of protection if they experience nausea or dizziness.

HEALTH AND SAFETY PLAN APPROVALS

Prepared by Sherri Curria _____ Date _____
DHSC Signature _____ Date _____
HSM Signature _____ Date _____

EMERGENCY CONTACTS	NAME	PHONE
Health and Safety Manager	Chris Marlowe	(800) SKY PAGE
Project Manager		
Site Safety Coordinator		
Client Contact		
Other *(specify)*		
Environmental Agency	MA DEP (check)	(508) 792-7653
State Spill Number	MA DEP	(508) 820-2121
Fire Department		
Police Department		
State Police		
Poison Control Center		(800) 682-9211
Occupational Physician		1-800/229-3674

MEDICAL EMERGENCY PHONE

Hospital Name:
Hospital Address:
Name of Contact at Hospital: Emergency Room
Name of 24-Hour Ambulance: Through 911 (check)
Route to Hospital:

Distance to Hospital _____
Attach map with route to hospital

THIS PAGE RESERVED FOR MAP

HEALTH AND SAFETY PLAN SIGNATURE FORM

CDM Health and Safety Program

All site personnel must sign this form indicating receipt of the H&SP. Keep this original on site. It becomes part of the permanent project files. Send a copy to the Health and Safety Manager (HSM).

SITE NAME/NUMBER: _____

DIVISION/LOCATION: _____

CERTIFICATION:

I understand, and agree to comply with, the provisions of the above referenced H&SP for work activities on this project. I agree to report any injuries, illnesses or exposure incidents to the site Health and Safety Coordinator (SHSC). I agree to inform the SHSC about any drugs (legal and illegal) that I take within three days of site work.

PRINTED NAME	SIGNATURE	DATE

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
METROPOLITAN BOSTON - NORTHEAST REGIONAL OFFICE

ARGEO PAUL CELLUCCI
Governor

TRUDY COXE
Secretary

DAVID B. STRUHS
Commissioner

September 11, 1997

Mr. Ronald Vokey
Planning Director
City of Waltham
610 Main Street
Waltham, MA 02154

RE: WALTHAM - Solid Waste
Woerd Avenue Landfill
BWP SW 12 - ISA
Approval with Conditions
Transmittal No. 102380

Dear Mr. Vokey:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Protection, Bureau of Waste Prevention, Solid Waste Section (the "Department"), has reviewed the City of Waltham's application for an Initial Site Assessment (BWP SW 12, Transmittal No. 102380) for the former Waltham landfill located off Woerd Avenue in Waltham (Woerd Avenue Landfill). The application includes two documents, entitled:

City of Waltham, Massachusetts
Initial Site Assessment
Woerd Avenue Landfill
May 1997

and

City of Waltham, Massachusetts
Woerd Avenue Landfill
Comprehensive Site Assessment
Scope of Work
May 1997

The documents present an Initial Site Assessment (ISA) and a Scope of Work for a Comprehensive Site Assessment (CSA Scope) for the Woerd Avenue Landfill. Both reports were prepared on behalf of the City of Waltham (the "City") by Camp Dresser & McKee Inc. (CDM) of Cambridge, MA.

The Woerd Avenue Landfill is located adjacent to the Waltham/Newton municipal boundary. According to the ISA, the landfill area is approximately 8.7 acres and abuts Cram's Cove off of the Charles River. Abutting property uses include: a playground and residential properties to the east; an industrial property (Parker Hannifin) to the north; and the former Newton solid waste incinerator to the south.

Reportedly, the landfill began operations in the early 1900s for the disposal of coal ash. When the Waltham incinerator began operations in 1946, the landfill accepted incinerator ash and non-combustible wastes. The landfill ceased operations in 1973, and was reportedly covered with clean fill. The landfill, reportedly, continued to receive brush and street sweepings until 1980.

Previous reports (TWM Northeast, 1990) indicate that landfill waste may be located under the parking lot at the eastern portion of the adjacent Parker Hannifin property. The report also indicates that the source of groundwater contamination at the Parker Hannifin property may be due to the landfill. To date, there has been no environmental monitoring of the landfill.

In summary, the CSA Scope proposes to: (1) install four groundwater monitoring well couplets; (2) install three landfill gas monitoring wells; (3) collect and analyze four quarterly rounds from the groundwater and gas monitoring wells and four surface water monitoring locations; (4) collect and analyze sediment samples; and (5) prepare and submit a CSA in accordance with the Department's guidance document; Landfill Technical Guideline Manual.

The Department has reviewed the information presented in the application pursuant to 310 CMR 19.150 (Solid Waste Management Facility Regulations, Landfill Assessment Requirements) and the established guidelines presented in Chapter 5, "Landfill Assessments," of the Landfill Technical Guideline Manual.

Based on this review, the Department, acting under the authority of the M.G.L. c. 111, s. 150A and 310 CMR 19.000, hereby approves the City of Waltham's application for an ISA (BWP SW 12, Transmittal No. 102380) for the Woerd Avenue Landfill with the following conditions:

CONDITIONS:

(1) All work conducted at the landfill shall be performed in accordance with the Department's Landfill Technical Guidance Manual and Standard References for Monitoring Wells, DEP Publication #WSC-310-91.

(2) **ISA Comments.** Responses to the following comments regarding the ISA should be addressed with the results of the first sampling round, as they may affect subsequent CSA monitoring locations.

a. Information should be provided indicating abutting property ownership and usage. Appendix A of the ISA provides a list of abutting property owners, but does not provide reference to usage and where the properties are located.

b. The Department notes that figures presented in the Handex (1996) report indicate that Excavation Area #1 and sample locations GP-7, GP-8, GP-37, GP-38, GP-39, and GP-40 may have been on the landfill property. Other than the figure which indicates TPH concentrations, the analytical results for these samples were not provided in the Handex (1996) report. These results should be provided, if available.

(3) **Waste Delineation.** The Department notes that the extent of the landfill may extend beyond the property boundaries for the parcel. The CSA must adequately determine the limit of waste at the landfill. The edge of waste should be physically confirmed through test pit excavation, borings, or other suitable method.

(4) **Property Line Survey.** The Department notes that the site plans provided indicate "Approximate Property Lines" as derived from Assessor's records. Please be advised that the property line survey must be certified by a Registered Land Surveyor.

(5) **Evaluation of Groundwater Flow.** An attempt should be made to incorporate groundwater elevation data in the existing monitoring wells on the Parker Hannifin property during sampling events, in order to better evaluate groundwater flow direction in the area.

(6) **Landfill Gas Characterization.** In addition to analyzing landfill gas characterization samples by EPA Method TO-14, the samples shall also be analyzed for total Non-Methane Organic Compounds (NMOCs) by EPA Method 25A, or equivalent.

(7) **Schedule.** Due to the Department's review time of the application, the schedule for the CSA, as outlined in CSA Scope Section 1.2, may be delayed 2 months.

(8) **Monitoring Results Submittal.** The results of each sampling round shall be submitted to the Department for review prior to collection of the subsequent sampling round. The results shall include any proposed modifications to the sampling plan, if warranted.

(9) **CSA Report Submittal.** The Final CSA report shall be presented to the Department with an application BWP SW 23 - Comprehensive Site Assessment. The CSA shall be prepared in accordance with the Landfill Technical Guidance Manual; 310 CMR 19.150 Landfill Assessment Requirements; and the approved CSA Scope.

(10) **Further CSA Study.** In accordance with 310 CMR 19.150 (5), the CSA shall include a scope for further study, if warranted.

(11) **Alternative Cap.** If, in accordance with 310 CMR 19.113, an alternative cap is proposed for the landfill, then additional assessment of the existing cover material will be required.

(12) **Post-Closure Use.** If an active post-closure use of the site is proposed, a quantitative risk assessment shall be prepared to comply with the Office of Research and Standards (ORS) Solid Waste Landfill Quantitative Risk Assessment Scope of Work Guidance document, dated January 1996.

(13) **Continued Environmental Monitoring.** Following completion of sampling for the CSA, the City shall continue to conduct environmental monitoring at the landfill in accordance with 310 CMR 19.132. Sampling shall be performed in accordance with the approved CSA Scope until an alternate environmental monitoring plan, based on the findings of the CSA, is submitted and approved by the Department. However, groundwater and surface water sampling may be performed on a semi-annual schedule, instead of quarterly as approved in the CSA Scope.

(14) The Department reserves the right to require additional assessment and investigation of the landfill site area based on a review of environmental monitoring results. It is the applicant's responsibility to comply with all other applicable federal, state, and local statutes and regulations as a prerequisite to conducting work at the Waltham Woerd Avenue Landfill.

NOTICE OF RIGHT TO APPEAL

The City of Waltham (the "City") is hereby notified that it may within twenty-one (21) days file a request that this decision be deemed a provisional decision under 310 CMR 19.037(4)(b), by submitting a written statement of the basis on which the City believes it is aggrieved, together with any supporting materials. Upon timely filing of such a request, the decision shall be deemed

a provisional decision with an effective date twenty-one (21) days after the Department's receipt of the request. Such a request shall reopen the administrative record, and the Department may rescind, supplement, modify, or reaffirm its decision. Failure by the City to exercise the right provided in this section shall constitute a waiver of the City's right to appeal.

Appeal. Any person aggrieved by the issuance of this decision, except as provided for under 310 CMR 19.037(4)(b), may file an appeal for judicial review of said decision in accordance with the provisions of M.G.L. c. 111, s. 150A, and M.G.L. c. 30A, not later than thirty (30) days following the receipt of the final decision. The standing of a person to file an appeal and the procedures for filing such appeal shall be governed by the provisions of M.G.L. c. 30A. Unless the person requesting an appeal requests and is granted a stay of the terms and conditions of the decision by a court of competent jurisdiction, the decision shall remain effective.

Notice of Action. Any aggrieved person intending to appeal this decision to the Superior Court shall first provide notice to the Department of their intention to commence such action. Said notice of intention shall include the Department file number and shall identify with particularity the issues and reasons why it is believed the decision was not proper. Such notice shall be provided to the Office of General Counsel of the Department and the Regional Director for the regional office which processed the application. The appropriate addresses to which to send such notices are:

General Counsel
Department of Environmental Protection
One Winter Street - 3rd Floor
Boston, MA 02108

Regional Director
Department of Environmental Protection
10 Commerce Way
Woburn, MA 01801

No allegation shall be made in any judicial appeal of this decision unless the matter complained of was raised at the appropriate point in the administrative review procedures established in those regulations, provided that a matter may be raised upon a showing that it is material and that it was not reasonably possible with due diligence to have been raised during such procedures or that matter sought to be raised is of critical importance to the environmental impact of the permitted activity.

If you have any questions regarding this letter, or you need additional information, please contact Peter Flink at (617) 932-7663.

Sincerely,

Peter J. Flink
Environmental Analyst

Sincerely,

Edward H. MacDonald
Regional Engineer for
Waste Prevention

EHM/PJF

cc: Mr. Bruce Haskell, Camp Dresser & McKee Inc.
10 Cambridge Center, Cambridge, MA 02142
Waltham Board of Health

Waltham, Massachusetts
Woerd Avenue Landfill

Groundwater and Surface Water
Quarterly Sampling Results

May 1998 Sampling

Q1

TRANSMITTAL SHEET

environmental engineers, scientists, planners & management consultants

CDM

Date: 7/16/98

Job: Quarterly Sampling Report
Groundwater, Surface Water and Gas Sampling
Woerd Avenue Landfill, Waltham, Massachusetts

To: Waltham Planning Department
610 Main Street
Waltham, MA 02154

Att: Mr. Ronald G. Vokey, Planning Director

We are sending		
	herewith	X
	under separate cover	
	by messenger	

2 print(s) each of the following: Quarterly Sampling Report for the Woerd Avenue Landfill

Which are		
	approved	
	approved as noted	
	returned to you for correction and resubmittal	
	for your information & use	X
	for your review	

Two copies of this report have also been sent to Peter Flink at the DEP Northeast Regional Office.

Please call me if you have any questions.

Thank You..

CC: File

By James R. Laurila

CDM Camp Dresser & McKee Inc.

consulting
engineering
construction
operations

Ten Cambridge Center
Cambridge, Massachusetts 02142
Tel: 617 252-8000 Fax: 617 621-2565

July 16, 1998

Mr. Peter Flink
Solid Waste Management Division
Department of Environmental Protection
Metropolitan Boston - Northeast Regional Office
205A Lowell Street
Wilmington, MA 01887

Subject: Groundwater, Surface Water and Gas Sampling
Woerd Avenue Landfill, Waltham, Massachusetts

Dear Mr. Flink:

Please find enclosed the following documents pertaining to the groundwater, surface water, and gas sampling event performed at the Woerd Avenue Landfill on May 18, 19 and 21, 1998.

- Written summary describing the sampling and analysis
- Landfill monitoring schematic depicting monitoring locations
- Summary tables presenting laboratory and field data for each monitoring point
- Laboratory data sheets and chain of custody forms

There was no exceedance of drinking water standards for volatile organics detected in this round of sampling. There were several exceedances of primary drinking water standards including exceedances of arsenic, barium, cadmium, chromium, copper, lead and mercury. In addition, there were several exceedances of secondary drinking water standards, including exceedances of iron and manganese; and exceedances of total dissolved solids and zinc. Many of the total metals concentrations may be due in large part to sediment in the water samples. Future samples will be filtered so that dissolved metals concentrations can be determined. The Massachusetts Department of Environmental Protection's (DEP) solid waste regulations (310 CMR 19.132) require that any exceedances of state or federal drinking water standards be reported to DEP, with resampling and analysis of the location with the exceedance to occur within 60 days of the prior sampling date. However, because routine quarterly sampling is occurring at this facility with the next sampling event scheduled for August, no additional sampling is planned prior to this next quarterly sampling round.

If there are any questions regarding this information please contact me at 617-252-8382 or Paul Taurasi at 617-252-8481.

Very truly yours,

CAMP DRESSER & McKEE INC.

James R. Laurila, P.E.
Project Manager

cc: Mr. Ronald G. Vokey, Planning Department

SUMMARY OF QUARTERLY SAMPLING AND ANALYSIS
MAY 1998
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

Introduction

On May 18, 19 and 21, 1998, Camp Dresser & McKee's (CDM's) subconsultant CRB Geological & Environmental Services, Inc. collected groundwater and surface water samples in the vicinity of the Woerd Avenue Landfill. The sampling network at the landfill site currently consists of 8 groundwater monitoring wells and 3 landfill gas wells. The locations of the groundwater monitoring wells are identified as: CDM 1, CDM 1A, CDM 2, CDM 2A, CDM 3 (not sampled), CDM 3A, CDM 4 and CDM 4A. As noted above, monitoring well CDM 3 was not sampled because it was dry at the time of sampling. Monitoring wells CDM 1, CDM 2, CDM 3 and CDM 4 are shallow wells with 10-foot long screens with bottom of screen elevations ranging from 15 to 37-feet. Monitoring wells CDM 1A, CDM 2A, CDM 3A and CDM 4A are deeper wells with 10-foot long screens with bottom of screen depths ranging from 75 to 97-feet. Two surface water samples were also taken from Cram's Cove at locations identified as Cove 1 and Cove 2. Additional surface water samples were planned for two locations within the existing swale located at the southwestern area of the site, however the swale was dry at the time of sampling. Additionally, as part of the quarterly gas monitoring program, gas monitoring wells LFG 1, LFG 2, and LFG 3 were sampled for the presence of methane and hydrogen sulfide.

The above-referenced sampling locations are indicated on the attached Existing Conditions Plan. The sampling wells were located as close to the site property border as access would allow. However, the shallow overburden wells were installed in filled material in all locations. The deep overburden wells were installed in native soils. The fill material encountered was mainly ash. The installation of the wells and other site conditions will be reported in detail in the *Comprehensive Site Assessment Report*.

Groundwater and surface water samples were analyzed for volatile organic compounds (VOCs), dissolved metals, and several indicator parameters at the Camp Dresser & McKee Laboratory in Cambridge, Massachusetts. Both the laboratory reports for this sampling round and summary tables of the analytical results are included in this report.

Groundwater Quality

Indicator Parameters

As shown on the attached tables, the samples indicated no exceedance of Massachusetts Department of Environmental Protection (MDEP) or Environmental Protection Agency (EPA) Primary Standards (primary standards) for all the field parameters and conventional parameters measured. Concentrations of total dissolved solids (TDS) exceeded the Massachusetts Drinking Water Guidelines and EPA Secondary Maximum Contaminant Level (secondary standards) at CDM-1 (duplicate sample), CDM 2, CDM 4, and CDM 4A. Concentrations of TDS ranged from 700 mg/L to 1,400 mg/L for these samples. The secondary standard for pH was exceeded at CDM 2 with value of 8.86, above the standard's range of 6.5 to 8.5.

Metals

The metals concentrations reported were total metals since the samples were not filtered. Future sampling events will include the filtering of samples to determine dissolved metals concentrations.

There were several exceedances of the primary standards for metals detected in the groundwater samples. The primary standard for lead was exceeded by all samples, except at CDM 1A and CDM 3A. The largest concentrations of lead were detected at CDM 4 at 14,000 ug/L and at CDM 1 at 1,300 ug/L, well above the primary standard of 15 ug/L. The primary standards for arsenic, cadmium and chromium were exceeded at CDM 4 and CDM 2A at maximum concentrations of 210 ug/L, 150 ug/L and 2,000 ug/L, above the primary standards of 50 ug/L, 5 ug/L and 100 ug/L, respectively. The primary standards for barium, copper and mercury were exceeded at CDM 4 at concentrations of 5,400 ug/L, 17,000 ug/L and 3.3 ug/L, above the primary standards of 2,000 ug/L, 1,300 ug/L and 2 ug/L, respectively.

There were several exceedances of the secondary standards for metals detected in the groundwater samples. The secondary standard for iron was exceeded for all seven monitoring wells sampled with two concentrations as high as 5,100,000 ug/L at CDM 2A and 370,000 ug/L at CDM 4, considerably above the standard of 300 ug/L. The secondary standard for manganese was exceeded for all seven monitoring wells sampled with a concentration as high as 110,000 ug/L at CDM 2A, considerably above the standard of 50 ug/L.

Volatile Organic Compounds

No exceedances of primary or secondary standards were detected for any VOC's in this sampling round. Chlorobenzene, 1,2-Dichlorobenzene, cis 1,2-Dichloroethene were detected in monitoring well CDM 3A at low concentrations of 1.3 ug/L, 1.9 ug/L, and 19 ug/L, below the primary standards of 600 ug/L, 100 ug/L and 70 ug/L, respectively. Naphthalene, a compound not regulated by primary or secondary standards, was detected in monitoring well CDM 4 at a low concentration of 2.8 ug/L.

Surface Water Quality

This quarterly monitoring of Cram's Cove surface water quality with samples from locations Cove 1 and Cove 2 indicate low concentrations of several parameters. Additional surface water samples were planned for two locations within the existing swale located at the southwestern area of the site, however the swale was dry at the time of sampling

Indicator Parameters

No exceedances of primary or secondary standards were detected in either surface water sample, Cove 1 or Cove 2 for any of the indicator parameters. Nitrate-nitrogen, sulfate and chloride were detected at maximum levels of 0.36 ug/L, 43 ug/l and 60 ug/L for the two samples, below the standards of 10 ug/l, 250 ug/L and 250 ug/L, respectively.

Metals

Lead was the only metal detected in either surface water sample which exceeded the primary standard. Lead was detected at 18 ug/L in Cove 2, just above the primary standard for lead of 15 ug/L. There was exceedances of both iron and manganese for both Cove 1 and Cove 2 at maximum

levels of 5,100 ug/l and 190 ug/L, above the secondary standards of 300 ug/l and 50 ug/l, respectively. Barium, copper and zinc were detected but at levels considerably below the primary and secondary standards and generally below the concentrations detected at the groundwater monitoring wells.

Volatile Organic Compounds

No exceedances of primary or secondary standards for VOC's were detected in either surface water sample, Cove 1 or Cove 2. Methyl Tert-butyl Ether was the only VOC detected and was detected in both Cove 1 and Cove 2 samples at concentrations of 3.2 ug/L and 1.7 ug/L, both significantly below the secondary standard of 70 ug/L.

Quality Control

A trip blank was collected for each of the two days of groundwater sampling, May 18 and May 21, 1998. The only detection of volatile organic compounds was a concentration of 55 ug/L of acetone in the trip blank from May 21, 1998. There was no detection of acetone in any of the groundwater or surface water samples, therefore it appears that the detection was caused by a contamination only effecting that one sample and has no effect on the results of the other samples.

One duplicate sample was collected from CDM 1. The concentrations detected for the initial CDM 1 sample varied from the concentrations detected for the duplicate sample. However, they both had similar exceedances of primary and secondary standards and the concentrations of metals were generally in the same proportion between both samples. The discrepancy may be due to the sediment in the unfiltered samples.

Landfill Gas Monitoring

The concentrations of methane, hydrogen sulfide, carbon dioxide and oxygen gases were measured at gas monitoring wells LFG 1, LFG 2 and LFG 3. There was only one detection of methane at LFG 1 at a concentration of 0.3 percent (of methane by volume in air), considerably below the lower explosive limit of 5 percent. The detection of oxygen at an average of 11.0 percent and the absence of methane indicates that ash at this site is stable and is not anaerobically degrading. Gas migration does not appear to be a problem at this site.

Conclusions

The results of the laboratory analysis of the first round of quarterly sampling show exceedances of primary standards in certain metals but no exceedances in indicator parameters or VOCs. Five of the seven monitoring wells sampled contained concentrations of lead exceeding the primary standard. The sample from CDM 4 contained a lead concentration of over 900 times the primary standard. Also, the primary standards for arsenic, barium, cadmium, chromium, copper and mercury were all exceeded at one or two locations of groundwater sampling. The high levels of certain metals are likely due to the monitoring wells being located within the waste boundary and may not necessarily represent the quality of groundwater beyond the site boundaries. Also, the metals concentrations reported were total metals since the samples were not filtered. Future sampling events will include the filtering of samples to determine dissolved metals concentrations.

The surface water samples from Cram's Cove showed similar water quality to groundwater sampled within the site, however, at generally lower concentrations. Lead was the only contaminant detected in either surface water sample which exceeded the primary standard and was detected just above the regulated concentration.

The gas monitoring at the site showed no methane gas migration. The waste appears to be biologically stable and gas migration does not appear to be a problem.

Groundwater and surface water quality will continue to be evaluated quarterly as part of routine monitoring and as part of the preparation of the *Comprehensive Site Assessment Report*.

WATER QUALITY SAMPLING SUMMARY
MAY 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

SAMPLE NUMBER		DRINKING	98-04320	98-04321	98-04319	98-04322	98-04433	98-04434	98-04435	98-04436	98-04379	98-04380
SAMPLING DATE		WATER	18-May-98	18-May-98	18-May-98	18-May-98	21-May-98	21-May-98	21-May-98	21-May-98	19-May-98	19-May-98
LOCATION ID	UNITS	REGULATIONS	CDM 1	CDM 1 - Duplicate	CDM 2	CDM 4	CDM 1A	CDM 2A	CDM 3A	CDM 4A	Cove 1	Cove 2
FIELD PARAMETERS												
SPECIFIC CONDUCTANCE	umhos	NL	382	382	1,285	1,852	196	165	389	1,217	---	---
DISSOLVED OXYGEN	mg/l	NL	---	---	---	---	4.0	2.5	2.3	2.5	---	---
pH	Std	6.5-8.5 (3,5)	8.18	8.18	8.86	7.75	---	---	---	---	---	---
WATER LEVEL (MEAN SEA LEVEL)	ft.	NL	40.44	40.44	39.16	37.41	43.78	39.73	37.70	37.46	---	---
TEMPERATURE	C	NL	16.4	16.4	15.8	18.9	17.9	17.7	26.1	17.0	---	---
CONVENTIONAL PARAMETERS												
ALKALINITY	mg/l	NL	140	130	660	900	74	79	150	300	180	160
TDS (TOT. DISSOLVED SOLIDS)	mg/l	500 (3,5)	240	730	760	1,400	140	140	<5.0	700	340	280
NITRATE-NITROGEN	mg/l	10 (2,4)	4	4	<0.050	0.58	<0.050	<0.050	<0.050	<0.050	0.36	0.22
CYANIDE, TOTAL	mg/l	0.2(4)	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
SULFATE	mg/l	250(3,5)	36	27	79	85	<10	<10	<10	<10	36	43
CHLORIDE	mg/l	250(5)	3.6	3.8	22	66	11	4.1	27	200	60	50
COD (CHEMICAL OXYGEN DEMAND)	mg/l	NL	20	31	120	140	48	66	7	16	57	140
METALS												
ARSENIC	ug/l	50(2,4)	11	<5.0	9.5	120	<5.0	210	12	<5.0	5.2	<5.0
BARIUM	ug/l	2,000 (2,4)	260	110	590	5,400	24	570	120	160	260	230
CADMIUM	ug/l	5 (2,4)	4	1.3	2	83	<1.0	150	<1.0	1.7	<1.0	<1.0
CHROMIUM	ug/l	100(2,4)	66	19	11	2,000	5.1	990	<5.0	19	<5.0	<5.0
COPPER	ug/l	1,300 (2,4)	740	220	70	17,000	8.2	680	<5.0	27	9.8	17
IRON	ug/l	300 (3,5)	47,000	11,000	27,000	370,000	10,000	5,100,000	990	12,000	5,100	5,800
LEAD	ug/l	15 (2,4)	1,300	380	430	14,000	<5.0	140	<5.0	22	8.4	18
MANGANESE	ug/l	50 (3,5)	1,500	1,300	540	1,800	190	110,000	380	3,300	190	140
MERCURY	ug/l	2 (2,4)	<0.20	0.26	0.22	3.3	<0.20	0.5	<0.20	<0.20	<0.20	<0.20
SELENIUM	ug/l	50 (2,4)	<10	<10	<10	28	<10	<10	<10	11	<10	<10
SILVER	ug/l	100 (3,5)	<5.0	<5.0	<5.0	55	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
ZINC	ug/l	5,000 (3,5)	380	120	470	13,000	34	3,600	<20	57	91	86

FOOTNOTES:

(1) HIGHLIGHTED AREA: CONCENTRATION EXCEEDS MASSACHUSETTS OR EPA DRINKING WATER STANDARDS

(2) MASSACHUSETTS DRINKING WATER STANDARD

(3) MASSACHUSETTS DRINKING WATER GUIDELINE OR SECONDARY MAXIMUM CONTAMINANT LEVEL

(4) EPA PRIMARY DRINKING WATER STANDARD

(5) EPA SECONDARY DRINKING WATER STANDARD

(6) NO SAMPLE WAS TAKEN AT GROUNDWATER MONITORING WELL MW-3 BECAUSE GROUNDWATER WAS BELOW BOTTOM OF SCREEN.

(7) SAMPLES WERE NOT FILTERED, THEREFORE TOTAL CONCENTRATIONS OF METALS INCLUDING DISSOLVED, SUSPENDED AND SETTLED METALS MAY HAVE BEEN PRESENT DURING ANALYSIS.

<#.# NOT DETECTED TO THE LIMIT INDICATED

NL NO LIMIT

— THIS ANALYSIS WAS NOT PERFORMED.

WATER QUALITY SAMPLING SUMMARY
MAY 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

SAMPLE NUMBER		DRINKING	98-04320	98-04319	98-04322	98-04433	98-04434	98-04435	98-04436	98-04379	98-04380
SAMPLING DATE		WATER	18-May-98	18-May-98	18-May-98	21-May-98	21-May-98	21-May-98	21-May-98	19-May-98	19-May-98
LOCATION ID	UNITS	REGULATIONS	CDM 1	CDM 2	CDM 4	CDM 1A	CDM 2A	CDM 3A	CDM 4A	Cove 1	Cove 2
VOLATILE ORGANICS											
1,1,1,2-TETRACHLOROETHANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-TRICHLOROETHANE	ug/l	200 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-TETRACHLOROETHANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-TRICHLOROETHANE	ug/l	5 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DICHLOROETHANE	ug/l	70(3)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DICHLOROETHENE	ug/l	7 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DICHLOROPROPENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3- TRICHLOROBENZENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-TRICHLOROPROPANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-TRICHLOROBENZENE	ug/l	70(2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-TRIMETHYLBENZENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2- DIBROMO- 3-CHLOROPROPANE	ug/l	0.2(2)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-DIBROMOETHANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-DICHLOROBENZENE	ug/l	600 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0
1,2-DICHLOROETHANE	ug/l	5(2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-DICHLOROPROPANE	ug/l	5 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-TRIMETHYLBENZENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-DICHLOROBENZENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-DICHLOROPROPANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-DICHLOROBENZENE	ug/l	75(2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-DICHLOROPROPANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-BUTANONE	ug/l	NL	<20	<20	<20	<20	<20	<20	<20	<20	<20
2-CHLOROTOLUENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-HEXANONE	ug/l	NL	<20	<20	<20	<20	<20	<20	<20	<20	<20
4-CHLOROTOLUENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-METHYL-2-PENTANONE	ug/l	NL	<20	<20	<20	<20	<20	<20	<20	<20	<20
ACETONE	ug/l	3000 (3)	<20	<20	<20	<20	<20	<20	<20	<20	<20
BENZENE	ug/l	5 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BROMOBENZENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BROMOCHLOROMETHANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BROMODICHLOROMETHANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BROMOFORM	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BROMOMETHANE	ug/l	10 (3)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CARBON TETRACHLORIDE	ug/l	5 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
CHLOROBENZENE	ug/l	100 (2)	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	<1.0
CHLOROETHANE	ug/l	NL	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CHLOROFORM	ug/l	5 (3)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
CHLOROMETHANE	ug/l	NL	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis 1,2-DICHLOROETHENE	ug/l	70 (2,4)	<1.0	<1.0	<1.0	<1.0	<1.0	19	<1.0	<1.0	<1.0
cis 1,3-DICHLOROPROPENE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
DIBROMOCHLOROMETHANE	ug/l	NL	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

WATER QUALITY SAMPLING SUMMARY
MAY 1998 SAMPLING ROUND - QA/QC
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

SAMPLE NUMBER			98-04321	98-04323	98-04437
SAMPLING DATE		DRINKING WATER	18-May-98	18-May-98	21-May-98
LOCATION ID	UNITS	REGULATIONS	CDM 1 - Duplicate	Trip Blank	Trip Blank
VOLATILE ORGANICS					
1,1,1,2-TETRACHLOROETHANE	ug/l	NL	<1.0	<1.0	<2.0
1,1,1-TRICHLOROETHANE	ug/l	200 (2,4)	<1.0	<1.0	<2.0
1,1,2,2-TETRACHLOROETHANE	ug/l	NL	<1.0	<1.0	<2.0
1,1,2-TRICHLOROETHANE	ug/l	5 (2,4)	<1.0	<1.0	<2.0
1,1-DICHLOROETHANE	ug/l	70(3)	<1.0	<1.0	<2.0
1,1-DICHLOROETHENE	ug/l	7 (2,4)	<1.0	<1.0	<2.0
1,1-DICHLOROPROPENE	ug/l	NL	<1.0	<1.0	<2.0
1,2,3- TRICHLOROBENZENE	ug/l	NL	<1.0	<1.0	<2.0
1,2,3-TRICHLOROPROPANE	ug/l	NL	<1.0	<1.0	<2.0
1,2,4-TRICHLOROBENZENE	ug/l	70(2,4)	<1.0	<1.0	<2.0
1,2,4-TRIMETHYLBENZENE	ug/l	NL	<1.0	<1.0	<2.0
1,2- DIBROMO- 3-CHLOROPROPANE	ug/l	0.2(2)	<1.0	<1.0	<2.0
1,2-DIBROMOETHANE	ug/l	NL	<1.0	<1.0	<2.0
1,2-DICHLOROBENZENE	ug/l	600 (2,4)	<1.0	<1.0	<2.0
1,2-DICHLOROETHANE	ug/l	5(2,4)	<1.0	<1.0	<2.0
1,2-DICHLOROPROPANE	ug/l	5 (2,4)	<1.0	<1.0	<2.0
1,3,5-TRIMETHYLBENZENE	ug/l	NL	<1.0	<1.0	<2.0
1,3-DICHLOROBENZENE	ug/l	NL	<1.0	<1.0	<2.0
1,3-DICHLOROPROPANE	ug/l	NL	<1.0	<1.0	<2.0
1,4-DICHLOROBENZENE	ug/l	75(2,4)	<1.0	<1.0	<2.0
2,2-DICHLOROPROPANE	ug/l	NL	<1.0	<1.0	<2.0
2-BUTANONE	ug/l	NL	<20	<20	<40
2-CHLOROTOLUENE	ug/l	NL	<1.0	<1.0	<2.0
2-HEXANONE	ug/l	NL	<20	<20	<40
4-CHLOROTOLUENE	ug/l	NL	<1.0	<1.0	<2.0
4-METHYL-2-PENTANONE	ug/l	NL	<20	<20	<40
ACETONE	ug/l	3000 (3)	<20	<20	55
BENZENE	ug/l	5 (2,4)	<1.0	<1.0	<2.0
BROMOBENZENE	ug/l	NL	<1.0	<1.0	<2.0
BROMOCHLOROMETHANE	ug/l	NL	<1.0	<1.0	<2.0
BROMODICHLOROMETHANE	ug/l	NL	<1.0	<1.0	<2.0
BROMOFORM	ug/l	NL	<1.0	<1.0	<2.0
BROMOMETHANE	ug/l	10 (3)	<5.0	<5.0	<10
CARBON TETRACHLORIDE	ug/l	5 (2,4)	<1.0	<1.0	<2.0
CHLOROBENZENE	ug/l	100 (2)	<1.0	<1.0	<2.0
CHLOROETHANE	ug/l	NL	<5.0	<5.0	<10
CHLOROFORM	ug/l	5 (3)	<5.0	<5.0	<10
CHLOROMETHANE	ug/l	NL	<5.0	<5.0	<10
cis 1,2-DICHLOROETHENE	ug/l	70 (2,4)	<1.0	<1.0	<2.0
cis 1,3-DICHLOROPROPENE	ug/l	NL	<1.0	<1.0	<2.0
DIBROMOCHLOROMETHANE	ug/l	NL	<1.0	<1.0	<2.0

GAS WELL SAMPLING RESULTS
MAY 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

Parameter	*Meter*	**LFG 1**	**LFG 2**	**LFG 3**
METHANE	LANDTEC	0.3	0.0	0.0
VOCs	---	---	---	---
HYDROGEN SULFIDE	BACHRACH	0.0	0.0	0.0
CARBON DIOXIDE	LANDTEC	8.9	8.5	5.5
OXYGEN	LANDTEC	9.2	10.3	13.4

Notes:
1. Values are expressed in percent by volume in air.
2. LEL = Lower Explosive Limit. The lower explosive limit of methane in air is 5% methane by volume in air.
--- This analysis was not performed.

Client: City of Waltham

Project: Waltham landfill

SDG: 980519-632

Date: 6/4/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980519-632	**Print Date:**	6/4/98
Client:	City of Waltham	**Client Contact:**	JIM LAUERA
Project:	Waltham landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Cove 1	05/19/98	05/19/98	98-04379	AQUEOUS
Cove 2	05/19/98	05/19/98	98-04380	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	91.14	86 - 115
Dibromofluoromethane	99.24	86 - 118
Toluene-d8	94.98	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	260	
Iron	25	5100	
Manganese	5.0	190	
Zinc	20	91	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	1.7	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	110.40	86 - 115
Dibromofluoromethane	104.22	86 - 118
Toluene-d8	105.76	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	230	
Iron	25	5800	
Manganese	5.0	140	
Zinc	20	86	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Preparation Batch: P980526/9012_AQ_P/22 Prep. Analyst: DEVLINHA

Component Name: Cyanide, Total EPA Method #: EPA 9012 Matrix: AQUEOUS
Analytical Batch: I980526/9012_AQUE/22 Analyst: DEVLINHA Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.015	<0.015	1	
Cove 2	98-04380	0.015	<0.015	1	

Component Name: Nitrate EPA Method #: EPA 353.2 Matrix: AQUEOUS
Analytical Batch: I980521/353.2_AQU/65 Analyst: DEVLINHA Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.050	0.36	1	
Cove 2	98-04380	0.050	0.22	1	

Component Name: Total Dissolved Solids EPA Method #: SM 2540C Matrix: AQUEOUS
Analytical Batch: I980529/2540C_AQU/41 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.0	340	1	
Cove 2	98-04380	5.0	280	1	

Component Name: Alkalinity EPA Method #: SM 2320B Matrix: AQUEOUS
Analytical Batch: I980601/2320B_AQU/36 Analyst: NGUYENMH Units: mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 6/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.0	180	1	
Cove 2	98-04380	5.0	160	1	

Component Name: COD EPA Method #: HACH 8000 Matrix: AQUEOUS
Analytical Batch: I980603/8000_AQUE/35 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 6/3/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.0	57	1	
Cove 2	98-04380	5.0	140	1	

Component Name: Chloride EPA Method #: EPA 9251 Matrix: AQUEOUS
Analytical Batch: I980603/9251_AQUE/15 Analyst: DEVLINHA Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 6/3/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	1.0	60	1	
Cove 2	98-04380	1.0	50	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Component Name:	Sulfate	**EPA Method #:**	EPA 9038	**Matrix:**	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	10	36	1	
Cove 2	98-04380	10	43	1	

PREPARATION INFORMATION REPORT

SDG #: 980519-632

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030
EPA Method #: EPA 5030
Batch Approved By: GOTTSHALLDL
Batch Approved On: 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Cove 2	98-04380	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep
EPA Method #: EPA 9012
Batch Approved By: GOTTSHALLDL
Batch Approved On: 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015
EPA Method #: 3015
Batch Approved By: GOTTSHALLDL
Batch Approved On: 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/28/98
Cove 2	98-04380	05/19/98	05/19/98		05/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/26/98
Cove 2	98-04380	05/19/98	05/19/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/20/98
Cove 2	98-04380	05/19/98	05/19/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/29/98	06/01/98
Cove 2	98-04380	05/19/98	05/19/98	05/29/98	06/01/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/22/98	05/22/98
Cove 2	98-04380	05/19/98	05/19/98	05/22/98	05/22/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/21/98	05/21/98
Cove 2	98-04380	05/19/98	05/19/98	05/21/98	05/21/98

HOLDTIME SUMMARY

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/03/98
Cove 2	98-04380	05/19/98	05/19/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	98-04415	**Prep Analyst:**	
EPA Number:	EPA 353.2		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	**Prep Analyst:**	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03282	**Prep Analyst:**	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.0	<5.0	
Iron	25	<25	
Manganese	5.0	<5.0	

6010A_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03346	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03348	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03352	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03354	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03356	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03379	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03016	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980521/353.2_AQU/65
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	QCS98-03098	**Prep. Analyst:**	DEVLINHA
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980526/9012_AQUE/22
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03209	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980529/2540C_AQU/41
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03283	**Prep. Analyst:**	
Units:	mg/L CaCO3		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980601/2320B_AQU/36
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	140	104.6	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03347	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03349	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03353	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03355	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03357	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03380	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03384	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	LFB98-03067	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980524/8260A_AQU/261
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.0	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.0	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.0	1000.00	93.8			80 - 120		
Iron	25	200.00	103.5			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04310		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
EPA Method #:	EPA 9012	**Prep. Analyst:**	DEVLINHA
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04353		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	<5.0	<5.0	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 353.2	**Prep. Analyst:**	
Lab Sample ID:	98-04379		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04401		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04404		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04405		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.0	120	130	4.672	0 - 20	
Iron	25	810	1100	27.144	0 - 20	
Manganese	5.0	380	400	4.779	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04444		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	15	16	3.279	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 9251	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

353.2_AQUEOUS MS/MSD RPD REPORT

SDG #: 980519-632
Lab Sample ID: 98-04379
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980521/353.2_AQU/65
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	% Analyte Recovery MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Nitrate	99			80 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/26/98

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Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
2320B_AQUEOUS	Alkalinity	mg/L CaCO3	180	160
2540C_AQUEOUS	Total Dissolved Solids	mg/L	340	280
353.2_AQUEOUS	Nitrate	mg/L	0.36	0.22
6010A_AQUEOUS	Barium	ug/L	260	230
	Iron	ug/L	5100	5800
	Manganese	ug/L	190	140
	Zinc	ug/L	91	86
8000_AQUEOUS	COD	mg/L	57	140
8260A_AQUEOUS	1,1,1,2-Tetrachloroet	ug/L	<1.0	<1.0
	1,1,1-Trichloroethane	ug/L	<1.0	<1.0
	1,1,2,2-Tetrachloroet	ug/L	<1.0	<1.0
	1,1,2-Trichloroethane	ug/L	<1.0	<1.0
	1,1-Dichloroethane	ug/L	<1.0	<1.0
	1,1-Dichloroethene	ug/L	<1.0	<1.0
	1,1-Dichloropropene	ug/L	<1.0	<1.0
	1,2,3-Trichlorobenzen	ug/L	<1.0	<1.0
	1,2,3-Trichloropropan	ug/L	<1.0	<1.0

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	1,2,4-Trichlorobenzen	ug/L	<1.0	<1.0
	1,2,4-Trimethylbenze	ug/L	<1.0	<1.0
	1,2-Dibromo-3-chloro	ug/L	<1.0	<1.0
	1,2-Dibromoethane	ug/L	<1.0	<1.0
	1,2-Dichlorobenzene	ug/L	<1.0	<1.0
	1,2-Dichloroethane	ug/L	<1.0	<1.0
	1,2-Dichloropropane	ug/L	<1.0	<1.0
	1,3,5-Trimethylbenze	ug/L	<1.0	<1.0
	1,3-Dichlorobenzene	ug/L	<1.0	<1.0
	1,3-Dichloropropane	ug/L	<1.0	<1.0
	1,4-Dichlorobenzene	ug/L	<1.0	<1.0
	2,2-Dichloropropane	ug/L	<1.0	<1.0
	2-Butanone	ug/L	<20	<20
	2-Chlorotoluene	ug/L	<1.0	<1.0
	2-Hexanone	ug/L	<20	<20
	4-Chlorotoluene	ug/L	<1.0	<1.0
	4-Methyl-2-pentanone	ug/L	<20	<20

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	Acetone	ug/L	<20	<20
	Benzene	ug/L	<1.0	<1.0
	Bromobenzene	ug/L	<1.0	<1.0
	Bromochloromethane	ug/L	<1.0	<1.0
	Bromodichloromethan	ug/L	<1.0	<1.0
	Bromoform	ug/L	<1.0	<1.0
	Bromomethane	ug/L	<5.0	<5.0
	Carbon tetrachloride	ug/L	<1.0	<1.0
	Chlorobenzene	ug/L	<1.0	<1.0
	Chloroethane	ug/L	<5.0	<5.0
	Chloroform	ug/L	<5.0	<5.0
	Chloromethane	ug/L	<5.0	<5.0
	cis-1,2-Dichloroethen	ug/L	<1.0	<1.0
	cis-1,3-Dichloroprope	ug/L	<1.0	<1.0
	Dibromochloromethan	ug/L	<1.0	<1.0
	Dibromomethane	ug/L	<1.0	<1.0
	Dichlorodifluorometha	ug/L	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	Ethylbenzene	ug/L	<1.0	<1.0
	Hexachlorobutadiene	ug/L	<1.0	<1.0
	Isopropylbenzene	ug/L	<1.0	<1.0
	Isopropylmethylbenze	ug/L	<1.0	<1.0
	m- and p-Xylenes	ug/L	<1.0	<1.0
	Methyl tert-butyl ethe	ug/L	3.2	1.7
	Methylene chloride	ug/L	<5.0	<5.0
	n-Butylbenzene	ug/L	<1.0	<1.0
	n-Propylbenzene	ug/L	<1.0	<1.0
	Naphthalene	ug/L	<1.0	<1.0
	o-Xylene	ug/L	<1.0	<1.0
	sec-Butylbenzene	ug/L	<1.0	<1.0
	Styrene	ug/L	<1.0	<1.0
	tert-Butylbenzene	ug/L	<1.0	<1.0
	Tetrachloroethene	ug/L	<1.0	<1.0
	Toluene	ug/L	<1.0	<1.0
	trans-1,2-Dichloroethe	ug/L	<1.0	<1.0

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	trans-1,3-Dichloropro	ug/L	<1.0	<1.0
	Trichloroethene	ug/L	<1.0	<1.0
	Trichlorofluoromethan	ug/L	<1.0	<1.0
	Vinyl chloride	ug/L	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	mg/L	<0.015	<0.015
9038_AQUEOUS	Sulfate	mg/L	36	43
9251_AQUEOUS	Chloride	mg/L	60	50

Chain of Custody

CDM Analytical Laboratory
840 Memorial Drive
Cambridge, MA 02139
Phone: (617) 354-4448
Fax: (617) 354-0764

Field Log # Q# 1447 Page 1 of 1

Client: City of Waltham
Project Name: Waltham Landfill
Project #:
Contact: Sampled by CRB
Report to: Jim Lavila
Bill to:
Address:
Phone: 258-8368 - Burns
Fax #:
SDG#: 980519-632
TAT: STD
TAT Approved by: JB
Lab Acct. #:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: Other	METALS: Filtered (Y/N)	OTHER	OTHER	OTHER
Cove 1	5/19/98	1:30	W	6	98-04379			✓										✓			✓	✓	✓
Cove 2		1:50			98-04380			✓										✓			✓	✓	✓
MW4		3:15			98-04381			✓										✓			✓	✓	✓
										CANCEL					MW4	PER							
										LAURIE					WEBSTER	OF							
										CRB					5/20/98	JB							

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature: ____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (____) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☒ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Chlorides, Sulfate, Nitrate Nitrogen, TDS — Alkalinity, Iron, Barium, Zinc — manganese, Total cyanide

Client: City of Waltham

Project: Waltham Landfill

SDG: 980518-620

Date: 6/5/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980518-620	**Print Date:**	6/5/98
Client:	City of Waltham	**Client Contact:**	JIM LAMELLA
Project:	Waltham Landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

BATCH NOTES

TDS: I980529/2540C_AQU/41

Samples 98-04310, 98-04319, 98-04320, 98-04321, and 98-04322 were all analyzed one day beyond the EPA recommended maximum holding time due to intervening holiday and laboratory oversight.

RESULT NOTES

98-04319, 4320, 4322 (Iron) E qualifier = determined concentration exceeds system calibration linear range; samples were reanalyzed diluted and the additional results are reported in the single component report (p.18 of 39).

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, RA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
CDM 2	05/18/98	05/18/98	98-04319	AQUEOUS
Duplicate	05/18/98	05/18/98	98-04321	AQUEOUS
CDM 1	05/18/98	05/18/98	98-04320	AQUEOUS
CDM 4	05/18/98	05/18/98	98-04322	AQUEOUS
Trip Blank	05/18/98	05/18/98	98-04323	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	96.92	86 - 115
Dibromofluoromethane	100.32	86 - 118
Toluene-d8	99.58	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	590	
Iron	25	26000	E
Manganese	5.0	540	
Zinc	20	470	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	87.58	86 - 115
Dibromofluoromethane	92.52	86 - 118
Toluene-d8	101.44	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	260	
Iron	25	38000	E
Manganese	5.0	1500	
Zinc	20	380	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	89.62	86 - 115
Dibromofluoromethane	94.16	86 - 118
Toluene-d8	97.48	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	110	
Iron	25	11000	
Manganese	5.0	1300	
Zinc	20	120	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	2.8	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	104.72	86 - 115
Dibromofluoromethane	101.00	86 - 118
Toluene-d8	101.50	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	5400	
Iron	25	270000	E
Manganese	5.0	1800	
Zinc	20	13000	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	114.36	86 - 115
Dibromofluoromethane	109.76	86 - 118
Toluene-d8	101.30	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Preparation Batch: P980526/9012_AQ_P/22 **Prep. Analyst:** DEVLINHA

Component Name: Cyanide, Total **EPA Method #:** EPA 9012 **Matrix:** AQUEOUS
Analytical Batch: I980526/9012_AQUE/22 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.015	<0.015	1	
CDM 1	98-04320	0.015	<0.015	1	
Duplicate	98-04321	0.015	<0.015	1	
CDM 4	98-04322	0.015	<0.015	1	

Preparation Batch: P980601/3015/121 **Prep. Analyst:** LESHINSKYA

Component Name: Iron **EPA Method #:** EPA 6010A **Matrix:** AQUEOUS
Analytical Batch: I980603/6010A_AQU/98 **Analyst:** LESHINSKYA **Units:** ug/L
Reviewed By - Date: GOTTSHALLDL - 6/4/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	50	27000	2	
CDM 1	98-04320	50	47000	2	
CDM 4	98-04322	500	370000	20	

Component Name: Alkalinity **EPA Method #:** SM 2320B **Matrix:** AQUEOUS
Analytical Batch: I980519/2320B_AQU/35 **Analyst:** DEVLINHA **Units:** mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 5/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.0	660	1	
CDM 1	98-04320	5.0	140	1	
Duplicate	98-04321	5.0	130	1	
CDM 4	98-04322	5.0	900	1	

Component Name: Nitrate **EPA Method #:** EPA 353.2 **Matrix:** AQUEOUS
Analytical Batch: I980521/353.2_AQU/65 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.050	<0.050	1	
CDM 1	98-04320	0.50	4.0	10	
Duplicate	98-04321	0.50	4.0	10	
CDM 4	98-04322	0.050	0.58	1	

Component Name: Total Dissolved Solids **EPA Method #:** SM 2540C **Matrix:** AQUEOUS
Analytical Batch: I980529/2540C_AQU/41 **Analyst:** NGUYENMH **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.0	760	1	
CDM 1	98-04320	5.0	240	1	
Duplicate	98-04321	5.0	730	1	
CDM 4	98-04322	5.0	1400	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Component Name:	COD	**EPA Method #:**	HACH 8000	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/8000_AQUE/35	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.0	120	1	
CDM 1	98-04320	5.0	20	1	
Duplicate	98-04321	5.0	31	1	
CDM 4	98-04322	5.0	140	1	

Component Name:	Chloride	**EPA Method #:**	EPA 9251	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/9251_AQUE/15	**Analyst:**	DEVLINHA	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	1.0	22	1	
CDM 1	98-04320	1.0	3.6	1	
Duplicate	98-04321	1.0	3.8	1	
CDM 4	98-04322	1.0	66	1	

Component Name:	Sulfate	**EPA Method #:**	EPA 9038	**Matrix:**	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	10	79	1	
CDM 1	98-04320	10	36	1	
Duplicate	98-04321	10	27	1	
CDM 4	98-04322	10	85	1	

PREPARATION INFORMATION REPORT

SDG #: 980518-620

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030 **EPA Method #:** EPA 5030
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 1	98-04320	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Duplicate	98-04321	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 4	98-04322	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Trip Blank	98-04323	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep **EPA Method #:** EPA 9012
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		DUPLICATE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		MATRIX_SPIKE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/19/98
CDM 1	98-04320	05/18/98	05/18/98		05/19/98
Duplicate	98-04321	05/18/98	05/18/98		05/19/98
CDM 4	98-04322	05/18/98	05/18/98		05/19/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/26/98
CDM 1	98-04320	05/18/98	05/18/98		05/26/98
Duplicate	98-04321	05/18/98	05/18/98		05/26/98
CDM 4	98-04322	05/18/98	05/18/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/20/98
CDM 1	98-04320	05/18/98	05/18/98		05/20/98
Duplicate	98-04321	05/18/98	05/18/98		05/20/98
CDM 4	98-04322	05/18/98	05/18/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/29/98	06/01/98
				05/29/98	06/04/98
CDM 1	98-04320	05/18/98	05/18/98	05/29/98	06/01/98
				05/29/98	06/04/98
Duplicate	98-04321	05/18/98	05/18/98	05/29/98	06/01/98
CDM 4	98-04322	05/18/98	05/18/98	05/29/98	06/01/98
				05/29/98	06/04/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

HOLDTIME SUMMARY

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/22/98	05/22/98
CDM 1	98-04320	05/18/98	05/18/98	05/22/98	05/22/98
Duplicate	98-04321	05/18/98	05/18/98	05/22/98	05/22/98
CDM 4	98-04322	05/18/98	05/18/98	05/22/98	05/22/98
Trip Blank	98-04323	05/18/98	05/18/98	05/22/98	05/22/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/21/98	05/21/98
CDM 1	98-04320	05/18/98	05/18/98	05/21/98	05/21/98
Duplicate	98-04321	05/18/98	05/18/98	05/21/98	05/21/98
CDM 4	98-04322	05/18/98	05/18/98	05/21/98	05/21/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/03/98
CDM 1	98-04320	05/18/98	05/18/98		06/03/98
Duplicate	98-04321	05/18/98	05/18/98		06/03/98
CDM 4	98-04322	05/18/98	05/18/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-02935	**Prep Analyst:**	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980519/2320B_AQU/35
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	98-04415	**Prep Analyst:**	
EPA Number:	EPA 353.2		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	**Prep Analyst:**	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.0	<5.0	
Iron	25	<25	
Manganese	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03346	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03348	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03352	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03354	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03356	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03379	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-02936	**Prep. Analyst:**	
Units:	mg/L CaCO3		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980519/2320B_AQU/35
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	130	99.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03016	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980521/353.2_AQU/65
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	QCS98-03098	**Prep. Analyst:**	DEVLINHA
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980526/9012_AQUE/22
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03209	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980529/2540C_AQU/41
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03347	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03349	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03353	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03355	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03357	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03380	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03384	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	LFB98-03067	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980524/8260A_AQU/261
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.0	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.0	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.0	1000.00	93.8			80 - 120		
Iron	25	200.00	103.5			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-02644		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980519/2320B_AQU/35
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	24	24	0	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04310		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
EPA Method #:	EPA 9012	**Prep. Analyst:**	DEVLINHA
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	EPA 353.2	**Prep. Analyst:**	
Lab Sample ID:	98-04379		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04401		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04404		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04405		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.0	120	130	4.672	0 - 20	
Iron	25	810	1100	27.144	0 - 20	
Manganese	5.0	380	400	4.779	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	EPA 9251	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04320
Matrix: AQUEOUS

Preparation Batch ID: P980524/5030/361
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980524/8260A_AQU/261
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	112			61 - 145		
Benzene	111			76 - 127		
Chlorobenzene	104			75 - 130		
Toluene	99			76 - 125		
Trichloroethene	106			71 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/26/98

9012_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04319
Matrix: AQUEOUS

Preparation Batch ID: P980526/9012_AQ_P/22
Prep. Analyst: DEVLINHA

Analytical Batch ID: I980526/9012_AQUE/22
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Cyanide, Total	94			80 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/26/98

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Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
2320B_AQUEOUS	Alkalinity	mg/L CaCO3	140	660	900	130	
2540C_AQUEOUS	Total Dissolved Solids	mg/L	240	760	1400	730	
353.2_AQUEOUS	Nitrate	mg/L	4.0	<0.050	0.58	4.0	
6010A_AQUEOUS	Barium	ug/L	260	590	5400	110	
	Iron	ug/L	38000	27000	370000	11000	
	Manganese	ug/L	1500	540	1800	1300	
	Zinc	ug/L	380	470	13000	120	
8000_AQUEOUS	COD	mg/L	20	120	140	31	
8260A_AQUEOUS	1,1,1,2-Tetrachloroeth	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2,2-Tetrachloroeth	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	1,2,4-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,4-Trimethylbenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromo-3-chlorop	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3,5-Trimethylbenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	2,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Butanone	ug/L	<20	<20	<20	<20	<20
	2-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Hexanone	ug/L	<20	<20	<20	<20	<20
	4-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	4-Methyl-2-pentanone	ug/L	<20	<20	<20	<20	<20

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Acetone	ug/L	<20	<20	<20	<20	<20
	Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromomethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	Carbon tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Chloroethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloroform	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloromethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	cis-1,2-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	cis-1,3-Dichloropropen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromochloromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Dichlorodifluorometha	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Hexachlorobutadiene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylmethylbenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	m- and p-Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Methyl tert-butyl ether	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Methylene chloride	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	n-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	n-Propylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Naphthalene	ug/L	<1.0	<1.0	2.8	<1.0	<1.0
	o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	sec-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	tert-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	trans-1,2-Dichloroethe	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0

Client: City of Waltham SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	trans-1,3-Dichloroprop	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Trichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Trichlorofluoromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	mg/L	<0.015	<0.015	<0.015	<0.015	
9038_AQUEOUS	Sulfate	mg/L	36	79	85	27	
9251_AQUEOUS	Chloride	mg/L	3.6	22	66	3.8	

Client: Dallas Water Utilities

SDG: 980527-692

	Description	Id Text	
			BAICR-1014
Analysis Name	Name	Units	98-04675
5310C_AQUEOUS	TOC	mg/L	2.8

Chain of Custody

CDM Analytical Laboratory — Cambridge, MA 02139 — Fax: (617) 354-0764 — Page 1 of 1

Client: City of Waltham — Address: — SDG#: 980518-620

Project Name: Waltham Landfill — TAT: STD

Project #: — Phone: 752-8368 E-Buens — TAT Approved by:

Contact: Sampled by CRB Geological & Environmental — Fax#: — Lab Acct. #:

Report to: Jim Lauricella — Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8 *	METALS: Other	METALS: Filtered (Y/N)	OTHER: COD	OTHER: * wet chem
CDM 2	5/18/98	1:20	W	6	98-04319			✓										✓			✓	✓
CDM 1	5/18/98	2:30	W	6	98-04320			✓										✓			✓	✓
Duplicate	5/18/98	2:15	W	6	98-04321			✓										✓			✓	✓
CDM 4	5/18/98	3:00	W	6	98-04322			✓										✓			✓	✓
Trip Blank	5/18/98	3:10	W	~~2~~ 1	98-04323			✓														

A - HCl	D - NaOH	P - Plastic	Container Type:
B - HNO_3	E - NaThio	G - Glass	Preservative:
C - H_2SO_4	F - Other	V - Vial	Volume:

Samples Received:
- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (_____) TICS ☐

	Date	Time		Date	Time
Sampled & Relinquished by: Steven J. Turbenbaker	5/18/98	4:40	Received by:	5/18	4:40
Relinquished by:			Received by:		
Relinquished by:			Received by:		

Shipper/Airbill#: — Custody Seal#: — Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:

* Chlorids, Sulfate, Nitrate nitroge, TDS

Alkalinity, Iron, Barium, Zinc

Manganese, Total Cyanide

Client: City of Waltham

Project: Waltham landfill

SDG: 980522-643

Date: 6/24/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980522-643	Print Date:	6/24/98
Client:	City of Waltham	Client Contact:	
Project:	Waltham landfill	Address:	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

BATCH NOTES

/OA: I980608/8260A_AQU/265; Trip blank was analyzed twice to confirm Acetone hit. Second analysis was taken from same vial as original un. Only one vial was submitted. Acetone was not detected in any of the associated samples.

RESULT NOTES

Metals: Samples originally submitted for Fe, Ba, Zn, Mn analyses; additional testing (RCRA8 + Fe, Mn, Cu, Zn) was required and is included n this report. Note sample 98-04434 contained appreciable amount of sediment in the sample. Sample matrix interference (high levels of arget and non-target analytes) hindered analysis of some constituents; Silver: M qualifier . Iron recovery of Matrix Spike (MS) was hindered lue to high sample concentration relative to spike amount (N qualifier).

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: James F Occhialini

LABORATORY QA/QC REVIEW: Kristin May

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Trip Blank	05/21/98	05/22/98	98-04437	AQUEOUS
CDM-1A	05/21/98	05/22/98	98-04433	AQUEOUS
CDM-2A	05/21/98	05/22/98	98-04434	AQUEOUS
CDM-4A	05/21/98	05/22/98	98-04436	AQUEOUS
CDM-3A	05/21/98	05/22/98	98-04435	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-1A		
Lab Sample ID:	98-04433	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-1A		
Lab Sample ID:	98-04433	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	97.54	86 - 115
Dibromofluoromethane	98.84	86 - 118
Toluene-d8	97.54	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-1A		
Lab Sample ID:	98-04433	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	24	
Cadmium	1.0	<1.0	
Chromium	5.0	5.1	
Copper	5.0	8.2	
Iron	25	10000	
Lead	5.0	<5.0	
Manganese	5.0	190	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	34	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-2A		
Lab Sample ID:	98-04434	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-2A		
Lab Sample ID:	98-04434	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	102.30	86 - 115
Dibromofluoromethane	100.12	86 - 118
Toluene-d8	98.66	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-2A		
Lab Sample ID:	98-04434	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	210	
Barium	5.0	570	
Cadmium	1.0	150	
Chromium	5.0	990	
Copper	5.0	680	
Iron	5000	5100000	
Lead	5.0	140	
Manganese	1000	110000	
Selenium	10	<10	
Silver	5.0	<5.0	M
Zinc	20	3600	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-3A		
Lab Sample ID:	98-04435	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	1.9	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	1.3	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	19	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-3A		
Lab Sample ID:	98-04435	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	102.62	86 - 115
Dibromofluoromethane	98.42	86 - 118
Toluene-d8	101.36	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-3A		
Lab Sample ID:	98-04435	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	12	
Barium	5.0	120	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	990	
Lead	5.0	<5.0	
Manganese	5.0	380	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-4A		
Lab Sample ID:	98-04436	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-4A		
Lab Sample ID:	98-04436	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	99.40	86 - 115
Dibromofluoromethane	98.36	86 - 118
Toluene-d8	95.82	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-4A		
Lab Sample ID:	98-04436	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	160	
Cadmium	1.0	1.7	
Chromium	5.0	19	
Copper	5.0	27	
Iron	25	12000	
Lead	5.0	22	
Manganese	5.0	3300	
Selenium	10	11	
Silver	5.0	<5.0	
Zinc	20	57	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980608/5030/370
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04437	**Analytical Batch ID:**	I980608/8260A_AQU/265
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	2		

Component Name	MRL	Result	Qualifiers
Benzene	2.0	<2.0	
Bromobenzene	2.0	<2.0	
Bromochloromethane	2.0	<2.0	
Bromodichloromethane	2.0	<2.0	
Bromoform	2.0	<2.0	
Bromomethane	10	<10	
2-Butanone	40	<40	
n-Butylbenzene	2.0	<2.0	
sec-Butylbenzene	2.0	<2.0	
tert-Butylbenzene	2.0	<2.0	
Carbon tetrachloride	2.0	<2.0	
Chlorobenzene	2.0	<2.0	
Chloroethane	10	<10	
Chloroform	10	<10	
Chloromethane	10	<10	
2-Chlorotoluene	2.0	<2.0	
4-Chlorotoluene	2.0	<2.0	
1,2-Dibromo-3-chloropropane	2.0	<2.0	
1,2-Dibromoethane	2.0	<2.0	
Dibromochloromethane	2.0	<2.0	
Dibromomethane	2.0	<2.0	
1,2-Dichlorobenzene	2.0	<2.0	
1,3-Dichlorobenzene	2.0	<2.0	
1,4-Dichlorobenzene	2.0	<2.0	
Dichlorodifluoromethane	2.0	<2.0	
1,1-Dichloroethane	2.0	<2.0	
1,2-Dichloroethane	2.0	<2.0	
cis-1,2-Dichloroethene	2.0	<2.0	
trans-1,2-Dichloroethene	2.0	<2.0	
1,2-Dichloropropane	2.0	<2.0	
1,3-Dichloropropane	2.0	<2.0	
2,2-Dichloropropane	2.0	<2.0	
1,1-Dichloropropene	2.0	<2.0	
cis-1,3-Dichloropropene	2.0	<2.0	
trans-1,3-Dichloropropene	2.0	<2.0	
Ethylbenzene	2.0	<2.0	
Hexachlorobutadiene	2.0	<2.0	
2-Hexanone	40	<40	
Isopropylbenzene	2.0	<2.0	
4-Methyl-2-pentanone	40	<40	
Methyl tert-butyl ether	2.0	<2.0	
Methylene chloride	10	<10	
Naphthalene	2.0	<2.0	
n-Propylbenzene	2.0	<2.0	
Styrene	2.0	<2.0	
1,1,1,2-Tetrachloroethane	2.0	<2.0	
1,1,2,2-Tetrachloroethane	2.0	<2.0	
Tetrachloroethene	2.0	<2.0	
Toluene	2.0	<2.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/08/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980608/5030/370
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04437	**Analytical Batch ID:**	I980608/8260A_AQU/265
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	2		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	2.0	<2.0	
1,2,4-Trichlorobenzene	2.0	<2.0	
1,1,1-Trichloroethane	2.0	<2.0	
1,1,2-Trichloroethane	2.0	<2.0	
Trichloroethene	2.0	<2.0	
Trichlorofluoromethane	2.0	<2.0	
1,2,4-Trimethylbenzene	2.0	<2.0	
1,3,5-Trimethylbenzene	2.0	<2.0	
1,2,3-Trichloropropane	2.0	<2.0	
Vinyl chloride	2.0	<2.0	
m- and p-Xylenes	2.0	<2.0	
o-Xylene	2.0	<2.0	
1,1-Dichloroethene	2.0	<2.0	
Acetone	40	55	
Isopropylmethylbenzene	2.0	<2.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	90.02	86 - 115
Dibromofluoromethane	93.02	86 - 118
Toluene-d8	98.78	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/08/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980522-643

Preparation Batch: P980528/9012_AQ_P/23 **Prep. Analyst:** NGUYENMH

Component Name: Cyanide, Total **EPA Method #:** EPA 9012 **Matrix:** AQUEOUS
Analytical Batch: I980528/9012_AQUE/23 **Analyst:** NGUYENMH **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	0.015	<0.015	1	
CDM-2A	98-04434	0.015	<0.015	1	
CDM-3A	98-04435	0.015	<0.015	1	
CDM-4A	98-04436	0.015	<0.015	1	

Preparation Batch: P980619/7470A_PRE/78 **Prep. Analyst:** LESHINSKYA

Component Name: Mercury **EPA Method #:** EPA 7470A **Matrix:** AQUEOUS
Analytical Batch: I980619/7470A_AQU/63 **Analyst:** LESHINSKYA **Units:** ug/L
Reviewed By - Date: GOTTSHALLDL - 6/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	0.20	<0.20	1	
CDM-2A	98-04434	0.20	0.50	1	
CDM-3A	98-04435	0.20	<0.20	1	
CDM-4A	98-04436	0.20	<0.20	1	

Component Name: Nitrate **EPA Method #:** EPA 353.2 **Matrix:** AQUEOUS
Analytical Batch: I980526/353.2_AQU/66 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	0.050	<0.050	1	
CDM-2A	98-04434	0.050	<0.050	1	
CDM-3A	98-04435	0.050	<0.050	1	
CDM-4A	98-04436	0.050	<0.050	1	

Component Name: Total Dissolved Solids **EPA Method #:** SM 2540C **Matrix:** AQUEOUS
Analytical Batch: I980529/2540C_AQU/41 **Analyst:** NGUYENMH **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	5.0	140	1	
CDM-2A	98-04434	5.0	140	1	
CDM-3A	98-04435	5.0	<5.0	1	
CDM-4A	98-04436	5.0	700	1	

Component Name: Alkalinity **EPA Method #:** SM 2320B **Matrix:** AQUEOUS
Analytical Batch: I980601/2320B_AQU/36 **Analyst:** NGUYENMH **Units:** mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 6/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	5.0	74	1	
CDM-2A	98-04434	5.0	79	1	
CDM-3A	98-04435	5.0	150	1	
CDM-4A	98-04436	5.0	300	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980522-643

Component Name:	COD	**EPA Method #:**	HACH 8000	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/8000_AQUE/35	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	5.0	48	1	
CDM-2A	98-04434	5.0	66	1	
CDM-3A	98-04435	5.0	7.0	1	
CDM-4A	98-04436	5.0	16	1	

Component Name:	Chloride	**EPA Method #:**	EPA 9251	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/9251_AQUE/15	**Analyst:**	DEVLINHA	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	1.0	11	1	
CDM-2A	98-04434	1.0	4.1	1	
CDM-3A	98-04435	1.0	27	1	
CDM-4A	98-04436	10	200	10	

Component Name:	Sulfate	**EPA Method #:**	EPA 9038	**Matrix:**	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	10	<10	1	
CDM-2A	98-04434	10	<10	1	
CDM-3A	98-04435	10	<10	1	
CDM-4A	98-04436	10	<10	1	

PREPARATION INFORMATION REPORT

SDG #: 980522-643

Preparation Batch ID: P980528/5030/366
Preparation ID: 5030 **EPA Method #:** EPA 5030
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM-2A	98-04434	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM-3A	98-04435	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM-4A	98-04436	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980528/9012_AQ_P/23
Preparation ID: 9012_AQ_Prep **EPA Method #:** EPA 9012
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM-2A	98-04434	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM-3A	98-04435	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM-4A	98-04436	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-2A	98-04434	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-3A	98-04435	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
		DUPLICATE	Final Volume	50	mL	
			Initial Volume	45	mL	
		MATRIX_SPIKE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-4A	98-04436	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980608/5030/370
Preparation ID: 5030 **EPA Method #:** EPA 5030
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/8/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Trip Blank	98-04437	SAMPLE	Final Volume	25.0	ml	

PREPARATION INFORMATION REPORT

SDG #: 980522-643

Preparation Batch ID: P980608/5030/370
Preparation ID: 5030
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 5030
Batch Approved On: 6/8/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
			Initial Volume	12.5	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980619/3015/136
Preparation ID: 3015
Batch Approved By: GOTTSHALLDL
EPA Method #: 3015
Batch Approved On: 6/23/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-2A	98-04434	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-3A	98-04435	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
		DUPLICATE	Final Volume	50	mL	
			Initial Volume	45	mL	
		MATRIX_SPIKE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-4A	98-04436	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/7470A_PRE/78
Preparation ID: 7470A_PREP
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 7470A
Batch Approved On: 6/19/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM-2A	98-04434	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM-3A	98-04435	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM-4A	98-04436	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		05/28/98
CDM-2A	98-04434	05/21/98	05/22/98		05/28/98
CDM-3A	98-04435	05/21/98	05/22/98		05/28/98
CDM-4A	98-04436	05/21/98	05/22/98		05/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		05/26/98
CDM-2A	98-04434	05/21/98	05/22/98		05/26/98
CDM-3A	98-04435	05/21/98	05/22/98		05/26/98
CDM-4A	98-04436	05/21/98	05/22/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		05/22/98
CDM-2A	98-04434	05/21/98	05/22/98		05/22/98
CDM-3A	98-04435	05/21/98	05/22/98		05/22/98
CDM-4A	98-04436	05/21/98	05/22/98		05/22/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	05/28/98	06/01/98
CDM-2A	98-04434	05/21/98	05/22/98	05/28/98	06/01/98
CDM-3A	98-04435	05/21/98	05/22/98	05/28/98	06/01/98
CDM-4A	98-04436	05/21/98	05/22/98	05/28/98	06/01/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	06/18/98	06/18/98
CDM-2A	98-04434	05/21/98	05/22/98	06/18/98	06/18/98
CDM-3A	98-04435	05/21/98	05/22/98	06/18/98	06/18/98
CDM-4A	98-04436	05/21/98	05/22/98	06/18/98	06/18/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		06/02/98

HOLDTIME SUMMARY

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-2A	98-04434	05/21/98	05/22/98		06/02/98
CDM-3A	98-04435	05/21/98	05/22/98		06/02/98
CDM-4A	98-04436	05/21/98	05/22/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	05/27/98	05/27/98
CDM-2A	98-04434	05/21/98	05/22/98	05/27/98	05/27/98
CDM-3A	98-04435	05/21/98	05/22/98	05/27/98	05/27/98
CDM-4A	98-04436	05/21/98	05/22/98	05/27/98	05/27/98
Trip Blank	98-04437	05/21/98	05/22/98	05/28/98	05/28/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	05/27/98	05/28/98
CDM-2A	98-04434	05/21/98	05/22/98	05/27/98	05/28/98
CDM-3A	98-04435	05/21/98	05/22/98	05/27/98	05/28/98
CDM-4A	98-04436	05/21/98	05/22/98	05/27/98	05/28/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		06/03/98
CDM-2A	98-04434	05/21/98	05/22/98		06/03/98
CDM-3A	98-04435	05/21/98	05/22/98		06/03/98
CDM-4A	98-04436	05/21/98	05/22/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		06/02/98
CDM-2A	98-04434	05/21/98	05/22/98		06/02/98
CDM-3A	98-04435	05/21/98	05/22/98		06/02/98
CDM-4A	98-04436	05/21/98	05/22/98		06/02/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	98-04597	**Prep Analyst:**	
EPA Number:	EPA 353.2		
Units:	mg/L	**Analytical Batch ID:**	I980526/353.2_AQU/66
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/5030/366
Lab Sample ID:	B98-03191	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/5030/366
Lab Sample ID:	B98-03191	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

9012_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/9012_AQ_P/23
Lab Sample ID:	B98-03199	**Prep Analyst:**	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980528/9012_AQUE/23
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

9012_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/9012_AQ_P/23
Lab Sample ID:	B98-03201	**Prep Analyst:**	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980528/9012_AQUE/23
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03282	**Prep Analyst:**	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analysis Analyst:**	LESHINSKYA
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
Barium	5.0	<5.0	
Iron	25	<25	
Manganese	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03346	**Prep Analyst:**	
EPA Number:	EPA 9251	**Analytical Batch ID:**	I980603/9251_AQUE/15
Units:	mg/L	**Analysis Analyst:**	DEVLINHA
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03348	**Prep Analyst:**	
EPA Number:	EPA 9251	**Analytical Batch ID:**	I980603/9251_AQUE/15
Units:	mg/L	**Analysis Analyst:**	DEVLINHA
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03352	**Prep Analyst:**	
EPA Number:	HACH 8000	**Analytical Batch ID:**	I980603/8000_AQUE/35
Units:	mg/L	**Analysis Analyst:**	NGUYENMH
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03354	**Prep Analyst:**	
EPA Number:	HACH 8000	**Analytical Batch ID:**	I980603/8000_AQUE/35
Units:	mg/L	**Analysis Analyst:**	NGUYENMH
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03356	**Prep Analyst:**	
EPA Number:	HACH 8000	**Analytical Batch ID:**	I980603/8000_AQUE/35
Units:	mg/L	**Analysis Analyst:**	NGUYENMH
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03379	**Prep Analyst:**	
EPA Number:	EPA 9038	**Analytical Batch ID:**	I980604/9038_AQUE/15
Units:	mg/L	**Analysis Analyst:**	NGUYENMH
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980608/5030/370
Lab Sample ID:	B98-03468	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980608/8260A_AQU/265
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980608/5030/370
Lab Sample ID:	B98-03468	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A	**Analytical Batch ID:**	I980608/8260A_AQU/265
Units:	ug/L	**Analysis Analyst:**	MITCHELLMR
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/8/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	B98-03772	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	<5.0	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	B98-03779	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03095	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980526/353.2_AQU/66
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	0.86	97.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/9012_AQ_P/23
Lab Sample ID:	QCS98-03200	**Prep. Analyst:**	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980528/9012_AQUE/23
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	94.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/9012_AQ_P/23
Lab Sample ID:	QCS98-03202	**Prep. Analyst:**	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980528/9012_AQUE/23
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.20	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03209
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980529/2540C_AQU/41
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/29/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03283
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980601/2320B_AQU/36
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	140	104.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03347
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03349
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03353
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03355
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03357
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03380
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03384
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/5030/366
Lab Sample ID:	LFB98-03192	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980528/8260A_AQU/264
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	103.4	109.3	5.51	61 - 145	0 - 14	
Benzene	1.0	50.00	107.4	110.4	2.70	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	109.4	110.2	0.75	75 - 130	0 - 13	
Toluene	1.0	50.00	97.1	102.0	4.96	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	105.6	107.8	2.08	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

SDG #:	980522-643	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.0	1000.00	93.8			80 - 120		
Iron	25	200.00	103.5			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

SDG #:	980522-643	**Preparation Batch ID:**	P980608/5030/370
Lab Sample ID:	LFB98-03469	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980608/8260A_AQU/265
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	110.2	104.3	5.54	61 - 145	0 - 14	
Benzene	1.0	50.00	109.8	106.8	2.71	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	108.4	107.6	0.78	75 - 130	0 - 13	
Toluene	1.0	50.00	105.5	107.8	2.21	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	108.0	106.6	1.34	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/8/98

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	LFB98-03773	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/6010A_AQU/107
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.0	100.00	100.4			80 - 120		
Barium	5.0	1000.00	93.8			80 - 120		
Cadmium	1.0	50.00	89.4			80 - 120		
Chromium	5.0	100.00	91.8			80 - 120		
Copper	5.0	100.00	98.6			80 - 120		
Iron	25	200.00	103.3			80 - 120		
Lead	5.0	100.00	88.2			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Selenium	10	50.00	111.3			80 - 120		
Silver	5.0	100.00	106.3			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

SDG #:	980522-643	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	LFB98-03778	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/7470A_AQU/63
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.2	5.00	97.6			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04310		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/7470A_PRE/78
EPA Method #:	EPA 7470A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04319		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	0.22	0.26	20.238	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04353		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	<5.0	<5.0	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/9012_AQ_P/23
EPA Method #:	EPA 9012	**Prep. Analyst:**	NGUYENMH
Lab Sample ID:	98-04398		
Units:	mg/L	**Analytical Batch ID:**	I980528/9012_AQUE/23
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04401		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-04402		
Units:	mg/L	Analytical Batch ID:	I980526/353.2_AQU/66
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	1.2	1.2	0.722	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-04404		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04405		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	P980601/3015/121
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.0	120	130	4.672	0 - 20	
Iron	25	810	1100	27.144	0 - 20	

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980601/3015/121
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Manganese	5.0	380	400	4.779	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/3015/136
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.0	12	12	6.193	0 - 20	
Barium	5.0	120	130	4.672	0 - 20	
Cadmium	1.0	<1.0	<1.0	N/A	0 - 20	
Chromium	5.0	<5.0	<5.0	N/A	0 - 20	
Copper	5.0	<5.0	<5.0	N/A	0 - 20	
Iron	25	990	1100	7.863	0 - 20	
Lead	5.0	<5.0	<5.0	N/A	0 - 20	
Manganese	5.0	380	400	4.779	0 - 20	
Selenium	10	<10	<10	N/A	0 - 20	
Silver	5.0	<5.0	<5.0	N/A	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04444		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	15	16	3.279	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	EPA 9251	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/9012_AQ_P/23
EPA Method #:	EPA 9012	**Prep. Analyst:**	NGUYENMH
Lab Sample ID:	98-04452		
Units:	mg/L	**Analytical Batch ID:**	I980528/9012_AQUE/23
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980522-643
Lab Sample ID: 98-04434
Matrix: AQUEOUS

Preparation Batch ID: P980528/5030/366
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980528/8260A_AQU/264
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	115			61 - 145		
Benzene	110			76 - 127		
Chlorobenzene	109			75 - 130		
Toluene	102			76 - 125		
Trichloroethene	107			71 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/28/98

6010A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980522-643
Lab Sample ID: 98-04435
Matrix: AQUEOUS

Preparation Batch ID: P980601/3015/121
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980602/6010A_AQU/95
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Barium	91			80 - 120		
Iron	228			80 - 120		N
Manganese	97			80 - 120		
Zinc	91			80 - 120		
Arsenic	98			80 - 120		
Barium	91			80 - 120		
Cadmium	86			80 - 120		
Chromium	88			80 - 120		
Copper	96			80 - 120		
Iron	149			80 - 120		N
Lead	89			80 - 120		
Manganese	97			80 - 120		
Selenium	111			80 - 120		
Silver	103			80 - 120		
Zinc	91			80 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/23/98

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Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
2320B_AQUEOUS	Alkalinity	mg/L CaCO3	74	79	150	300	
2540C_AQUEOUS	Total Dissolved Solids	mg/L	140	140	<5.0	700	
353.2_AQUEOUS	Nitrate	mg/L	<0.050	<0.050	<0.050	<0.050	
6010A_AQUEOUS	Arsenic	ug/L	<5.0	210	12	<5.0	
	Barium	ug/L	24	570	120	160	
	Cadmium	ug/L	<1.0	150	<1.0	1.7	
	Chromium	ug/L	5.1	990	<5.0	19	
	Copper	ug/L	8.2	680	<5.0	27	
	Iron	ug/L	10000	5100000	990	12000	
	Lead	ug/L	<5.0	140	<5.0	22	
	Manganese	ug/L	190	110000	380	3300	
	Selenium	ug/L	<10	<10	<10	11	
	Silver	ug/L	<5.0	<5.0	<5.0	<5.0	
	Zinc	ug/L	34	3600	<20	57	
7470A_AQUEOUS	Mercury	ug/L	<0.20	0.50	<0.20	<0.20	
8000_AQUEOUS	COD	mg/L	48	66	7.0	16	
8260A_AQUEOUS	1,1,1,2-Tetrachloroet	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1,2,2-Tetrachloroet	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,3-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,3-Trichloropropan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,4-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,4-Trimethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dibromo-3-chloro	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dichlorobenzene	ug/L	<1.0	<1.0	1.3	<1.0	<2.0
	1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,3,5-Trimethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	1,3-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	2,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	2-Butanone	ug/L	<20	<20	<20	<20	<40
	2-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	2-Hexanone	ug/L	<20	<20	<20	<20	<40
	4-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	4-Methyl-2-pentanone	ug/L	<20	<20	<20	<20	<40
	Acetone	ug/L	<20	<20	<20	<20	55
	Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromodichloromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromomethane	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	Carbon tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Chlorobenzene	ug/L	<1.0	<1.0	1.9	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	Chloroethane	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	Chloroform	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	Chloromethane	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	cis-1,2-Dichloroethen	ug/L	<1.0	<1.0	19	<1.0	<2.0
	cis-1,3-Dichloroprope	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Dibromochloromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Dichlorodifluorometha	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Hexachlorobutadiene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Isopropylmethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	m- and p-Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Methyl tert-butyl ethe	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Methylene chloride	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	n-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	n-Propylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	Naphthalene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	sec-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	tert-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	trans-1,2-Dichloroethe	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	trans-1,3-Dichloropro	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Trichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Trichlorofluoromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
9012_AQUEOUS	Cyanide, Total	mg/L	<0.015	<0.015	<0.015	<0.015	
9038_AQUEOUS	Sulfate	mg/L	<10	<10	<10	<10	
9251_AQUEOUS	Chloride	mg/L	11	4.1	27	200	

Chain of Custody

CDM Analytical Laboratory
840 Memorial Drive
Cambridge, MA 02139
Phone: (617) 354-4448
Fax: (617) 354-0764

Field Log # QAR 1454 Page 1 of 1

Client: City of Waltham
Project Name: Waltham Landfill
Project #:
Contact: Sampled by CRB Geological + Environmental
Report to: Jim Laurila Bill to:

Address:
Phone: 252-836B Burns
Fax #:

SDG#: 980522-643
TAT: STD
TAT Approved by:
Lab Acct. #:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: Other	METALS: Filtered (Y/N)	OTHER: COD	OTHER: Nitrate	OTHER: see below
Trip blank	5/4/98	9:00	W	1	98-04437			✓										✓			✓	✓	✓
CDM 1A	"	10:50	"	6	98-04433			✓										✓			✓	✓	✓
CDM 2A	"		"	"	98-04434			✓										✓			✓	✓	✓
CDM 3A	"	2:30	"	"	98-04435			✓										✓			✓	✓	✓
CDM 4A	"	2:00	"	"	98-04436			✓										✓			✓	✓	✓

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Split sample for Hg

Samples Received:
- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
Fax Results ☐
State Forms ☐
SMART Report ☐
Disk Deliverable ☐
(_____) TICS ☐

Sample Relinquished by: [signature]
Relinquished by:

Received by: [signature] Date 5/4/98 Time 1540
Received by: Date Time
Received by: Date Time

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex

Other NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:
Chlorides
Sulfate
Nitrate Nitrogen
TDS
Alkalinity
Iron
Barium
Zinc
Manganese
Total Cyanide

Client: City of Waltham

Project: Waltham landfill

SDG: 980519-632

Date: 6/24/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980519-632	**Print Date:**	6/24/98
Client:	City of Waltham	**Client Contact:**	
Project:	Waltham landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples. No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

Note that results for these samples were originally reported on 6/4/98. It was discovered that additional metals analyses were needed; the additional metals results plus all of the original results are included in this report.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge complete & accurate.

LABORATORY MANAGEMENT REVIEW: James F. Ochiltree

LABORATORY QA/QC REVIEW: Peter May

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48, VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Cove 1	05/19/98	05/19/98	98-04379	AQUEOUS
Cove 2	05/19/98	05/19/98	98-04380	AQUEOUS
MW-4	05/19/98	05/19/98	98-04381	AQUEOUS

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	3.2	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALL.DL **Batch Approval Date:** 05/26/98

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	91.14	86 - 115
Dibromofluoromethane	99.24	86 - 118
Toluene-d8	94.98	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	5.2	
Barium	5	260	
Cadmium	1	<1.0	
Chromium	5	<5.0	
Copper	5	9.8	
Iron	25	5100	
Lead	5	8.4	
Manganese	5	190	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	91	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	1.7	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	110.40	86 - 115
Dibromofluoromethane	104.22	86 - 118
Toluene-d8	105.76	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	<5.0	
Barium	5	230	
Cadmium	1	<1.0	
Chromium	5	<5.0	
Copper	5	17	
Iron	25	5800	
Lead	5	18	
Manganese	5	140	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	86	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Preparation Batch: P980526/9012_AQ_P/22 **Prep. Analyst:** DEVLINHA

Component Name: Cyanide, Total **EPA Method #:** EPA 9012 **Matrix:** AQUEOUS
Analytical Batch: I980526/9012_AQUE/22 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.015	<0.015	1	
Cove 2	98-04380	0.015	<0.015	1	

Preparation Batch: P980619/7470A_PRE/78 **Prep. Analyst:** LESHINSKYA

Component Name: Mercury **EPA Method #:** EPA 7470A **Matrix:** AQUEOUS
Analytical Batch: I980619/7470A_AQU/63 **Analyst:** LESHINSKYA **Units:** ug/L
Reviewed By - Date: GOTTSHALLDL - 6/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.200	<0.20	1	
Cove 2	98-04380	0.200	<0.20	1	

Component Name: Nitrate **EPA Method #:** EPA 353.2 **Matrix:** AQUEOUS
Analytical Batch: I980521/353.2_AQU/65 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.050	0.36	1	
Cove 2	98-04380	0.050	0.22	1	

Component Name: Total Dissolved Solids **EPA Method #:** SM 2540C **Matrix:** AQUEOUS
Analytical Batch: I980529/2540C_AQU/41 **Analyst:** NGUYENMH **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.000	340	1	
Cove 2	98-04380	5.000	280	1	

Component Name: Alkalinity **EPA Method #:** SM 2320B **Matrix:** AQUEOUS
Analytical Batch: I980601/2320B_AQU/36 **Analyst:** NGUYENMH **Units:** mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 6/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.000	180	1	
Cove 2	98-04380	5.000	160	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Component Name: COD
Analytical Batch: I980603/8000_AQUE/35
Reviewed By - Date: GOTTSHALLDL - 6/3/98
EPA Method #: HACH 8000
Analyst: NGUYENMH
Matrix: AQUEOUS
Units: mg/L

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.000	57	1	
Cove 2	98-04380	5.000	140	1	

Component Name: Chloride
Analytical Batch: I980603/9251_AQUE/15
Reviewed By - Date: GOTTSHALLDL - 6/3/98
EPA Method #: EPA 9251
Analyst: DEVLINHA
Matrix: AQUEOUS
Units: mg/L

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	1.000	60	1	
Cove 2	98-04380	1.000	50	1	

Component Name: Sulfate
Analytical Batch: I980604/9038_AQUE/15
Reviewed By - Date: GOTTSHALLDL - 6/4/98
EPA Method #: EPA 9038
Analyst: NGUYENMH
Matrix: AQUEOUS
Units: mg/L

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	10.000	36	1	
Cove 2	98-04380	10.000	43	1	

PREPARATION INFORMATION REPORT

SDG #: 980519-632

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030 **EPA Method #:** EPA 5030
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Cove 2	98-04380	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep **EPA Method #:** EPA 9012
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/3015/136
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/23/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/7470A_PRE/78
Preparation ID: 7470A_PREP **EPA Method #:** EPA 7470A
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/19/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Cove 2	98-04380	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/28/98
Cove 2	98-04380	05/19/98	05/19/98		05/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/26/98
Cove 2	98-04380	05/19/98	05/19/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/20/98
Cove 2	98-04380	05/19/98	05/19/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/28/98	06/01/98
Cove 2	98-04380	05/19/98	05/19/98	05/28/98	06/01/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	06/18/98	06/18/98
Cove 2	98-04380	05/19/98	05/19/98	06/18/98	06/18/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/22/98	05/22/98
Cove 2	98-04380	05/19/98	05/19/98	05/22/98	05/22/98

HOLDTIME SUMMARY

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/21/98	05/21/98
Cove 2	98-04380	05/19/98	05/19/98	05/21/98	05/21/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/03/98
Cove 2	98-04380	05/19/98	05/19/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

353.2 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	98-04415	**Prep Analyst:**	
EPA Number:	EPA 353.2		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.05	<0.050	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8260A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.00	<1.0	
1,1,1-Trichloroethane	1.00	<1.0	
1,1,2,2-Tetrachloroethane	1.00	<1.0	
1,1,2-Trichloroethane	1.00	<1.0	
1,1-Dichloroethane	1.00	<1.0	
1,1-Dichloroethene	1.00	<1.0	
1,1-Dichloropropene	1.00	<1.0	
1,2,3-Trichlorobenzene	1.00	<1.0	
1,2,3-Trichloropropane	1.00	<1.0	
1,2,4-Trichlorobenzene	1.00	<1.0	
1,2,4-Trimethylbenzene	1.00	<1.0	
1,2-Dibromo-3-chloropropane	1.00	<1.0	
1,2-Dibromoethane	1.00	<1.0	
1,2-Dichlorobenzene	1.00	<1.0	
1,2-Dichloroethane	1.00	<1.0	
1,2-Dichloropropane	1.00	<1.0	
1,3,5-Trimethylbenzene	1.00	<1.0	
1,3-Dichlorobenzene	1.00	<1.0	
1,3-Dichloropropane	1.00	<1.0	
1,4-Dichlorobenzene	1.00	<1.0	
2,2-Dichloropropane	1.00	<1.0	
2-Butanone	20.00	<20	
2-Chlorotoluene	1.00	<1.0	
2-Hexanone	20.00	<20	
4-Chlorotoluene	1.00	<1.0	
4-Methyl-2-pentanone	20.00	<20	
Acetone	20.00	<20	
Benzene	1.00	<1.0	

8260A AQUEOUS BLANK REPORT

SDG #: 980519-632
Lab Sample ID: B98-03066
EPA Number: EPA 8260A
Units: ug/L
Matrix: AQUEOUS

Preparation Batch ID: P980524/5030/361
Prep Analyst: MITCHELLMR

Analytical Batch ID: I980524/8260A_AQU/261
Analysis Analyst: MITCHELLMR

Component Name	MRL	Result	Qualifier
Bromobenzene	1.00	<1.0	
Bromochloromethane	1.00	<1.0	
Bromodichloromethane	1.00	<1.0	
Bromoform	1.00	<1.0	
Bromomethane	5.00	<5.0	
Carbon tetrachloride	1.00	<1.0	
Chlorobenzene	1.00	<1.0	
Chloroethane	5.00	<5.0	
Chloroform	5.00	<5.0	
Chloromethane	5.00	<5.0	
Dibromochloromethane	1.00	<1.0	
Dibromomethane	1.00	<1.0	
Dichlorodifluoromethane	1.00	<1.0	
Ethylbenzene	1.00	<1.0	
Hexachlorobutadiene	1.00	<1.0	
Isopropylbenzene	1.00	<1.0	
Isopropylmethylbenzene	1.00	<1.0	
Methyl tert-butyl ether	1.00	<1.0	
Methylene chloride	5.00	<5.0	
Naphthalene	1.00	<1.0	
Styrene	1.00	<1.0	
Tetrachloroethene	1.00	<1.0	
Toluene	1.00	<1.0	
Trichloroethene	1.00	<1.0	
Trichlorofluoromethane	1.00	<1.0	
Vinyl chloride	1.00	<1.0	
cis-1,2-Dichloroethene	1.00	<1.0	
cis-1,3-Dichloropropene	1.00	<1.0	
m- and p-Xylenes	1.00	<1.0	
n-Butylbenzene	1.00	<1.0	
n-Propylbenzene	1.00	<1.0	
o-Xylene	1.00	<1.0	
sec-Butylbenzene	1.00	<1.0	
tert-Butylbenzene	1.00	<1.0	
trans-1,2-Dichloroethene	1.00	<1.0	
trans-1,3-Dichloropropene	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	**Prep Analyst:**	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.02	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

2320B AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03282	**Prep Analyst:**	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

6010A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.00	<5.0	
Iron	25.00	<25	

6010A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Manganese	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03346	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03348	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03352	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03354	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03356	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03379	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

6010A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	B98-03772	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.00	<5.0	
Barium	5.00	<5.0	
Cadmium	1.00	<1.0	
Chromium	5.00	<5.0	
Copper	5.00	<5.0	
Iron	25.00	<25	
Lead	5.00	<5.0	
Manganese	5.00	<5.0	
Selenium	10.00	<10	
Silver	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	B98-03779	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

353.2 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03016
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980521/353.2_AQU/65
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.05	0.88	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9012 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03098
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID: P980526/9012_AQ_P/22
Prep. Analyst: DEVLINHA

Analytical Batch ID: I980526/9012_AQUE/22
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.02	0.20	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

2540C AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03209
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980529/2540C_AQU/41
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	1200.00	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

2320B AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03283
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980601/2320B_AQU/36
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.00	131.00	140	104.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/1/98

9251 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03347
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

9251 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03349
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

8000 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03353
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL

Batch Approved Date: 6/3/98

8000 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03355
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL

Batch Approved Date: 6/3/98

8000 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03357
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	272.00	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL

Batch Approved Date: 6/3/98

9038 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03380
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9038 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03384
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

8260A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #: 980519-632
Lab Sample ID: LFB98-03067
EPA Method #: EPA 8260A
Matrix: AQUEOUS
Units: ug/L

Preparation Batch ID: P980524/5030/361
Prep. Analyst: MITCHELLMR
Analytical Batch ID: I980524/8260A_AQU/261
Analyst: MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.00	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.00	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.00	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.00	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.00	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

6010A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #: 980519-632
Lab Sample ID: LFB98-03299
EPA Method #: EPA 6010A
Matrix: AQUEOUS
Units: ug/L

Preparation Batch ID: P980601/3015/121
Prep. Analyst: LESHINSKYA
Analytical Batch ID: I980602/6010A_AQU/95
Analyst: LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.00	1000.00	93.8			80 - 120		
Iron	25.00	200.00	103.5			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #: 980519-632
Lab Sample ID: LFB98-03773
EPA Method #: EPA 6010A
Matrix: AQUEOUS
Units: ug/L

Preparation Batch ID: P980619/3015/136
Prep. Analyst: LESHINSKYA
Analytical Batch ID: I980619/6010A_AQU/107
Analyst: LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.00	100.00	100.4			80 - 120		
Barium	5.00	1000.00	93.8			80 - 120		
Cadmium	1.00	50.00	89.4			80 - 120		
Chromium	5.00	100.00	91.8			80 - 120		
Copper	5.00	100.00	98.6			80 - 120		

6010A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	LFB98-03773	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/6010A_AQU/107
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Iron	25.00	200.00	103.3			80 - 120		
Lead	5.00	100.00	88.2			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Selenium	10.00	50.00	111.3			80 - 120		
Silver	5.00	100.00	106.3			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	LFB98-03778	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/7470A_AQU/63
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.20	5.00	97.6			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

2540C AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04310		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9012 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
EPA Method #:	EPA 9012	**Prep. Analyst:**	DEVLINHA
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.02	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

7470A AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/7470A_PRE/78
EPA Method #:	EPA 7470A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04319		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	0.22	0.26	20.238	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

8000 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2320B AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04353		
Units:	mg/L CaCO	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.00	<5.0	<5.0	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

353.2 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 353.2	**Prep. Analyst:**	
Lab Sample ID:	98-04379		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.05	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9038 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04401		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

2540C AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04404		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

8000 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04405		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980519-632
EPA Method #: EPA 6010A
Lab Sample ID: 98-04435
Units: ug/L
Matrix: AQUEOUS

Preparation Batch ID: P980601/3015/121
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980602/6010A_AQU/95
Analysis Analyst: LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.00	120	130	4.672	0 - 20	
Iron	25.00	810	1100	27.144	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980519-632
EPA Method #: EPA 6010A
Lab Sample ID: 98-04435
Units: ug/L
Matrix: AQUEOUS

Preparation Batch ID: P980619/3015/136
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980619/6010A_AQU/107
Analysis Analyst: LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.00	12	12	6.193	0 - 20	
Barium	5.00	120	130	4.672	0 - 20	
Cadmium	1.00	<1.0	<1.0	N/A	0 - 20	
Chromium	5.00	<5.0	<5.0	N/A	0 - 20	
Copper	5.00	<5.0	<5.0	N/A	0 - 20	
Iron	25.00	990	1100	7.863	0 - 20	
Lead	5.00	<5.0	<5.0	N/A	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Selenium	10.00	<10	<10	N/A	0 - 20	
Silver	5.00	<5.0	<5.0	N/A	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

2320B AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980519-632
EPA Method #: SM 2320B
Lab Sample ID: 98-04444
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980601/2320B_AQU/36
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.00	15	16	3.279	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

9251 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980519-632
EPA Method #: EPA 9251
Lab Sample ID: 98-04450
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.00	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980519-632
EPA Method #: EPA 9038
Lab Sample ID: 98-04450
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

353.2 AQUEOUS MS/MSD RPD REPORT

SDG #: 980519-632
Lab Sample ID: 98-04379
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980521/353.2_AQU/65
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	% Analyte Recovery MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Nitrate	99			80 - 120		

Batch Approved By: GOTTSHALLDL

Batch Approved Date: 5/26/98

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Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
2320B_AQUEOUS	Alkalinity	180	160
2540C_AQUEOUS	Total Dissolved Solids	340	280
353.2_AQUEOUS	Nitrate	0.36	0.22
6010A_AQUEOUS	Arsenic	5.2	<5.0
	Barium	260	230
	Cadmium	<1.0	<1.0
	Chromium	<5.0	<5.0
	Copper	9.8	17
	Iron	5100	5800
	Lead	8.4	18
	Manganese	190	140
	Selenium	<10	<10
	Silver	<5.0	<5.0
	Zinc	91	86
7470A_AQUEOUS	Mercury	<0.20	<0.20
8000_AQUEOUS	COD	57	140
8260A_AQUEOUS	1,1,1,2-Tetrachloroeth	<1.0	<1.0
	1,1,1-Trichloroethane	<1.0	<1.0
	1,1,2,2-Tetrachloroeth	<1.0	<1.0
	1,1,2-Trichloroethane	<1.0	<1.0
	1,1-Dichloroethane	<1.0	<1.0
	1,1-Dichloroethene	<1.0	<1.0
	1,1-Dichloropropene	<1.0	<1.0
	1,2,3-Trichlorobenzen	<1.0	<1.0
	1,2,3-Trichloropropan	<1.0	<1.0
	1,2,4-Trichlorobenzen	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
8260A_AQUEOUS	1,2,4-Trimethylbenzer	<1.0	<1.0
	1,2-Dibromo-3-chloro	<1.0	<1.0
	1,2-Dibromoethane	<1.0	<1.0
	1,2-Dichlorobenzene	<1.0	<1.0
	1,2-Dichloroethane	<1.0	<1.0
	1,2-Dichloropropane	<1.0	<1.0
	1,3,5-Trimethylbenzer	<1.0	<1.0
	1,3-Dichlorobenzene	<1.0	<1.0
	1,3-Dichloropropane	<1.0	<1.0
	1,4-Dichlorobenzene	<1.0	<1.0
	2,2-Dichloropropane	<1.0	<1.0
	2-Butanone	<20	<20
	2-Chlorotoluene	<1.0	<1.0
	2-Hexanone	<20	<20
	4-Chlorotoluene	<1.0	<1.0
	4-Methyl-2-pentanon	<20	<20
	Acetone	<20	<20
	Benzene	<1.0	<1.0
	Bromobenzene	<1.0	<1.0
	Bromochloromethane	<1.0	<1.0
	Bromodichlorometha	<1.0	<1.0
	Bromoform	<1.0	<1.0
	Bromomethane	<5.0	<5.0
	Carbon tetrachloride	<1.0	<1.0
	Chlorobenzene	<1.0	<1.0
	Chloroethane	<5.0	<5.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
8260A_AQUEOUS	Chloroform	<5.0	<5.0
	Chloromethane	<5.0	<5.0
	cis-1,2-Dichloroethen	<1.0	<1.0
	cis-1,3-Dichloroprope	<1.0	<1.0
	Dibromochlorometha	<1.0	<1.0
	Dibromomethane	<1.0	<1.0
	Dichlorodifluorometh	<1.0	<1.0
	Ethylbenzene	<1.0	<1.0
	Hexachlorobutadiene	<1.0	<1.0
	Isopropylbenzene	<1.0	<1.0
	Isopropyltmethylbenz	<1.0	<1.0
	m- and p-Xylenes	<1.0	<1.0
	Methyl tert-butyl ethe	3.2	1.7
	Methylene chloride	<5.0	<5.0
	n-Butylbenzene	<1.0	<1.0
	n-Propylbenzene	<1.0	<1.0
	Naphthalene	<1.0	<1.0
	o-Xylene	<1.0	<1.0
	sec-Butylbenzene	<1.0	<1.0
	Styrene	<1.0	<1.0
	tert-Butylbenzene	<1.0	<1.0
	Tetrachloroethene	<1.0	<1.0
	Toluene	<1.0	<1.0
	trans-1,2-Dichloroeth	<1.0	<1.0
	trans-1,3-Dichloropro	<1.0	<1.0
	Trichloroethene	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
8260A_AQUEOUS	Trichlorofluoromethan	<1.0	<1.0
	Vinyl chloride	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	<0.015	<0.015
9038_AQUEOUS	Sulfate	36	43
9251_AQUEOUS	Chloride	60	50

Chain of Custody

CDM Analytical Laboratory — 840 Memorial Drive, Cambridge, MA 02139 — Phone: (617) 354-0764 — Fax: (617) 354-0764

Field Log # CX 1977 — Page 1 of 1

Client: City of Waltham — Address: — SDG#: 980519-632

Project Name: Waltham Landfill — TAT: STD

Project #: — Phone: 252-8368 - Burns — TAT Approved by: JB

Contact: Sampled by CRB — Fax #: — Lab Acct. #:

Report to: Jim Lavila — Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: Other	METALS: Filtered (Y/N)	OTHER: Cond	OTHER: wet chem	OTHER:	OTHER: see below	OTHER:	OTHER:	OTHER:
Cove 1	5/19/98	1:30	W	6	98-04379			✓										✓			✓	✓		✓			
Cove 2	↓	1:50	↓	↓	98-04380			✓										✓			✓	✓		✓			
mw4	↓	3:15	↓	↓	98-04381			✓										✓			✓	✓		✓			
										CANCEL					MW4					PER							
										LARGE					WEBSTER					OF							
										CRB					5/20/98					2B							

A - HCl — D - NaOH — P - Plastic — Container Type:

B - HNO_3 — E - NaThio — G - Glass — Preservative:

C - H_2SO_4 — F - Other — V - Vial — Volume:

Samples Received:
- Cooler Temperature: ____ °C
- Chilled/properly preserved? ☑ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☑ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (____) TICS ☐

	Date	Time		Date	Time
Sampled & Relinquished by:			Received by: [signature]	5/19/98	1600
Relinquished by:			Received by:		
Relinquished by:			Received by:		

Shipper/Airbill#: — Custody Seal#: — Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☑ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Chlorides, Sulfate, Nitrate Nitrogen, TDS — Alkalinity, Iron, Barium, Zinc — manganese, Total cyanide

Client: City of Waltham

Project: Waltham Landfill

SDG: 980518-620

Date: 6/24/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980518-620	**Print Date:**	6/24/98
Client:	City of Waltham	**Client Contact:**	
Project:	Waltham Landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples. No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

NOTES

SDG 980518-620: Results for this sample group were originally reported on 6/5/98; after which, iy was discovered that the trace metals target list was incomplete. Additional testing was conducted on these samples and this report contains the results reported on 6/5/98 as well as any additional metals results needed.

TDS: I980529/2540C_AQU/41; Samples , 98-04319, 98-04320, 98-04321, and 98-04322 were all analyzed one day beyond the EPA recommended maximum holding time due to intervening holiday and laboratory oversight.

RESULT NOTES

Metals: It should be noted that the analysis of these samples for trace metals was complicated by the large amounts of sediment found in the preserved samples. The sediment contributed to matrix interferences both as non-target and target chemicals requiring dilution.

98-04322 (Silver) M qualifier = Sample matrix interference is suspected, which may have biased results for this analyte. Sample result should be considered an estimate.
I980619/6010A_AQU/107; All samples were reanalyzed for silver on 6/19/98. The concentrations of samples 98-04322 (potential high bias) and 98-04434 (potential low bias) were confirmed. Sample matrix interference is suspected due to very high levels of aluminum and iron.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge complete & accurate.

LABORATORY MANAGEMENT REVIEW: James F. O'Brien Jr.

LABORATORY QA/QC REVIEW: Peter T. May - 1

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
CDM 2	05/18/98	05/18/98	98-04319	AQUEOUS
Duplicate	05/18/98	05/18/98	98-04321	AQUEOUS
CDM 1	05/18/98	05/18/98	98-04320	AQUEOUS
CDM 4	05/18/98	05/18/98	98-04322	AQUEOUS
Trip Blank	05/18/98	05/18/98	98-04323	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	96.92	86 - 115
Dibromofluoromethane	100.32	86 - 118
Toluene-d8	99.58	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	9.5	
Barium	5	590	
Cadmium	1	2.0	
Chromium	5	11	
Copper	5	70	
Iron	50	27000	
Lead	5	430	
Manganese	5	540	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	470	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	87.58	86 - 115
Dibromofluoromethane	92.52	86 - 118
Toluene-d8	101.44	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	11	
Barium	5	260	
Cadmium	1	4.0	
Chromium	5	66	
Copper	5	740	
Iron	50	47000	
Lead	5	1300	
Manganese	5	1500	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	380	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	89.62	86 - 115
Dibromofluoromethane	94.16	86 - 118
Toluene-d8	97.48	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	<5.0	
Barium	5	110	
Cadmium	1	1.3	
Chromium	5	19	
Copper	5	220	
Iron	25	11000	
Lead	5	380	
Manganese	5	1300	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	120	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	2.8	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	104.72	86 - 115
Dibromofluoromethane	101.00	86 - 118
Toluene-d8	101.50	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	120	
Barium	5	5400	
Cadmium	1	83	
Chromium	5	2000	
Copper	5	17000	
Iron	500	370000	
Lead	5	14000	
Manganese	5	1800	
Selenium	10	28	
Silver	5	55	M
Zinc	20	13000	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	114.36	86 - 115
Dibromofluoromethane	109.76	86 - 118
Toluene-d8	101.30	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Preparation Batch: P980526/9012_AQ_P/22 **Prep. Analyst:** DEVLINHA

Component Name: Cyanide, Total **EPA Method #:** EPA 9012 **Matrix:** AQUEOUS
Analytical Batch: I980526/9012_AQUE/22 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.015	<0.015	1	
CDM 1	98-04320	0.015	<0.015	1	
Duplicate	98-04321	0.015	<0.015	1	
CDM 4	98-04322	0.015	<0.015	1	

Preparation Batch: P980619/7470A_PRE/78 **Prep. Analyst:** LESHINSKYA

Component Name: Mercury **EPA Method #:** EPA 7470A **Matrix:** AQUEOUS
Analytical Batch: I980619/7470A_AQU/63 **Analyst:** LESHINSKYA **Units:** ug/L
Reviewed By - Date: GOTTSHALLDL - 6/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.200	0.22	1	
CDM 1	98-04320	0.200	<0.20	1	
Duplicate	98-04321	0.200	0.26	1	
CDM 4	98-04322	0.200	3.3	1	

Component Name: Alkalinity **EPA Method #:** SM 2320B **Matrix:** AQUEOUS
Analytical Batch: I980519/2320B_AQU/35 **Analyst:** DEVLINHA **Units:** mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 5/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.000	660	1	
CDM 1	98-04320	5.000	140	1	
Duplicate	98-04321	5.000	130	1	
CDM 4	98-04322	5.000	900	1	

Component Name: Nitrate **EPA Method #:** EPA 353.2 **Matrix:** AQUEOUS
Analytical Batch: I980521/353.2_AQU/65 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.050	<0.050	1	
CDM 1	98-04320	0.500	4.0	10	
Duplicate	98-04321	0.500	4.0	10	
CDM 4	98-04322	0.050	0.58	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Component Name:	Total Dissolved Solids	**EPA Method #:**	SM 2540C	**Matrix:**	AQUEOUS
Analytical Batch:	I980529/2540C_AQU/41	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 5/29/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.000	760	1	
CDM 1	98-04320	5.000	240	1	
Duplicate	98-04321	5.000	730	1	
CDM 4	98-04322	5.000	1400	1	

Component Name:	COD	**EPA Method #:**	HACH 8000	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/8000_AQUE/35	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.000	120	1	
CDM 1	98-04320	5.000	20	1	
Duplicate	98-04321	5.000	31	1	
CDM 4	98-04322	5.000	140	1	

Component Name:	Chloride	**EPA Method #:**	EPA 9251	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/9251_AQUE/15	**Analyst:**	DEVLINHA	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	1.000	22	1	
CDM 1	98-04320	1.000	3.6	1	
Duplicate	98-04321	1.000	3.8	1	
CDM 4	98-04322	1.000	66	1	

Component Name:	Sulfate	**EPA Method #:**	EPA 9038	**Matrix:**	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	10.000	79	1	
CDM 1	98-04320	10.000	36	1	
Duplicate	98-04321	10.000	27	1	
CDM 4	98-04322	10.000	85	1	

PREPARATION INFORMATION REPORT

SDG #: 980518-620

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030 **EPA Method #:** EPA 5030
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 1	98-04320	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Duplicate	98-04321	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 4	98-04322	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Trip Blank	98-04323	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep **EPA Method #:** EPA 9012
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		DUPLICATE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		MATRIX_SPIKE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

PREPARATION INFORMATION REPORT

SDG #: 980518-620

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Duplicate	98-04321	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/3015/136
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/23/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/7470A_PRE/78
Preparation ID: 7470A_PREP **EPA Method #:** EPA 7470A
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/19/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		DUPLICATE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		MATRIX_SPIKE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 1	98-04320	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Duplicate	98-04321	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 4	98-04322	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/19/98
CDM 1	98-04320	05/18/98	05/18/98		05/19/98
Duplicate	98-04321	05/18/98	05/18/98		05/19/98
CDM 4	98-04322	05/18/98	05/18/98		05/19/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/26/98
CDM 1	98-04320	05/18/98	05/18/98		05/26/98
Duplicate	98-04321	05/18/98	05/18/98		05/26/98
CDM 4	98-04322	05/18/98	05/18/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/20/98
CDM 1	98-04320	05/18/98	05/18/98		05/20/98
Duplicate	98-04321	05/18/98	05/18/98		05/20/98
CDM 4	98-04322	05/18/98	05/18/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/28/98	06/01/98
CDM 1	98-04320	05/18/98	05/18/98	05/28/98	06/01/98
Duplicate	98-04321	05/18/98	05/18/98	05/28/98	06/01/98
CDM 4	98-04322	05/18/98	05/18/98	05/28/98	06/01/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	06/18/98	06/18/98
CDM 1	98-04320	05/18/98	05/18/98	06/18/98	06/18/98
Duplicate	98-04321	05/18/98	05/18/98	06/18/98	06/18/98
CDM 4	98-04322	05/18/98	05/18/98	06/18/98	06/18/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98

HOLDTIME SUMMARY

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/22/98	05/22/98
CDM 1	98-04320	05/18/98	05/18/98	05/22/98	05/22/98
Duplicate	98-04321	05/18/98	05/18/98	05/22/98	05/22/98
CDM 4	98-04322	05/18/98	05/18/98	05/22/98	05/22/98
Trip Blank	98-04323	05/18/98	05/18/98	05/22/98	05/22/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/21/98	05/21/98
CDM 1	98-04320	05/18/98	05/18/98	05/21/98	05/21/98
Duplicate	98-04321	05/18/98	05/18/98	05/21/98	05/21/98
CDM 4	98-04322	05/18/98	05/18/98	05/21/98	05/21/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/03/98
CDM 1	98-04320	05/18/98	05/18/98		06/03/98
Duplicate	98-04321	05/18/98	05/18/98		06/03/98
CDM 4	98-04322	05/18/98	05/18/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-02935	**Prep Analyst:**	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980519/2320B_AQU/35
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Alkalinity	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	98-04415	**Prep Analyst:**	
EPA Number:	EPA 353.2		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.05	<0.050	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.00	<1.0	
1,1,1-Trichloroethane	1.00	<1.0	
1,1,2,2-Tetrachloroethane	1.00	<1.0	
1,1,2-Trichloroethane	1.00	<1.0	
1,1-Dichloroethane	1.00	<1.0	
1,1-Dichloroethene	1.00	<1.0	
1,1-Dichloropropene	1.00	<1.0	
1,2,3-Trichlorobenzene	1.00	<1.0	
1,2,3-Trichloropropane	1.00	<1.0	
1,2,4-Trichlorobenzene	1.00	<1.0	
1,2,4-Trimethylbenzene	1.00	<1.0	
1,2-Dibromo-3-chloropropane	1.00	<1.0	
1,2-Dibromoethane	1.00	<1.0	
1,2-Dichlorobenzene	1.00	<1.0	
1,2-Dichloroethane	1.00	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,2-Dichloropropane	1.00	<1.0	
1,3,5-Trimethylbenzene	1.00	<1.0	
1,3-Dichlorobenzene	1.00	<1.0	
1,3-Dichloropropane	1.00	<1.0	
1,4-Dichlorobenzene	1.00	<1.0	
2,2-Dichloropropane	1.00	<1.0	
2-Butanone	20.00	<20	
2-Chlorotoluene	1.00	<1.0	
2-Hexanone	20.00	<20	
4-Chlorotoluene	1.00	<1.0	
4-Methyl-2-pentanone	20.00	<20	
Acetone	20.00	<20	
Benzene	1.00	<1.0	
Bromobenzene	1.00	<1.0	
Bromochloromethane	1.00	<1.0	
Bromodichloromethane	1.00	<1.0	
Bromoform	1.00	<1.0	
Bromomethane	5.00	<5.0	
Carbon tetrachloride	1.00	<1.0	
Chlorobenzene	1.00	<1.0	
Chloroethane	5.00	<5.0	
Chloroform	5.00	<5.0	
Chloromethane	5.00	<5.0	
Dibromochloromethane	1.00	<1.0	
Dibromomethane	1.00	<1.0	
Dichlorodifluoromethane	1.00	<1.0	
Ethylbenzene	1.00	<1.0	
Hexachlorobutadiene	1.00	<1.0	
Isopropylbenzene	1.00	<1.0	
Isopropylmethylbenzene	1.00	<1.0	
Methyl tert-butyl ether	1.00	<1.0	
Methylene chloride	5.00	<5.0	
Naphthalene	1.00	<1.0	
Styrene	1.00	<1.0	
Tetrachloroethene	1.00	<1.0	
Toluene	1.00	<1.0	
Trichloroethene	1.00	<1.0	
Trichlorofluoromethane	1.00	<1.0	
Vinyl chloride	1.00	<1.0	
cis-1,2-Dichloroethene	1.00	<1.0	
cis-1,3-Dichloropropene	1.00	<1.0	
m- and p-Xylenes	1.00	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
n-Butylbenzene	1.00	<1.0	
n-Propylbenzene	1.00	<1.0	
o-Xylene	1.00	<1.0	
sec-Butylbenzene	1.00	<1.0	
tert-Butylbenzene	1.00	<1.0	
trans-1,2-Dichloroethene	1.00	<1.0	
trans-1,3-Dichloropropene	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	**Prep Analyst:**	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.02	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.00	<5.0	
Iron	25.00	<25	
Manganese	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03346	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03348	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03352	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03354	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03356	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03379	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	B98-03772	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.00	<5.0	
Barium	5.00	<5.0	
Cadmium	1.00	<1.0	
Chromium	5.00	<5.0	
Copper	5.00	<5.0	
Iron	25.00	<25	
Lead	5.00	<5.0	
Manganese	5.00	<5.0	
Selenium	10.00	<10	
Silver	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	B98-03779	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-02936	**Prep. Analyst:**	
Units:	mg/L CaCO3		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980519/2320B_AQU/35
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.00	131.00	130	99.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03016	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980521/353.2_AQU/65
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.05	0.88	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	QCS98-03098	**Prep. Analyst:**	DEVLINHA
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980526/9012_AQUE/22
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.02	0.20	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03209
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980529/2540C_AQU/41
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	1200.00	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03347
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03349
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03353
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03355
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03357
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	272.00	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03380
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03384
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	LFB98-03067	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980524/8260A_AQU/261
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.00	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.00	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.00	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.00	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.00	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.00	1000.00	93.8			80 - 120		
Iron	25.00	200.00	103.5			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	LFB98-03773	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/6010A_AQU/107
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.00	100.00	100.4			80 - 120		
Barium	5.00	1000.00	93.8			80 - 120		
Cadmium	1.00	50.00	89.4			80 - 120		
Chromium	5.00	100.00	91.8			80 - 120		
Copper	5.00	100.00	98.6			80 - 120		

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	LFB98-03773	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/6010A_AQU/107
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Iron	25.00	200.00	103.3			80 - 120		
Lead	5.00	100.00	88.2			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Selenium	10.00	50.00	111.3			80 - 120		
Silver	5.00	100.00	106.3			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	LFB98-03778	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/7470A_AQU/63
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.20	5.00	97.6			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-02644		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980519/2320B_AQU/35
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.00	24	24	0	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04310		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
EPA Method #:	EPA 9012	**Prep. Analyst:**	DEVLINHA
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.02	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	P980619/7470A_PRE/78
EPA Method #:	EPA 7470A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-04319		
Units:	ug/L	Analytical Batch ID:	I980619/7470A_AQU/63
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	0.22	0.26	20.238	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/19/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04319		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-04379		
Units:	mg/L	Analytical Batch ID:	I980521/353.2_AQU/65
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.05	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04401		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04404		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04405		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.00	120	130	4.672	0 - 20	
Iron	25.00	810	1100	27.144	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/3015/136
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.00	12	12	6.193	0 - 20	
Barium	5.00	120	130	4.672	0 - 20	
Cadmium	1.00	<1.0	<1.0	N/A	0 - 20	
Chromium	5.00	<5.0	<5.0	N/A	0 - 20	
Copper	5.00	<5.0	<5.0	N/A	0 - 20	
Iron	25.00	990	1100	7.863	0 - 20	
Lead	5.00	<5.0	<5.0	N/A	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Selenium	10.00	<10	<10	N/A	0 - 20	
Silver	5.00	<5.0	<5.0	N/A	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	EPA 9251	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.00	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04320
Matrix: AQUEOUS

Preparation Batch ID: P980524/5030/361
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980524/8260A_AQU/261
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	112			61 - 145		
Benzene	111			76 - 127		
Chlorobenzene	104			75 - 130		
Toluene	99			76 - 125		
Trichloroethene	106			71 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04319
Matrix: AQUEOUS

Preparation Batch ID: P980526/9012_AQ_P/22
Prep. Analyst: DEVLINHA

Analytical Batch ID: I980526/9012_AQUE/22
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Cyanide, Total	94			80 - 120		
Mercury	95			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

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Laboratory Summary Report

Client: City of Waltham SDG: 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
2320B_AQUEOUS	Alkalinity	140	660	900	130	
2540C_AQUEOUS	Total Dissolved Solid	240	760	1400	730	
353.2_AQUEOUS	Nitrate	4.0	<0.050	0.58	4.0	
6010A_AQUEOUS	Arsenic	11	9.5	120	<5.0	
	Barium	260	590	5400	110	
	Cadmium	4.0	2.0	83	1.3	
	Chromium	66	11	2000	19	
	Copper	740	70	17000	220	
	Iron	47000	27000	370000	11000	
	Lead	1300	430	14000	380	
	Manganese	1500	540	1800	1300	
	Selenium	<10	<10	28	<10	
	Silver	<5.0	<5.0	55	<5.0	
	Zinc	380	470	13000	120	
7470A_AQUEOUS	Mercury	<0.20	0.22	3.3	0.26	
8000_AQUEOUS	COD	20	120	140	31	
8260A_AQUEOUS	1,1,1,2-Tetrachloroet	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2,2-Tetrachloroet	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichlorobenzen	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichloropropan	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,4-Trichlorobenzen	<1.0	<1.0	<1.0	<1.0	<1.0

Client: City of Waltham SDG: 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	1,2,4-Trimethylbenze	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromo-3-chloro	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3,5-Trimethylbenze	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	2,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Butanone	<20	<20	<20	<20	<20
	2-Chlorotoluene	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Hexanone	<20	<20	<20	<20	<20
	4-Chlorotoluene	<1.0	<1.0	<1.0	<1.0	<1.0
	4-Methyl-2-pentanone	<20	<20	<20	<20	<20
	Acetone	<20	<20	<20	<20	<20
	Benzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromochloromethan	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromodichlorometha	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromomethane	<5.0	<5.0	<5.0	<5.0	<5.0
	Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0
	Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Chloroethane	<5.0	<5.0	<5.0	<5.0	<5.0

Laboratory Summary Report

Client: City of Waltham SDG: 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Chloroform	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
	cis-1,2-Dichloroethen	<1.0	<1.0	<1.0	<1.0	<1.0
	cis-1,3-Dichloroprope	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromochlorometha	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0
	Dichlorodifluorometh	<1.0	<1.0	<1.0	<1.0	<1.0
	Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Hexachlorobutadiene	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylmethylbenz	<1.0	<1.0	<1.0	<1.0	<1.0
	m- and p-Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0
	Methyl tert-butyl ethe	<1.0	<1.0	<1.0	<1.0	<1.0
	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0
	n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Naphthalene	<1.0	<1.0	2.8	<1.0	<1.0
	o-Xylene	<1.0	<1.0	<1.0	<1.0	<1.0
	sec-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Styrene	<1.0	<1.0	<1.0	<1.0	<1.0
	tert-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0
	Toluene	<1.0	<1.0	<1.0	<1.0	<1.0
	trans-1,2-Dichloroeth	<1.0	<1.0	<1.0	<1.0	<1.0
	trans-1,3-Dichloropro	<1.0	<1.0	<1.0	<1.0	<1.0
	Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Trichlorofluorometha	<1.0	<1.0	<1.0	<1.0	<1.0
	Vinyl chloride	<1.0	<1.0	<1.0	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	<0.015	<0.015	<0.015	<0.015	
9038_AQUEOUS	Sulfate	36	79	85	27	
9251_AQUEOUS	Chloride	3.6	22	66	3.8	

CDM Analytical Laboratory

340 Memorial Drive
Cambridge, MA 02139
Phone: (617) 354-4448
Fax: (617) 354-0764

Field Log # Q# 1435 Page 1 of _

Client: CDM
Address:
SDG#: 980518-620
Project Name: Walton Landfill
TAT: STD
Project #:
Phone: 752-8368 F-BURNS
TAT Approved by:
Contact: Sampled by CRB Geological - Environmental Fax#:
Lab Acct. #:
Report to: Jim Lawless Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (W - Water, S - Soil, D - Drinking)	# OF CONT	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8 *	METALS: Other	METALS: Filtered (Y/N)	OTHER: COD	OTHER: Nitrate nitrogen
COM 2	5/16/98	1:20	W	6	98-04319			✓										✓			✓	✓
CDM 1	5/16/98	2:30	W	6	98-04320			✓										✓			✓	✓
Duplicate	5/16/98	2:15	W	6	98-04321			✓										✓			✓	✓
CDM 4	5/16/98	3:00	W	6	98-04322			✓										✓			✓	✓
Trip Blank	5/16/98	3:15	W	1	98-04323			✓														

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
(_____)

Fax Results ☐
State Forms ☐
SMART Report ☐
Disk Deliverable ☐
TICS ☐

	Date	Time		Date	Time
Sampled & Relinquished by:	5/16/98	7:40	Received by:	5/18	4:40
Relinquished by:			Received by:		
Relinquished by:			Received by:		

Shipper/Airbill#: Custody Seal#
Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:
* Chlorides
Sulfate
Nitrate nitrogen
TDS
Alkalinity
Iron *
Barium *
Zinc *
Manganese *
Total cyanide

Chain of Custody

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
METROPOLITAN BOSTON - NORTHEAST REGIONAL OFFICE

ARGEO PAUL CELLUCCI
Governor

TRUDY COXE
Secretary

DAVID B. STRUHS
Commissioner

December 3, 1998

Mr. Ronald Vokey
Planning Director
City of Waltham
610 Main Street
Waltham, MA 02154

RE: WALTHAM - Solid Waste
Woerd Avenue Landfill
FMF # 39834
Response to 11NOV98 Report

Dear Mr. Vokey:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Protection, Bureau of Waste Prevention, Solid Waste Section (the "Department"), is in receipt of the report, dated November 11, 1998, entitled:

Waltham, Massachusetts
Woerd Avenue Landfill
Groundwater, Surface Water, Gas and Sediment
Quarterly Sampling Results
August 1998 Sampling
(received November 16, 1998)

The report presents the results of the second quarterly round of sampling for the former Waltham landfill located off Woerd Avenue in Waltham (Woerd Avenue Landfill). The report was prepared on behalf of the City of Waltham (the "City") by Camp Dresser & McKee Inc. (CDM) of Cambridge, MA. CDM previously submitted results from the first sampling round conducted in May 1998.

Based on the CSA findings to date, CDM is planning on collecting an additional sediment sample from Cram's Cove to confirm the concentration of lead detected in one sample (Cove 2), and proposes to prepare the CSA based on the sampling data already gathered. Based on the data, the City will continue with closure and post-closure plans for the site.

Based on a review of the data from the first two CSA sampling rounds, the Department has determined the following:

1. The Department concurs that additional sediment sampling is warranted to confirm the results found in sediment sample Cove 2.

2. The Department does not concur that sufficient data has been gathered in order to complete the CSA, at this time. Based on the data provided:

   a. Additional investigation of the sediments adjacent to the landfill is warranted. The Department notes that the concentration of heavy metals and SVOCs in the sediments in Cram's Cove and the stream on the south side of the landfill. Additional sediment samples should be collected to help determine if the landfill is the primary source of contamination of sediments in the cove.

   b. Due to the variability of the results from the two sampling rounds (the first being analyzed for total metals and the second being analyzed for dissolved metals), the Department will require that at least one additional round be collected and analyzed for dissolved metals, and indicator parameters.

Please be advised that the Department reserves the right to require additional assessment and investigation of the landfill site area based on a review of environmental monitoring results.

If you have any questions regarding this letter, or you need additional information, please contact Peter Flink at (978) 661-7663.

Sincerely,

Peter J. Flink
Environmental Analyst

Sincerely,

Edward H. MacDonald
Regional Engineer for
Waste Prevention

EHM/PJF

cc: Mr. Bruce Haskell, Camp Dresser & McKee Inc.
10 Cambridge Center, Cambridge, MA 02142
Waltham Board of Health

Waltham, Massachusetts
Woerd Avenue Landfill

Groundwater, Surface Water, Gas and Sediment
Quarterly Sampling Results

November 1998 Sampling

CDM Camp Dresser & McKee Inc.

consulting
engineering
construction
operations

Ten Cambridge Center
Cambridge, Massachusetts 02142
Tel: 617 252-8000 Fax: 617 621-2565

January 26, 1999

Mr. Edward MacDonald
Department of Environmental Protection
Metropolitan Boston - Northeast Regional Office
205A Lowell Street
Wilmington, Massachusetts 01887

Subject: Groundwater, Surface Water, Sediment and Landfill Gas Sampling
Woerd Avenue Landfill — Waltham, Massachusetts
November 1998

Dear Mr. MacDonald:

Attached are the following documents pertaining to the groundwater, surface water, landfill gas and sediment sampling event performed at the Woerd Avenue Landfill on December 9, 10 and 11, 1998:

- Written summary describing the sampling and analysis. *(Attachment A)*
- Landfill monitoring site plan showing sampling locations. *(Attachment B)*
- Summary tables presenting analytical results and field data for each monitoring point. *(Attachment C)*
- Laboratory data sheets and chain of custody forms. *(Attachment D)*

The groundwater and surface water sampling results for the third round of sampling showed no exceedances of any primary standards for indicator parameters or metals. The samples were filtered prior to laboratory analysis and show similar yet lower concentrations than the second quarter sampling which were also filtered. Comparably, these results show considerably lower concentrations than the first quarter sampling which were not filtered. Groundwater and surface water samples were not tested for volatile organic carbons (VOCs) this round because of the low concentrations of VOCs found in the previous two sampling rounds.

A confirmatory sample of sediment was taken at Cove 2 due to excessively high lead concentration found in the sediment sample during the second round of sampling. Three samples were obtained at locations 5-feet apart and combined at the laboratory prior to analysis. The composite sample showed two exceedances of NOAA ER-Median concentrations of lead and zinc. The lead concentration of 490 mg/kg exceeded the ER-Median value of 300 mg/kg; however, it is significantly lower than the 110,000 mg/kg found in the second sampling round.

The landfill gas results correlate with the findings of the first two sampling rounds that the waste is biologically stable and methane does not appear to be a problem at the site.

As previously agreed, this third sampling round completes the sampling requirements as part of the CSA. The City is now concentrating on proceeding forward with landfill closure and post-closure reuse plans and will be completing the CSA based on the existing data. The recommendations for future site monitoring will be made as part of the CSA.

If there are any questions regarding this information, please contact me at (617) 252-8367 or Bruce Haskell at (617) 252-8371.

Very truly yours,

CAMP DRESSER & McKEE INC.

Renata P. Nagrant

Renata P. Nagrant

Bruce W. Haskell

Bruce W. Haskell, P.E.

RPN/BWH:dmd

Attachments

cc: Ronald G. Vokey, Waltham Planning Department

Attachment A

Summary of Quarterly Sampling and Analysis
November 1998
Woerd Avenue Landfill
Waltham, Massachusetts

Introduction

On December 9 and 10, 1998, Camp Dresser & McKee's (CDM's) subconsultant CRB Geological & Environmental Services, Inc. collected groundwater, surface water, sediment, and gas samples in the vicinity of the Woerd Avenue Landfill. The monitoring network at the landfill site currently consists of 8 groundwater monitoring wells and 3 landfill gas wells. The locations of the groundwater monitoring wells are identified as: CDM 1, CDM 1A, CDM 2, CDM 2A, CDM 3, CDM 3A, CDM 4 and CDM 4A. Monitoring well CDM 3 was not sampled because it was dry at the time of sampling. Monitoring wells CDM 1, CDM 2, CDM 3 and CDM 4 are shallow wells with 10-foot screens with bottom of screen depths ranging from 15 to 37-feet. Monitoring wells CDM 1A, CDM 2A, CDM 3A and CDM 4A are deeper wells with 10-foot screens with bottom of screen depths ranging from 75 to 97-feet. A total of three surface water samples were collected: Cove 1, Cove 2, and Stream 1. Cove 1 and Cove 2 were taken from Cram's Cove. Stream 1 was collected from the stream along the southern border of the site in Newton. Three sediment samples were also taken at the Cove 2 location at 5-foot increments and were combined at the laboratory into one composite sample before laboratory analysis was performed. In addition, landfill gas parameters were measured from landfill gas wells LFG 1, LFG 2, and LFG 3. No leachate seeps were observed in the field. The above-referenced sampling locations are indicated on the attached Existing Conditions Plan in Attachment B.

Groundwater and surface water samples were analyzed on-site for field parameters. All water samples were forwarded to the CDM Laboratory in Cambridge, Massachusetts who managed the laboratory testing performed by the CDM affiliate Alpha Analytical Laboratories in Westborough, Massachusetts. The water samples were analyzed for the following parameters: "RCRA 8" - metals plus iron, manganese, zinc by EPA Method 6010A; total cyanide; and indicator parameters. All water samples analyzed for metals were filtered in the laboratory prior to analysis. Samples were not tested for volatile organic carbons (VOCs) since there was no exceedance of primary or secondary standards for VOCs in prior sampling rounds.

The composite sediment sample obtained at Cove 2 was analyzed at the CDM Laboratory for metals by EPA Method 6010A, pesticides and polychlorinated biphenyls (PCBs) by EPA Method 8081, VOCs by EPA Method 8260A, and polyaromatic hydrocarbons (PAHs) by EPA Method 8270B.

The landfill gas wells were screened in the field for methane, hydrogen sulfide, oxygen, carbon dioxide, and VOCs. Both the laboratory reports for this sampling round and summary tables of the analytical results are included in this report.

Quality Control

A duplicate sample was obtained for the groundwater well CDM 1. The concentrations of all metals found for CDM 1 Duplicate are comparable to the concentrations found in CDM 1. No blank samples were obtained in the field because these samples are used to test the accuracy of VOC analysis which was not performed for this sample round.

Evaluation of Results

The results of the water quality sampling are summarized in Table 1 in Attachment C. The sampling results are compared to the Massachusetts Department of Environmental Protection (MDEP) or Environmental Protection Agency (EPA) Primary Drinking Water Standards (primary standards) and to MDEP Drinking Water Guidelines or EPA Secondary Maximum Contaminant Level (secondary standards).

Groundwater Quality

There are no exceedances of primary standards for any of the field and conventional parameters measured for any of the groundwater locations. The pH exceeded the secondary standard for pH at CDM 1 with a slightly acidic value of 6.2, below the minimum standard of 6.5. Concentrations of total dissolved solids (TDS) exceeded the secondary standard of 500 mg/L at CDM 2, CDM 4 and CDM 4A. Concentrations of TDS ranged from 690 mg/L to 940 mg/L for these samples.

The metals concentrations reported are dissolved metals concentrations since all samples were filtered at the laboratory before analysis. There were no exceedances of the primary standards for metals for any of the groundwater samples.

There were several exceedances of the secondary standards for metals detected in the groundwater samples. Iron was detected at a level of 9,800 ug/L at CDM 2 and 1,700 ug/L, at CDM 4 both above the secondary standard of 300 ug/L. The secondary standard for manganese of 50 ug/L was exceeded for all seven monitoring wells sampled with levels as high as 3,200 ug/L at CDM 4A and 1,200 ug/L at CDM 1.

Surface Water Quality

Surface water samples were obtained from Cram's Cove, at locations Cove 1 and Cove 2 and from the stream bordering the landfill to the south on the Waltham/Newton town line at the location Stream 1.

The surface water samples indicated no exceedances of primary standards. Concentrations of total dissolved solids (TDS) exceeded the secondary standard of 500 mg/L at Cove 1 and Stream 1 with concentrations of 780 mg/L and 820 mg/L, respectively.

As explained previously, the metals concentrations reported are the dissolved metals concentrations because the samples were filtered at the laboratory before analysis. There were no exceedances of the primary standards for metals for any of the surface water samples.

There were several exceedances of the secondary standards for metals detected in the surface water samples. The secondary standard for iron of 300 ug/L was exceeded for all three surface water samples with levels as high as 19,000 ug/L at Cove 1 and 1,100 ug/L at Stream 1. The secondary standard for manganese of 50 ug/L was also exceeded for all three surface water samples with levels as high as 500 ug/L at Cove 1 and 370 ug/L at Stream 1.

Sediment Sample

The National Oceanic and Atmospheric Administration (NOAA) has developed sediment effect levels as part of the National Status and Trends Program (NS&T). A number of approaches were used to determine the different effect ranges (ERs). ER-L is the effects Range-Low, which is based on histograms where 10 percent of the data shows that the organisms in a more sensitive life stage are biologically affected. For ER-M, or Effects Range-Median, 50 percent of the data shows effects on all life stages. Although not listed by NOAA, the concentration of iron was found at a high concentration of 34,000 mg/kg.

The results of the laboratory analysis of the composite sediment sample obtained at Cove 2 is presented in Table 2 of Attachment C. These results are compared to the NOAA Effects Range-Low (ER-Low) and Effects Range-Median(ER-Median). Exceedances of the ER-Low range were noted for all metals except mercury and silver. Exceedances of the ER-Median range were noted in two of the eight metals, namely lead and zinc. Lead was found at a concentration of 490 mg/kg, exceeding the ER-Median concentration of 300 mg/kg. Zinc was found at a concentration of 840 mg/kg, exceeding the ER-Median concentration of 410 mg/kg. There are no NOAA ER detection limits established for VOCs and PCBs/pesticides (with an exception of 4-4'-DDE) in sediment. However, there are ER-Low and ER-Median values established for selective PAHs which are significantly lower than the laboratory detection limits. Consequently, no comparison of the sediment results with NOAA limits can be made.

Landfill Gas Monitoring

The concentrations of methane, total volatile organic compounds (VOCs), hydrogen sulfide, carbon dioxide and oxygen were field measured on December 9, 1998 at gas monitoring well LFG 2 and on December 11, 1998 at gas monitoring wells LFG 1 and LFG 3. The summary table of these results is shown as Table 4 in Attachment C. Background levels were established in the ambient air, off landfill limits, before proceeding with well sampling. Upon arrival at the well, the end of the tubing attached to the sampling instrument was connected to the well's sampling port then the sampling valve was opened and initial readings were recorded. After taking the initial readings, the well was purged for ten minutes in order to obtain a representative air sample from the soil surrounding the monitoring well screen. Once purging was complete, the gas meters were reconnected to the sampling port to record final readings.

Methane was detected above the background levels at LFG 1 and LFG 3, however, at levels below the lower explosive limit of 5 percent (methane by volume in air). Total VOCs were not detected in any of the three gas wells. Hydrogen sulfide was measured below background levels at LFG 2 and LFG 3 and at the low level of 1 ppm at LFG 1. Carbon dioxide was detected at LFG 1, LFG 2 and LFG 3 at concentration of 16.5, 14.1 and 1.2 percent by volume in air, none of which indicate a high level of biological activity. Oxygen was found at 19.9 percent by volume in LFG 3, which is similar

to ambient conditions, and at lower concentrations of 0.7 and 7.8 percent at LFG 1 and LFG 2, respectively.

Conclusions

The groundwater and surface water sampling results for the third quarter showed no exceedances of any primary standard in indicator parameters or metals. The results for indicator parameters are similar to both the first and second quarter sampling results. The results for metals are significantly lower in concentration than the results of non-filtered samples of the first sampling round in May 1998. However, the results from this round are similar to the results from the filtered samples of the second round which showed a total of three exceedances of primary standards; two exceedances of cadmium in groundwater samples and one exceedance of lead in a surface water sample.

The composite sediment sample at Cove 2 showed two exceedances of NOAA ER-Median concentrations for lead and zinc and four other exceedances of ER-Low concentrations for arsenic, cadmium, chromium and copper. There were no exceedances for NOAA effects concentrations for any of the PCBs/pesticides and VOCs. PAHs exceedances for NOAA limits could not be established because the minimum detection limits for PAHs were higher than ER values.

The gas monitoring at the site indicates a low presence of methane on the site, similar to the findings of the first and second sampling rounds that found virtually no presence of methane on-site.

This is the final of three rounds of water quality sediment and landfill gas sampling to be evaluated as part of the *Comprehensive Site Assessment Report*.

Attachment C

TABLE 1
WATER QUALITY SAMPLING SUMMARY
NOVEMBER 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

TYPE OF SAMPLE		DRINKING	GROUNDWATER SAMPLES								SURFACE WATER SAMPLES		
SAMPLING DATE		WATER	9-DEC-98	9-DEC-98	9-DEC-98	10-Dec-98	9-DEC-98	9-DEC-98	10-Dec-98	10-Dec-98	10-Dec-98	10-Dec-98	10-Dec-98
LOCATION ID	UNITS	REGULATIONS	CDM 1	CDM 1 Duplicate	CDM 2	CDM 4	CDM 1A	CDM 2A	CDM 3A	CDM 4A	COVE 1	COVE 2	STREAM 1
FIELD PARAMETERS													
SPECIFIC CONDUCTANCE	us/cm	NL	—	—	—	—	—	—	—	—	—	—	—
DISSOLVED OXYGEN	mg/l	NL	1.7	1.7	1.0	0.4	4.2	1.5	2.1	3.1	2.3	6.6	8.1
Ph	Std	6.5-8.5 (3,5)	6.2	6.2	6.6	6.8	7.0	7.5	7.4	6.8	6.5	7.2	7.6
WATER LEVEL (MEAN SEA LEVEL)	ft.	NL	40.8	40.8	36.4	35.5	38.0	36.3	35.3	36.2	—	—	—
TEMPERATURE	C	NL	11.0	11.0	14.2	16.0	10.8	12.2	17.7	12.5	10.8	7.9	4.2
CONVENTIONAL PARAMETERS													
ALKALINITY	mg/l	NL	120	120	650	900	120	69	230	310	500	400	510
TDS (TOT. DISSOLVED SOLIDS)	mg/l	500 (3,5)	190	200	690	940	190	120	320	710	780	470	820
NITRATE-NITROGEN	mg/l	10 (2,4)	2.7	2.7	< 0.1	< 0.1	0.8	< 0.1	< 0.1	< 0.1	0.46	0.16	< 0.1
CYANIDE, TOTAL	mg/l	0.2(4)	< 0.005	< 0.005	< 0.005	< 0.025	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
SULFATE	mg/l	250(3,5)	26	26	< 10	< 10	20	< 10	13	< 10	< 10	< 10	53
CHLORIDE	mg/l	250(5)	4.3	4.2	66	58	8.4	4	32	240	150	40	220
COD (CHEMICAL OXYGEN DEMAND)	mg/l	NL	130	120	620	710	< 20	< 20	41	51	46	110	150
METALS													
ARSENIC	ug/l	50(2,4)	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
BARIUM	ug/l	2000 (2,4)	40	40	1,400	870	<10	<10.0	160	120	960	340	200
CADMIUM	ug/l	5 (2,4)	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
CHROMIUM	ug/l	100(2,4)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
COPPER	ug/l	1300 (2,4)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	10
IRON	ug/l	300 (3,5)	260	180	9,800	1,700	100	< 50	50	350	19,000	490	1,100
LEAD	ug/l	15 (2,4)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
MANGANESE	ug/l	50 (3,5)	1,200	1,200	130	170	460	180	560	3,200	500	190	370
MERCURY	ug/l	2 (2,4)	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
SELENIUM	ug/l	50 (2,4)	< 5	< 5	25	25	< 5	< 5	6	7	16	9	10
SILVER	ug/l	100 (3,5)	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
ZINC	ug/l	5000 (3,5)	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

FOOTNOTES:
(1) HIGHLIGHTED AREA: CONCENTRATION EXCEEDS MASSACHUSETTS OR EPA DRINKING WATER STANDARDS
(2) MASSACHUSETTS DRINKING WATER STANDARD
(3) MASSACHUSETTS DRINKING WATER GUIDELINE OR SECONDARY MAXIMUM CONTAMINANT LEVEL
(4) EPA PRIMARY DRINKING WATER STANDARD
(5) EPA SECONDARY DRINKING WATER STANDARD
(6) NO SAMPLE WAS TAKEN AT GROUNDWATER MONITORING WELL CDM 3 BECAUSE THE WELL WAS DRY
(7) ALL SAMPLES WERE FILTERED IN THE LABORATORY
(8) SURFACE WATER SAMPLE WAS NOT TAKEN AT THE LOCATION - SWALE 1 BECAUSE THE SWALE WAS DRY
<#.# NOT DETECTED TO THE LIMIT INDICATED
NL NO LIMIT
— THIS ANALYSIS WAS NOT PERFORMED.

TABLE 2
SEDIMENT ANALYSIS SUMMARY
NOVEMBER 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

SAMPLING DATE	NOAA EFFECTS RANGE CONCENTRATIONS			10-Dec-98 Composite of
LOCATION ID	ER-Low (mg/kg)	ER-Median (mg/kg)	UNITS	Cove 2
EPA 6010A - Metals				
Arsenic	8.2	70	mg/Kg dry	**17**
Barium	NL	NL	mg/Kg dry	530
Cadmium	1.2	9.6	mg/Kg dry	**6.4**
Chromium	8.1	370	mg/Kg dry	**63**
Copper	34	270	mg/Kg dry	**210**
Iron	NL	NL	mg/Kg dry	34000
Lead	218	300	mg/Kg dry	**490**
Manganese	NL	NL	mg/Kg dry	270
Mercury	0.15	0.71	mg/Kg dry	<1.4
Selenium	NL	NL	mg/Kg dry	<2.2
Silver	1	3.7	mg/Kg dry	<2.2
Zinc	150	410	mg/Kg dry	**840**
EPA 8081				
Aldrin	NL	NL	mg/Kg dry	<0.278
Aroclor 1221	NL	NL	mg/Kg dry	<1.390
Aroclor 1232	NL	NL	mg/Kg dry	<1.390
Aroclor 1248	NL	NL	mg/Kg dry	<1.390
Aroclor 1254	NL	NL	mg/Kg dry	<1.390
Aroclor 1260	NL	NL	mg/Kg dry	<1.390
alpha-BHC	NL	NL	mg/Kg dry	<0.278
beta-BHC	NL	NL	mg/Kg dry	<0.278
Chlordane (Technical)	NL	NL	mg/Kg dry	<1.110
4,4'-DDD	NL	NL	mg/Kg dry	<0.278
4,4'-DDE	0.0022	0.027	mg/Kg dry	<0.278
4,4'-DDT	NL	NL	mg/Kg dry	<0.278
Dieldrin	NL	NL	mg/Kg dry	<0.278
Endosulfan I	NL	NL	mg/Kg dry	<0.278
Endosulfan II	NL	NL	mg/Kg dry	<0.278
Endosulfan sulfate	NL	NL	mg/Kg dry	<0.278
Endrin	NL	NL	mg/Kg dry	<0.278
Endrin aldehyde	NL	NL	mg/Kg dry	<0.278
Heptachlor	NL	NL	mg/Kg dry	<0.278
Heptachlor epoxide	NL	NL	mg/Kg dry	<0.278
Methoxychlor	NL	NL	mg/Kg dry	<0.278
Toxaphene	NL	NL	mg/Kg dry	<1.110
delta-BHC	NL	NL	mg/Kg dry	<0.278
Aroclor 1242/1016	NL	NL	mg/Kg dry	<1.390
EPA 8260A				
Benzene	NL	NL	ug/Kg dry	<110

TABLE 2 (cont.)
SEDIMENT ANALYSIS SUMMARY
NOVEMBER 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

SAMPLING DATE	NOAA EFFECTS RANGE CONCENTRATIONS			10-Dec-98 Composite of
LOCATION ID	ER-Low (mg/kg)	ER-Median (mg/kg)	UNITS	Cove 2
Bromobenzene	NL	NL	ug/Kg dry	<560
Bromochloromethane	NL	NL	ug/Kg dry	<560
Bromodichloromethane	NL	NL	ug/Kg dry	<1,100
Bromoform	NL	NL	ug/Kg dry	<110
Bromomethane	NL	NL	ug/Kg dry	<220
2-Butanone	NL	NL	ug/Kg dry	<1,100
n-Butylbenzene	NL	NL	ug/Kg dry	<560
sec-Butylbenzene	NL	NL	ug/Kg dry	<560
tert-Butylbenzene	NL	NL	ug/Kg dry	<560
Carbon tetrachloride	NL	NL	ug/Kg dry	<110
Chlorobenzene	NL	NL	ug/Kg dry	<390
Chloroethane	NL	NL	ug/Kg dry	<220
Chloroform	NL	NL	ug/Kg dry	<170
Chloromethane	NL	NL	ug/Kg dry	<1,100
1,2-Dibromo-3-chloropropane	NL	NL	ug/Kg dry	<560
1,2-Dibromoethane	NL	NL	ug/Kg dry	<560
Dibromochloromethane	NL	NL	ug/Kg dry	<110
Dibromomethane	NL	NL	ug/Kg dry	<1,100
1,2-Dichlorobenzene	NL	NL	ug/Kg dry	<1,100
1,3-Dichlorobenzene	NL	NL	ug/Kg dry	<1,100
1,4-Dichlorobenzene	NL	NL	ug/Kg dry	<1,100
Dichlorodifluoromethane	NL	NL	ug/Kg dry	<1,100
1,1-Dichloroethane	NL	NL	ug/Kg dry	<170
1,2-Dichloroethane	NL	NL	ug/Kg dry	<170
cis-1,2-Dichloroethene	NL	NL	ug/Kg dry	<110
trans-1,2-Dichloroethene	NL	NL	ug/Kg dry	<170
1,2-Dichloropropane	NL	NL	ug/Kg dry	<390
1,3-Dichloropropane	NL	NL	ug/Kg dry	<560
2,2-Dichloropropane	NL	NL	ug/Kg dry	<560
1,1-Dichloropropene	NL	NL	ug/Kg dry	<2,800
cis-1,3-Dichloropropene	NL	NL	ug/Kg dry	<110
trans-1,3-Dichloropropene	NL	NL	ug/Kg dry	<110
Ethylbenzene	NL	NL	ug/Kg dry	<110
Hexachlorobutadiene	NL	NL	ug/Kg dry	<560
2-Hexanone	NL	NL	ug/Kg dry	<1,100
Isopropylbenzene	NL	NL	ug/Kg dry	<560
4-Methyl-2-pentanone	NL	NL	ug/Kg dry	<1,100
Methylene chloride	NL	NL	ug/Kg dry	660
Naphthalene	NL	NL	ug/Kg dry	<560
n-Propylbenzene	NL	NL	ug/Kg dry	<560
Styrene	NL	NL	ug/Kg dry	<110
1,1,1,2-Tetrachloroethane	NL	NL	ug/Kg dry	<560
1,1,2,2-Tetrachloroethane	NL	NL	ug/Kg dry	<110
Tetrachloroethene	NL	NL	ug/Kg dry	<170
Toluene	NL	NL	ug/Kg dry	<170

TABLE 2 (cont.)
SEDIMENT ANALYSIS SUMMARY
NOVEMBER 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

SAMPLING DATE	NOAA EFFECTS RANGE CONCENTRATIONS			10-Dec-98 Composite of
LOCATION ID	ER-Low (mg/kg)	ER-Median (mg/kg)	UNITS	Cove 2
1,2,3-Trichlorobenzene	NL	NL	ug/Kg dry	<560
1,2,4-Trichlorobenzene	NL	NL	ug/Kg dry	<560
1,1,1-Trichloroethane	NL	NL	ug/Kg dry	<560
1,1,2-Trichloroethane	NL	NL	ug/Kg dry	<560
Trichloroethene	NL	NL	ug/Kg dry	<110
Trichlorofluoromethane	NL	NL	ug/Kg dry	<560
1,2,4-Trimethylbenzene	NL	NL	ug/Kg dry	<560
1,3,5-Trimethylbenzene	NL	NL	ug/Kg dry	<560
1,2,3-Trichloropropane	NL	NL	ug/Kg dry	<1,100
Vinyl chloride	NL	NL	ug/Kg dry	<220
m- and p-Xylenes	NL	NL	ug/Kg dry	<110
o-Xylene	NL	NL	ug/Kg dry	<110
1,1-Dichloroethene	NL	NL	ug/Kg dry	<170
Acetone	NL	NL	ug/Kg dry	2100
Isopropylmethylbenzene	NL	NL	ug/Kg dry	<560
Methyl tert-butyl ether	NL	NL	ug/Kg dry	<1,100
EPA 8270B				
Acenaphthene	16	500	ug/Kg dry	<14,000
Acenaphthylene	44	640	ug/Kg dry	<14,000
Anthracene	85.3	1100	ug/Kg dry	<14,000
BenzO (a) anthracene	261	1600	ug/Kg dry	<14,000
Benzo(b)fluoranthene	NL	NL	ug/Kg dry	<14,000
Benzo(k)fluoranthene	NL	NL	ug/Kg dry	<14,000
Benzo(g,h,i)perylene	NL	NL	ug/Kg dry	<14,000
Benzo(a)pyrene	430	1600	ug/Kg dry	<14,000
Chrysene	384	2800	ug/Kg dry	<14,000
Dibenz(a,h)anthracene	63.4	260	ug/Kg dry	<14,000
Fluoranthene	600	5100	ug/Kg dry	<14,000
Fluorene	19	540	ug/Kg dry	<14,000
Indeno(1,2,3-cd)pyrene	NL	NL	ug/Kg dry	<14,000
2-Methylnaphthalene	70	670	ug/Kg dry	<14,000
Naphthalene	160	2100	ug/Kg dry	<14,000
Phenanthrene	240	1500	ug/Kg dry	<14,000
Pyrene	885	2600	ug/Kg dry	<14,000

FOOTNOTES:
Bolded, outlined values indicate an exceedance of the ER-L values.
Bolded, outlined, shaded values indicate an exceedance of both ER-L and ER-M values.
NL: No value was provided by NOAA.
* National Oceanic and Atmospheric Administration (NOAA) 1993. The
<#.# Not detected to the limit indicated.

TABLE 3
GAS WELL - FIELD MEASURED SUMMARY
NOVEMBER 1998 SAMPLING ROUND
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

Parameter	*Meter*	*Units*	**LFG 1 - Field Measured**			**LFG 2 - Field Measured**			**LFG 3 - Field Measured**		
			Background	*Initial*	*Final*	*Background*	*Initial*	*Final*	*Background*	*Initial*	*Final*
METHANE	LANDTEC	%*	0.0	0.0	2.7	0.1	0.1	0.1	0.0	0.0	0.1
CARBON DIOXIDE	LANDTEC	%	0.2	2.0	16.5	0.0	0.9	14.1	0.0	0.0	1.2
OXYGEN	LANDTEC	%	20.9	20.9	0.7	20.3	16.5	7.8	20.9	21.0	19.1
VOCs	PID	ppm	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HYDROGEN SULFIDE	BACHRACH	ppm	0	0	1	5	5	3	5	2	3

Notes:
1. LEL = Lower Explosive Limit. The lower explosive limit of methane in air is 5% methane by volume in air.
2. Gas well field measurements for LFG 2 were performed on December 9, 1998 at 3:15 PM. LFG 1 and LFG 3 were measured on December 11, 1998 at 8:30 AM and 9:00 AM respectively
* Values are expressed in percent by volume in air.
— This analysis was not performed.

Hourly Surface Observations

Station: BOSTON WSFO AP, MA, Year: 1998

mm/dd/yyyy	hh	Temperature	Dewpoint	Wind Speed	Wind Direction	Wind Gusts	Peak Wind Speed	Peak Wind Direction	Station Pressure	Visibility	Weather Conditions	Hourly Precipitation
—	lst	degF	degF	miles/hour	compass	miles/hour	miles/hour	compass	inch Hg	miles	text	inch
12/08/1998	00	45	28	12.7	NNW	-	-	-	30.15	10.00		0.00
12/08/1998	01	44	29	10.4	NNW	-	-	-	30.16	10.00		0.00
12/08/1998	02	42	29	6.9	NNW	-	-	-	30.19	10.00		0.00
12/08/1998	03	41	27	10.4	N	-	-	-	30.19	10.00		0.00
12/08/1998	04	40	28	8.1	N	-	-	-	30.20	10.00		0.00
12/08/1998	05	39	27	9.2	N	-	-	-	30.21	10.00		0.00
12/08/1998	06	37	28	5.8	NNE	-	-	-	30.22	10.00		0.00
12/08/1998	07	37	27	8.1	N	-	-	-	30.24	10.00		0.00
12/08/1998	08	38	27	6.9	N	-	-	-	30.24	10.00		0.00
12/08/1998	09	42	33	13.8	E	-	-	-	30.22	10.00		0.00
12/08/1998	10	43	36	11.5	E	-	-	-	30.24	10.00		0.00
12/08/1998	11	43	39	13.8	E	-	-	-	30.20	10.00		0.00
12/08/1998	12	43	38	16.1	ESE	-	-	-	30.15	10.00		0.00
12/08/1998	13	43	37	16.1	ESE	-	-	-	30.13	10.00	light rain	0.00
12/08/1998	14	40	39	17.3	ESE	-	-	-	30.10	4.00	moderate rain, fog/mist	0.02
12/08/1998	15	40	40	12.7	ESE	-	-	-	30.09	3.00	light rain	0.12
12/08/1998	16	41	41	15.0	E	-	-	-	30.06	3.00	light rain	0.02
12/08/1998	17	41	41	15.0	E	-	-	-	30.03	3.00	light rain, fog/mist	0.07
12/08/1998	18	42	42	10.4	NE	-	-	-	30.04	10.00	light rain	0.03
12/08/1998	19	40	42	11.5	NNE	-	-	-	30.01	2.00	light rain, fog/mist	0.03
12/08/1998	20	40	40	12.7	N	-	-	-	30.02	2.00	light rain, fog/mist	0.07
12/08/1998	21	40	40	10.4	NNE	-	-	-	30.01	4.00	light rain, fog/mist	0.04
12/08/1998	22	40	40	8.1	N	-	-	-	30.00	2.00	light rain, fog/mist	0.00
12/08/1998	23	40	40	8.1	NNW	-	-	-	30.00	5.00	moderate drizzle, fog/mist	0.00
12/09/1998	00	37	37	9.2	NNW	-	-	-	30.01	3.00	moderate drizzle, fog/mist	0.00
12/09/1998	01	36	36	8.1	NNW	-	-	-	30.01	3.00	fog/mist	0.00
12/09/1998	02	35	35	9.2	NNW	-	-	-	30.03	3.00	fog/mist	0.00
12/09/1998	03	36	36	8.1	NNW	-	-	-	30.05	1.50	fog/mist	0.00

12/09/1998	04	35	35	9.2	NNW	-	-	-	30.05	10.00	0.00
12/09/1998	05	34	34	9.2	NW	-	-	-	30.07	10.00	0.00
12/09/1998	06	34	33	9.2	NW	-	-	-	30.09	10.00	0.00
12/09/1998	07	34	32	9.2	NNW	-	-	-	30.11	10.00	0.00
12/09/1998	08	35	31	11.5	NW	-	-	-	30.15	10.00	0.00
12/09/1998	09	38	31	13.8	NNW	-	-	-	30.17	10.00	0.00
12/09/1998	10	39	29	18.4	NNW	23.0	-	-	30.17	10.00	0.00
12/09/1998	11	41	29	13.8	NW	19.6	-	-	30.18	10.00	0.00
12/09/1998	12	43	28	10.4	NW	18.4	-	-	30.17	10.00	0.00
12/09/1998	13	45	28	13.8	WNW	-	-	-	30.16	10.00	0.00
12/09/1998	14	45	28	10.4	NW	23.0	-	-	30.16	10.00	0.00
12/09/1998	15	45	29	12.7	WNW	-	-	-	30.17	10.00	0.00
12/09/1998	16	43	30	18.4	WNW	-	-	-	30.20	10.00	0.00
12/09/1998	17	42	30	12.7	WNW	-	-	-	30.22	10.00	0.00
12/09/1998	18	41	31	11.5	WNW	-	-	-	30.23	10.00	0.00
12/09/1998	19	41	31	9.2	W	-	-	-	30.24	10.00	0.00
12/09/1998	20	41	32	11.5	W	-	-	-	30.26	10.00	0.00
12/09/1998	21	41	32	13.8	W	-	-	-	30.26	10.00	0.00
12/09/1998	22	40	32	13.8	W	-	-	-	30.27	10.00	0.00
12/09/1998	23	40	32	11.5	W	-	-	-	30.28	10.00	0.00
12/10/1998	00	38	32	8.1	WNW	-	-	-	30.29	10.00	0.00
12/10/1998	01	37	32	9.2	W	-	-	-	30.30	10.00	0.00
12/10/1998	02	37	32	8.1	WNW	-	-	-	30.30	10.00	0.00
12/10/1998	03	-	-	-	-	-	-	-	-	-	-
12/10/1998	04	37	32	9.2	W	-	-	-	30.30	10.00	0.00
12/10/1998	05	36	32	9.2	WNW	-	-	-	30.30	10.00	0.00
12/10/1998	06	36	32	5.8	W	-	-	-	30.31	10.00	0.00
12/10/1998	07	36	32	5.8	W	-	-	-	30.31	10.00	0.00
12/10/1998	08	38	33	10.4	W	-	-	-	30.30	10.00	0.00
12/10/1998	09	40	33	9.2	W	-	-	-	30.31	10.00	0.00
12/10/1998	10	41	34	8.1	SW	-	-	-	30.30	10.00	0.00
12/10/1998	11	44	33	8.1	W	-	-	-	30.27	10.00	0.00
12/10/1998	12	45	32	8.1	W	-	-	-	30.23	10.00	0.00
12/10/1998	13	46	33	10.4	W	-	-	-	30.21	10.00	0.00
12/10/1998	14	47	33	6.9	W	-	-	-	30.18	10.00	0.00
12/10/1998	15	47	32	10.4	W	-	-	-	30.16	10.00	0.00
12/10/1998	16	45	32	12.7	WSW	-	-	-	30.13	10.00	0.00
12/10/1998	17	44	32	5.8	W	-	-	-	30.13	10.00	0.00
12/10/1998	18	44	32	8.1	WSW	-	-	-	30.14	10.00	0.00
12/10/1998	19	43	32	8.1	SW	-	-	-	30.14	10.00	0.00
12/10/1998	20	43	31	10.4	WSW	-	-	-	30.13	10.00	0.00
12/10/1998	21	42	31	10.4	WSW	-	-	-	30.13	10.00	0.00

12/10/1998	22	43	31	13.8	WSW	-	-	-	30.11	10.00	0.00
12/10/1998	23	42	32	12.7	WSW	-	-	-	30.10	10.00	0.00
12/11/1998	00	43	31	11.5	W	-	-	-	30.08	10.00	0.00
12/11/1998	01	43	31	11.5	W	-	-	-	30.06	10.00	0.00
12/11/1998	02	43	31	15.0	W	-	-	-	30.06	10.00	0.00
12/11/1998	03	42	31	13.8	W	-	-	-	30.05	10.00	0.00
12/11/1998	04	42	31	15.0	WSW	-	-	-	30.03	10.00	0.00
12/11/1998	05	41	31	15.0	W	24.2	-	-	30.03	10.00	0.00
12/11/1998	06	40	31	12.7	W	19.6	-	-	30.04	10.00	0.00
12/11/1998	07	40	32	16.1	W	23.0	-	-	30.05	10.00	0.00
12/11/1998	08	41	32	12.7	W	23.0	-	-	30.06	10.00	0.00
12/11/1998	09	42	33	11.5	W	-	-	-	30.08	10.00	0.00
12/11/1998	10	43	32	16.1	WNW	21.9	-	-	30.09	10.00	0.00
12/11/1998	11	43	30	18.4	NW	25.3	-	-	30.08	10.00	0.00
12/11/1998	12	43	28	17.3	NW	23.0	29.9	WNW	30.08	10.00	0.00
12/11/1998	13	43	28	17.3	NW	27.6	29.9	WNW	30.08	10.00	0.00
12/11/1998	14	43	30	16.1	WNW	26.5	-	-	30.11	10.00	0.00
12/11/1998	15	44	28	20.7	WNW	25.3	34.5	NW	30.13	10.00	0.00
12/11/1998	16	42	26	16.1	NW	24.2	31.1	NW	30.16	10.00	0.00
12/11/1998	17	40	26	18.4	WNW	24.2	-	-	30.19	10.00	0.00
12/11/1998	18	39	26	19.6	NW	27.6	-	-	30.23	10.00	0.00
12/11/1998	19	38	27	12.7	NW	20.7	-	-	30.26	10.00	0.00
12/11/1998	20	37	28	10.4	NW	-	-	-	30.28	10.00	0.00
12/11/1998	21	35	28	8.1	NW	-	-	-	30.30	10.00	0.00
12/11/1998	22	35	28	11.5	WNW	-	-	-	30.31	10.00	0.00
12/11/1998	23	34	26	9.2	NW	-	-	-	30.32	10.00	0.00

Attachment D

Client: Town of Waltham
Project: Waltham Landfill
SDG: 981209-1664
Date: December 23, 1998

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617)-354-4448 - fax (617)-354-0764

Laboratory Report

Client: Town of Waltham

Client Contact: Paul Taurasi

Project: Waltham Landfill

Address: Camp Dresser & McKee
Ten Cambridge Center

Project Narrative

The following report contains the analytical results for samples submitted to CDM Laboratory Services *on December 9, 1998.* The samples were received into the laboratory in accordance with documented sample acceptance procedures. All sample identification agreed with accompanying Chain of Custody documentation. Please refer to the Sample Description Information sheet for the list of samples included within this report.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples.

Note: Analytical testing was conducted by Alpha Analytical Laboratories under subcontract to CDM. The report is attached.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge,complete and accurate.

LABORATORY MANAGEMENT REVIEW:

LABORATORY QA/QC REVIEW:

AZ DOH # AZ0553, CO DPHE (RECIPROCITY), CT DPH # 0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES#2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48, VA DGS/DCLS #00046, EPA ICR MA001

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.

Address: 840 Memorial Drive
Riverside Technology Center
Cambridge, MA 02139

Attn: Paul Taurasi

Project Number: 0519-22913-RT.SHMP

Site: TOWN OF WALTHAM

Laboratory Job Number: L9809864

Invoice Number: 21745

Date Received: 10-DEC-98

Date Reported: 23-DEC-98

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9809864-01	CDM 1	WALTHAM LANDFILL
L9809864-02	CDM 1A	WALTHAM LANDFILL
L9809864-03	CDM DUP	WALTHAM LANDFILL
L9809864-04	CDM 2	WALTHAM LANDFILL
L9809864-05	CDM 2A	WALTHAM LANDFILL

Authorized by:

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-01
CDM 1
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	120	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	190	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	4.3	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	2.7	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	26.	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	130	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	0.04	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	0.26	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	1.2	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-02
CDM 1A
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	ANALYSIS	I
Alkalinity, Total	120	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	190	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	8.4	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	0.80	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	20.	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	0.10	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.46	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-03
CDM DUP
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Alkalinity, Total	120	mg CaCO3/L	2.0	30	2320B		14-Dec	KI
Solids, Total Dissolved	200	mg/l	5.0	30	2540C		18-Dec	DI
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AI
Chloride	4.2	mg/l	1.0	1	9251		11-Dec	EI
Nitrogen, Nitrate	2.7	mg/l	0.10	30	4500NO3-F		11-Dec	EI
Sulfate	26.	mg/l	10.	1	9038		15-Dec	KI
Chemical Oxygen Demand	120	mg/l	20.	30	5220D		18-Dec	DI
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MC
Barium, Dissolved	0.04	mg/l	0.01	1	6010B		22-Dec	MC
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MC
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Iron, Dissolved	0.18	mg/l	0.05	1	6010B		22-Dec	MC
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Manganese, Dissolved	1.2	mg/l	0.01	1	6010B		22-Dec	MC
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	DM
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MC
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	MC

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-04
CDM 2
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Alkalinity, Total	650	mg CaCO3/L	2.0	30	2320B		14-Dec	K:
Solids, Total Dissolved	690	mg/l	5.0	30	2540C		18-Dec	D:
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A:
Chloride	66.	mg/l	1.0	1	9251		11-Dec	E:
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E:
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K:
Chemical Oxygen Demand	620	mg/l	20.	30	5220D		18-Dec	D:
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	M(
Barium, Dissolved	1.4	mg/l	0.01	1	6010B		22-Dec	M(
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M(
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M(
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M(
Iron, Dissolved	9.8	mg/l	0.05	1	6010B		22-Dec	M(
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M(
Manganese, Dissolved	0.13	mg/l	0.01	1	6010B		22-Dec	M(
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D:
Selenium, Dissolved	0.025	mg/l	0.005	1	6010B		22-Dec	M(
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M(
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M(

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-05
CDM 2A
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	69.	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	120	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		17-Dec	A
Chloride	4.0	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.18	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L9809864

Parameter	Value 1	Value 2	RPD	Units
Alkalinity, Total for sample(s) 01-05				
Alkalinity, Total	69.	69.	0	mg CaCO3/L
Chloride for sample(s) 01-05				
Chloride	6.5	6.1	6	mg/l
Nitrogen, Nitrate for sample(s) 01-05				
Nitrogen, Nitrate	0.76	0.76	0	mg/l
Sulfate for sample(s) 01-05				
Sulfate	20.	20.	0	mg/l
Dissolved Metals for sample(s) 01-05				
Arsenic, Dissolved	ND	ND	NC	mg/l
Barium, Dissolved	0.04	0.04	0	mg/l
Cadmium, Dissolved	ND	ND	NC	mg/l
Chromium, Dissolved	ND	ND	NC	mg/l
Copper, Dissolved	ND	ND	NC	mg/l
Iron, Dissolved	0.26	0.27	4	mg/l
Lead, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	1.2	1.2	0	mg/l
Selenium, Dissolved	ND	0.005	NC	mg/l
Silver, Dissolved	ND	ND	NC	mg/l
Zinc, Dissolved	ND	ND	NC	mg/l
Dissolved Metals for sample(s) 01-05				
Mercury, Dissolved	ND	ND	NC	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809864

Parameter	% Recovery
Alkalinity, Total LCS for sample(s) 01-05	
Alkalinity, Total	100
Cyanide, Total LCS for sample(s) 05	
Cyanide, Total	76
Cyanide, Total LCS for sample(s) 01-04	
Cyanide, Total	103
Chloride LCS for sample(s) 01-05	
Chloride	98
Nitrogen, Nitrate LCS for sample(s) 01-05	
Nitrogen, Nitrate	94
Sulfate LCS for sample(s) 01-05	
Sulfate	95
Chemical Oxygen Demand LCS for sample(s) 01-05	
Chemical Oxygen Demand	96
Chemical Oxygen Demand LCS for sample(s) 01-05	
Chemical Oxygen Demand	100
Dissolved Metals LCS for sample(s) 01-05	
Mercury, Dissolved	108
Alkalinity, Total SPIKE for sample(s) 01-05	
Alkalinity, Total	100
Cyanide, Total SPIKE for sample(s) 05	
Cyanide, Total	87
Chloride SPIKE for sample(s) 01-05	
Chloride	100
Nitrogen, Nitrate SPIKE for sample(s) 01-05	
Nitrogen, Nitrate	78
Sulfate SPIKE for sample(s) 01-05	
Sulfate	93
Chemical Oxygen Demand SPIKE for sample(s) 01-05	
Chemical Oxygen Demand	120
Dissolved Metals SPIKE for sample(s) 01-05	
Arsenic, Dissolved	104
Barium, Dissolved	100
Cadmium, Dissolved	105

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809864

Continued

Parameter	% Recovery
Dissolved Metals SPIKE for sample(s) 01-05	
Chromium, Dissolved	100
Copper, Dissolved	100
Iron, Dissolved	100
Lead, Dissolved	100
Manganese, Dissolved	98
Selenium, Dissolved	127
Silver, Dissolved	84
Zinc, Dissolved	100

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809864

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 01-05								
Alkalinity, Total	ND	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Blank Analysis for sample(s) 01-05								
Solids, Total Dissolved	ND	mg/l	5.0	30	2540C		18-Dec	D
Blank Analysis for sample(s) 05								
Cyanide, Total	ND	mg/l	0.005	1	9010B		17-Dec	A
Blank Analysis for sample(s) 01-04								
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Blank Analysis for sample(s) 01-05								
Chloride	ND	mg/l	1.0	1	9251		11-Dec	E
Blank Analysis for sample(s) 01-05								
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Blank Analysis for sample(s) 01-05								
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Blank Analysis for sample(s) 01-05								
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	D

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

CDM Analytical Laboratory
840 Memorial Drive
Cambridge, MA 02139
Phone: (617) 354-4448
Fax: (617) 354-0764

Field Log # ______

Client: Town of Waltham
Address:
SDG#: 981209-1664 gH 2553
Project Name: Waltham Landfill
TAT: standard
Project #: 0519-22913-RT.SAMP
Phone: 617 252 8481
TAT Approved by:
Contact: Paul Tamasi - CDM
Fax #:
Lab Acct. #:
Report to: Paul Tamasi
Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX S - Soil W - Water D - Drinking	# OF CONT.	CDM SAMPLE ID See Attached SDG DR for Aliquot #'s & CDM Bottle Id's	VOA 524.2	VOA 624/8240	VOA 8260	VOA Other	SEMI VOA 525	SEMI VOA 625/8270 A, B/N, AB/N	SEMI VOA PAH	SEMI VOA Other	MISC PEST / PCB	MISC TPH 418.1	MISC PET ID	METALS PP13	METALS RCRA 8	METALS Other	METALS Filtered (Y/N)	OTHER HACH 8000 COD	OTHER SM 4500 C TDS	OTHER SM 2320B Alkalinity	OTHER EPA 353.2 Nitrate	OTHER EPA 9012 Cyanide	OTHER EPA 7251 Chloride	OTHER SM 2540 (?)
CDM 1	12/9/98	10:20	W	4	~~98-08752~~															Y	✓	✓	✓	✓	✓	✓	✓
CDM 1A	↓	10:30	W	4	98-08753															↓	✓	✓	✓	✓	✓	✓	✓
CDM Dup	↓	10:40	W	4	98-08754															↓	✓	✓	✓	✓	✓	✓	✓
CDM 2	↓	2:30	W	4	98-08755*															↓	✓	✓	✓	✓	✓	✓	✓
CDM 2A	↓	2:30	W	4	98-08756															Y	✓	✓	✓	✓	✓	✓	✓

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature: ______ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
Fax Results ☐
State Forms ☐
SMART Report ☐
Disk Deliverable ☐
(________) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/9/98	1610	[signature] Kelly	12/9/98	1610
Relinquished by: [signature] Kelly	12/10/98	1630	Received by: [signature]	12/10/98	16:25
Relinquished by: [signature]	12/10/98		Received by: [signature]	12/10/98	1720

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☑ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:
EPA 9038 Sulfate
EPA ~~6010~~ 6010A ICP metals
EPA 7470A Mercury

~~Please filter metals~~
* Please filter + preserve sample CDM-2 / 98-08755

Waltham-CDM-012

Chain of Custody

CDM Analytical Laboratory

840 Memorial Drive
Cambridge, MA 02139
Phone: (617) 354-4448
Fax: (617) 354-0764

Field Log # _____ Page 1 of 1

Client: Town of Waltham
Address:
SDG#: 981209-1664 q# 2553
Project Name: Waltham Landfill
TAT: standard
Project #: 0579-22913-RT.SHMP
Phone: 617 252 8481
TAT Approved by:
Contact: Paul Tamasi - CDM
Fax #:
Lab Acct. #:
Report to: Paul Tamasi
Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST/PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: Other	METALS: Filtered (Y/N)	OTHER: HAL # 8260 (CDM)	OTHER: SM 2540C TDS	OTHER: SM 2320B Alkalinity	OTHER: EPA 353.2 NO3/NO2	OTHER: EPA 9012 Cyanide	OTHER: EPA 9251 Chloride	OTHER: Sulfate (EPA 9038)
CDM 1	12/9/98	10:20	W	4	~~98-08752~~															Y	✓	✓	✓	✓	✓	✓	✓
CDM 1A		10:30	W	4	98-08753																✓	✓	✓	✓	✓	✓	✓
CDM Dup		10:40	W	4	98-08754																✓	✓	✓	✓	✓	✓	✓
CDM 2		2:30	W	4	~~98-08755~~ *																✓	✓	✓	✓	✓	✓	✓
CDM 2A		2:30	W	4	98-08756															N	✓	✓	✓	✓	✓	✓	✓

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (_____) TICS ☐

	Date	Time
Sampled & Relinquished by:	12/9/98	1640
Relinquished by:	12/10/98	1630
Relinquished by:	Date	Time
Received by:	Date	Time
Received by:	12/9/98	1640
Received by:	12/10/98	1625
Received by:	Date	Time

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:
EPA 9038 Sulfate
EPA 6010A ICP metals
EPA 7470A Mercury
* Please filter + preserve sample CDM-2 / 98-08755 ~~Please filter metals~~

Waltham-CDM-012

Chain of Custody

Chain of Custody

CDM Analytical Laboratory — 840 Memorial Drive, Cambridge, MA 02139 — Phone: (617) 354-4448 — Fax: (617) 354-0764

Field Log # _____ Page 1 of 1

Client: Town of Waltham — Address: — SDG#: 981209-1664 QA 2553

Project Name: Waltham Landfill — TAT: standard

Project #: 0579-22913-RT.SAMP — Phone: 617 252 8481 — TAT Approved by:

Contact: Paul Tamasi - CDM — Fax #: — Lab Acct. #:

Report to: Paul Tamasi — Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)
CDM 1	12/4/98	10:20	W	4	~~98-08752~~
CDM 1A		10:30	W	4	98-08753
CDM Dup		10:40	W	4	98-08754
CDM 2		2:30	W	4	~~98-08755~~
CDM 2A		2:30	W	4	98-08756

VOA				SEMI VOA				MISC			METALS				OTHER						
524.2	624/8240	8260	Other	525	625/8270 A, B/N, AB/N	PAH	Other	PEST / PCB	TPH 418.1	PET ID	PP13	RCRA 8	Other	Filtered (Y/N)	TAC # 8222 Cl2	SM 2540C TDS	SM 2320B Alkalinity	EPA 353.2 Nitrate	EPA 9012 Cyanide	EPA 9251 Chloride	Sulfate
														Y	✓	✓	✓	✓	✓	✓	✓
															✓	✓	✓	✓	✓	✓	✓
															✓	✓	✓	✓	✓	✓	✓
															✓	✓	✓	✓	✓	✓	✓
															✓	✓	✓	✓	✓	✓	✓

A - HCl; B - HNO_3; C - H_2SO_4; D - NaOH; E - NaThio; F - Other; P - Plastic; G - Glass; V - Vial

Container Type: Preservative: Volume:

Samples Received:
- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions: Fax Results ☐ State Forms ☐ SMART Report ☐ Disk Deliverable ☐ (_____) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
	12/8/98	1640			
Relinquished by: K Kelly	12/10/98	1630			
Relinquished by:	Date	Time	Received by:	12/10/98	1605

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:
EPA 9038 Sulfate
EPA SW 6010A ICP metals
EPA 7470A Mercury

* Please filter + preserve sample CDM-2 / 98-08755 ~~Please filter metals~~

Waltham-CDM-012

Client: Town of Waltham
Project: Waltham Landfill
SDG: 981210-1671
Date: December 24, 1998

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617)-354-4448 - fax (617)-354-0764

Laboratory Report

Client: Town of Waltham

Client Contact: Paul Taurasi

Project: Waltham Landfill

Address: Camp Dresser & McKee
Ten Cambridge Center

Project Narrative

The following report contains the analytical results for samples submitted to CDM Laboratory Services *on December 10, 1998.* The samples were received into the laboratory in accordance with documented sample acceptance procedures. All sample identification agreed with accompanying Chain of Custody documentation. Please refer to the Sample Description Information sheet for the list of samples included within this report.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples.

Note: Analytical testing was conducted by Alpha Analytical Laboratories under subcontract to CDM. The report is attached.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge,complete and accurate.

LABORATORY MANAGEMENT REVIEW:

LABORATORY QA/QC REVIEW:

AZ DOH # AZ0553, CO DPHE (RECIPROCITY), CT DPH # 0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES#2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48, VA DGS/DCLS #00046, EPA ICR MA001

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.

Address: 840 Memorial Drive
Riverside Technology Center
Cambridge, MA 02139

Attn: Paul Taurasi

Project Number:

Site: TOWN OF WALTHAM

Laboratory Job Number: L9809865

Invoice Number: 21787

Date Received: 10-DEC-98

Date Reported: 24-DEC-98

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9809865-01	CDM 4	WALTHAM LANDFILL
L9809865-02	CDM 4A	WALTHAM LANDFILL
L9809865-03	STREAM 1	WALTHAM LANDFILL
L9809865-04	CDM 3A	WALTHAM LANDFILL
L9809865-05	COVE 1	WALTHAM LANDFILL
L9809865-06	COVE 2	WALTHAM LANDFILL
L9809865-07	COMPOSITE OF SED 1 - SED 3	WALTHAM LANDFILL

Authorized by:

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-01
CDM 4
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	900	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	940	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.025	1	9010B		22-Dec	A
Chloride	58.	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	710	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	M
Barium, Dissolved	0.87	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	1.7	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.17	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.025	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-02
CDM 4A
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	310	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	710	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	240	mg/l	10.	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	51.	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	0.12	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	0.35	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	3.2	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.007	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-03
STREAM 1
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	510	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	820	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	220	mg/l	10.	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	53.	mg/l	50.	1	9038		15-Dec	K
Chemical Oxygen Demand	150	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	0.20	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	0.01	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	1.1	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.37	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.010	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-04
CDM 3A
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	230	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	320	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	32.	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	13.	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	41.	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	0.008	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	0.16	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	0.05	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.56	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.006	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-05
COVE 1
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Alkalinity, Total	500	mg CaCO3/L	2.0	30	2320B		14-Dec	Kl
Solids, Total Dissolved	780	mg/l	5.0	30	2540C		18-Dec	DI
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	Al
Chloride	150	mg/l	10.	1	9251		11-Dec	EI
Nitrogen, Nitrate	0.46	mg/l	0.10	30	4500NO3-F		11-Dec	EI
Sulfate	ND	mg/l	10.	1	9038		15-Dec	KI
Chemical Oxygen Demand	46.	mg/l	20.	30	5220D		18-Dec	DI
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	MC
Barium, Dissolved	0.96	mg/l	0.01	1	6010B		22-Dec	MC
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MC
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Iron, Dissolved	19.	mg/l	0.05	1	6010B		22-Dec	MC
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Manganese, Dissolved	0.50	mg/l	0.01	1	6010B		22-Dec	MC
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	DI
Selenium, Dissolved	0.016	mg/l	0.005	1	6010B		22-Dec	MC
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MC
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	MC

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-06
COVE 2
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	400	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	470	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	40.	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	0.16	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	110	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	M
Barium, Dissolved	0.34	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	0.49	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.19	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.009	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-07 **Date Collected:** 10-DEC-1998
COMPOSITE OF SED 1 - SED 3 **Date Received :** 10-DEC-98
Sample Matrix: SOIL **Date Reported :** 24-DEC-98

Condition of Sample: Satisfactory **Field Prep:** None

Number & Type of Containers: 6-Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Solids, Total	18.	%	0.10	30	2540G		21-Dec	SI
Hydrocarbons, Total(IR)	5800	mg/kg	220	4	418.1	21-Dec	23-Dec	SI
Total Metals				1	3051			
Arsenic, Total	17.	mg/kg	1.1	1	6010B	15-Dec	16-Dec	MC
Barium, Total	530	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MC
Cadmium, Total	6.4	mg/kg	1.1	1	6010B	15-Dec	16-Dec	MC
Chromium, Total	63.	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MC
Copper, Total	210	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MC
Iron, Total	34000	mg/kg	11.	1	6010B	15-Dec	16-Dec	MC
Lead, Total	490	mg/kg	11.	1	6010B	15-Dec	16-Dec	MC
Manganese, Total	270	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MC
Mercury, Total	ND	mg/kg	1.4	1	7471A	21-Dec	22-Dec	GI
Selenium, Total	ND	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MC
Silver, Total	ND	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MC
Zinc, Total	840	mg/kg	11.	1	6010B	15-Dec	16-Dec	MC
Volatile Organics by GC/MS 8260				1	8260B		24-Dec	BT
Methylene chloride	660	ug/kg	560					
1,1-Dichloroethane	ND	ug/kg	170					
Chloroform	ND	ug/kg	170					
Carbon tetrachloride	ND	ug/kg	110					
1,2-Dichloropropane	ND	ug/kg	390					
Dibromochloromethane	ND	ug/kg	110					
1,1,2-Trichloroethane	ND	ug/kg	170					
Tetrachloroethene	ND	ug/kg	170					
Chlorobenzene	ND	ug/kg	390					
Trichlorofluoromethane	ND	ug/kg	560					
1,2-Dichloroethane	ND	ug/kg	170					
1,1,1-Trichloroethane	ND	ug/kg	110					
Bromodichloromethane	ND	ug/kg	110					
trans-1,3-Dichloropropene	ND	ug/kg	110					
cis-1,3-Dichloropropene	ND	ug/kg	110					
1,1-Dichloropropene	ND	ug/kg	2800					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Volatile Organics by GC/MS 8260 continued				1	8260B		24-Dec	B'
Bromoform	ND	ug/kg	110					
1,1,2,2-Tetrachloroethane	ND	ug/kg	110					
Benzene	ND	ug/kg	110					
Toluene	ND	ug/kg	170					
Ethylbenzene	ND	ug/kg	110					
Chloromethane	ND	ug/kg	1100					
Bromomethane	ND	ug/kg	220					
Vinyl chloride	ND	ug/kg	220					
Chloroethane	ND	ug/kg	220					
1,1-Dichloroethene	ND	ug/kg	170					
trans-1,2-Dichloroethene	ND	ug/kg	170					
Trichloroethene	ND	ug/kg	110					
1,2-Dichlorobenzene	ND	ug/kg	1100					
1,3-Dichlorobenzene	ND	ug/kg	1100					
1,4-Dichlorobenzene	ND	ug/kg	1100					
Methyl tert butyl ether	ND	ug/kg	1100					
p/m-Xylene	ND	ug/kg	110					
o-Xylene	ND	ug/kg	110					
cis-1,2-Dichloroethene	ND	ug/kg	110					
Dibromomethane	ND	ug/kg	1100					
1,2,3-Trichloropropane	ND	ug/kg	1100					
Styrene	ND	ug/kg	110					
Dichlorodifluoromethane	ND	ug/kg	1100					
Acetone	2100	ug/kg	1100					
2-Butanone	ND	ug/kg	1100					
4-Methyl-2-pentanone	ND	ug/kg	1100					
2-Hexanone	ND	ug/kg	1100					
Bromochloromethane	ND	ug/kg	560					
2,2-Dichloropropane	ND	ug/kg	560					
1,2-Dibromoethane	ND	ug/kg	560					
1,3-Dichloropropane	ND	ug/kg	560					
1,1,1,2-Tetrachloroethane	ND	ug/kg	560					
Bromobenzene	ND	ug/kg	560					
n-Butylbenzene	ND	ug/kg	560					
sec-Butylbenzene	ND	ug/kg	560					
tert-Butylbenzene	ND	ug/kg	560					
o-Chlorotoluene	ND	ug/kg	560					
p-Chlorotoluene	ND	ug/kg	560					
1,2-Dibromo-3-chloropropane	ND	ug/kg	560					
Hexachlorobutadiene	ND	ug/kg	560					
Isopropylbenzene	ND	ug/kg	560					
p-Isopropyltoluene	ND	ug/kg	560					
Naphthalene	ND	ug/kg	560					
n-Propylbenzene	ND	ug/kg	560					
1,2,3-Trichlorobenzene	ND	ug/kg	560					
1,2,4-Trichlorobenzene	ND	ug/kg	560					
1,3,5-Trimethylbenzene	ND	ug/kg	560					
1,2,4-Trimethylbenzene	ND	ug/kg	560					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Volatile Organics by GC/MS 8260 continued				1	8260B		24-Dec	B
Surrogate Recovery								
1,2-Dichloroethane-d4	94.0	%						
Toluene-d8	96.0	%						
4-Bromofluorobenzene	87.0	%						
Dibromofluoromethane	92.0	%						
SVOC's by GC/MS 8270				1	8270C	11-Dec	14-Dec	M
Acenaphthene	ND	ug/kg	14000					
Benzidine	ND	ug/kg	140000					
1,2,4-Trichlorobenzene	ND	ug/kg	14000					
Hexachlorobenzene	ND	ug/kg	14000					
Bis(2-chloroethyl)ether	ND	ug/kg	14000					
1-Chloronaphthalene	ND	ug/kg	14000					
2-Chloronaphthalene	ND	ug/kg	14000					
1,2-Dichlorobenzene	ND	ug/kg	14000					
1,3-Dichlorobenzene	ND	ug/kg	14000					
1,4-Dichlorobenzene	ND	ug/kg	14000					
3,3'-Dichlorobenzidine	ND	ug/kg	140000					
2,4-Dinitrotoluene	ND	ug/kg	14000					
2,6-Dinitrotoluene	ND	ug/kg	14000					
Azobenzene	ND	ug/kg	14000					
Fluoranthene	ND	ug/kg	14000					
4-Chlorophenyl phenyl ether	ND	ug/kg	14000					
4-Bromophenyl phenyl ether	ND	ug/kg	14000					
Bis(2-chloroisopropyl)ether	ND	ug/kg	14000					
Bis(2-chloroethoxy)methane	ND	ug/kg	14000					
Hexachlorobutadiene	ND	ug/kg	28000					
Hexachlorocyclopentadiene	ND	ug/kg	28000					
Hexachloroethane	ND	ug/kg	14000					
Isophorone	ND	ug/kg	14000					
Naphthalene	ND	ug/kg	14000					
Nitrobenzene	ND	ug/kg	14000					
NDPA/DPA	ND	ug/kg	14000					
n-Nitrosodi-n-propylamine	ND	ug/kg	14000					
Bis(2-ethylhexyl)phthalate	ND	ug/kg	28000					
Butyl benzyl phthalate	ND	ug/kg	14000					
Di-n-butylphthalate	ND	ug/kg	14000					
Di-n-octylphthalate	ND	ug/kg	14000					
Diethyl phthalate	ND	ug/kg	14000					
Dimethyl phthalate	ND	ug/kg	14000					
Benzo(a)anthracene	ND	ug/kg	14000					
Benzo(a)pyrene	ND	ug/kg	14000					
Benzo(b)fluoranthene	ND	ug/kg	14000					
Benzo(k)fluoranthene	ND	ug/kg	14000					
Chrysene	ND	ug/kg	14000					
Acenaphthylene	ND	ug/kg	14000					
Anthracene	ND	ug/kg	14000					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	M
Benzo(ghi)perylene	ND	ug/kg	14000					
Fluorene	ND	ug/kg	14000					
Phenanthrene	ND	ug/kg	14000					
Dibenzo(a,h)anthracene	ND	ug/kg	14000					
Indeno(1,2,3-cd)pyrene	ND	ug/kg	14000					
Pyrene	ND	ug/kg	14000					
Aniline	ND	ug/kg	28000					
4-Chloroaniline	ND	ug/kg	14000					
1-Methylnaphthalene	ND	ug/kg	14000					
2-Nitroaniline	ND	ug/kg	14000					
3-Nitroaniline	ND	ug/kg	14000					
4-Nitroaniline	ND	ug/kg	14000					
Dibenzofuran	ND	ug/kg	14000					
a,a-Dimethylphenethylamine	ND	ug/kg	140000					
Hexachloropropene	ND	ug/kg	140000					
Nitrosodi-n-butylamine	ND	ug/kg	28000					
2-Methylnaphthalene	ND	ug/kg	14000					
1,2,4,5-Tetrachlorobenzene	ND	ug/kg	56000					
Pentachlorobenzene	ND	ug/kg	56000					
a-Naphthylamine	ND	ug/kg	56000					
b-Naphthylamine	ND	ug/kg	56000					
Phenacetin	ND	ug/kg	28000					
Dimethoate	ND	ug/kg	56000					
4-Aminobiphenyl	ND	ug/kg	28000					
Pentachloronitrobenzene	ND	ug/kg	28000					
Isodrin	ND	ug/kg	28000					
p-Dimethylaminoazobenzene	ND	ug/kg	28000					
Chlorobenzilate	ND	ug/kg	56000					
3-Methylcholanthrene	ND	ug/kg	56000					
Ethyl Methanesulfonate	ND	ug/kg	42000					
Acetophenone	ND	ug/kg	56000					
Nitrosodipiperidine	ND	ug/kg	56000					
7,12-Dimethylbenz(a)anthracene	ND	ug/kg	28000					
n-Nitrosodimethylamine	ND	ug/kg	140000					
2,4,6-Trichlorophenol	ND	ug/kg	14000					
p-Chloro-m-cresol	ND	ug/kg	14000					
2-Chlorophenol	ND	ug/kg	14000					
2,4-Dichlorophenol	ND	ug/kg	28000					
2,4-Dimethylphenol	ND	ug/kg	28000					
2-Nitrophenol	ND	ug/kg	28000					
4-Nitrophenol	ND	ug/kg	28000					
2,4-Dinitrophenol	ND	ug/kg	56000					
4,6-Dinitro-o-cresol	ND	ug/kg	56000					
Pentachlorophenol	ND	ug/kg	56000					
Phenol	ND	ug/kg	14000					
2-Methylphenol	ND	ug/kg	14000					
3-Methylphenol/4-Methylphenol	ND	ug/kg	14000					
2,4,5-Trichlorophenol	ND	ug/kg	14000					
2,6-Dichlorophenol	ND	ug/kg	28000					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	MI
Benzoic Acid	ND	ug/kg	140000					
Benzyl Alcohol	ND	ug/kg	28000					
Carbazole	ND	ug/kg	14000					
Pyridine	ND	ug/kg	140000					
2-Picoline	ND	ug/kg	56000					
Pronamide	ND	ug/kg	56000					
Methyl methanesulfonate	ND	ug/kg	56000					
Surrogate Recovery								
2-Fluorophenol	43.0	%						
Phenol-d6	48.0	%						
Nitrobenzene-d5	75.0	%						
2-Fluorobiphenyl	72.0	%						
2,4,6-Tribromophenol	61.0	%						
4-Terphenyl-d14	83.0	%						
PCB/Pesticides				1	8082/8081	11-Dec	16-Dec	PI
Delta-BHC	ND	ug/kg	278.					
Lindane	ND	ug/kg	278.					
Alpha-BHC	ND	ug/kg	278.					
Beta-BHC	ND	ug/kg	278.					
Heptachlor	ND	ug/kg	278.					
Aldrin	ND	ug/kg	278.					
Heptachlor epoxide	ND	ug/kg	278.					
Endrin	ND	ug/kg	278.					
Endrin aldehyde	ND	ug/kg	278.					
Endrin ketone	ND	ug/kg	278.					
Dieldrin	ND	ug/kg	278.					
4,4'-DDE	ND	ug/kg	278.					
4,4'-DDD	ND	ug/kg	278.					
4,4'-DDT	ND	ug/kg	278.					
Endosulfan I	ND	ug/kg	278.					
Endosulfan II	ND	ug/kg	278.					
Endosulfan sulfate	ND	ug/kg	278.					
Methoxychlor	ND	ug/kg	278.					
Toxaphene	ND	ug/kg	1110					
Chlordane	ND	ug/kg	1110					
cis-Chlordane	ND	ug/kg	278.					
trans-Chlordane	ND	ug/kg	278.					
Aroclor 1221	ND	ug/kg	1390					
Aroclor 1232	ND	ug/kg	1390					
Aroclor 1242/1016	ND	ug/kg	1390					
Aroclor 1248	ND	ug/kg	1390					
Aroclor 1254	ND	ug/kg	1390					
Aroclor 1260	ND	ug/kg	1390					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
PCB/Pesticides continued				1	8082/8081	11-Dec	16-Dec	PI
Surrogate Recovery								
2,4,5,6-Tetrachloro-m-xylene	58.0	%						
Decachlorobiphenyl	42.0	%						

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L9809865

Parameter	Value 1	Value 2	RPD	Units
Alkalinity, Total for sample(s) 01-06				
Alkalinity, Total	69.	69.	0	mg CaCO3/L
Chloride for sample(s) 01-06				
Chloride	6.5	6.1	6	mg/l
Nitrogen, Nitrate for sample(s) 01-06				
Nitrogen, Nitrate	0.76	0.76	0	mg/l
Sulfate for sample(s) 01-06				
Sulfate	20.	20.	0	mg/l
Total Metals for sample(s) 07				
Arsenic, Total	17.	21.	21	mg/kg
Barium, Total	530	610	14	mg/kg
Cadmium, Total	6.4	6.6	3	mg/kg
Chromium, Total	63.	70.	11	mg/kg
Copper, Total	210	220	5	mg/kg
Iron, Total	34000	43000	23	mg/kg
Lead, Total	490	510	4	mg/kg
Manganese, Total	270	320	17	mg/kg
Selenium, Total	ND	ND	NC	mg/kg
Silver, Total	ND	ND	NC	mg/kg
Zinc, Total	840	880	5	mg/kg
Dissolved Metals for sample(s) 01-06				
Arsenic, Dissolved	ND	ND	NC	mg/l
Barium, Dissolved	0.04	0.04	0	mg/l
Cadmium, Dissolved	ND	ND	NC	mg/l
Chromium, Dissolved	ND	ND	NC	mg/l
Copper, Dissolved	ND	ND	NC	mg/l
Iron, Dissolved	0.26	0.27	4	mg/l
Lead, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	1.2	1.2	0	mg/l
Selenium, Dissolved	ND	0.005	NC	mg/l
Silver, Dissolved	ND	ND	NC	mg/l
Zinc, Dissolved	ND	ND	NC	mg/l
Dissolved Metals for sample(s) 01-06				
Mercury, Dissolved	ND	ND	NC	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Parameter	% Recovery
Alkalinity, Total LCS for sample(s) 01-06	
Alkalinity, Total	100
Cyanide, Total LCS for sample(s) 01	
Cyanide, Total	100
Cyanide, Total LCS for sample(s) 02-06	
Cyanide, Total	103
Chloride LCS for sample(s) 01-06	
Chloride	98
Nitrogen, Nitrate LCS for sample(s) 01-06	
Nitrogen, Nitrate	94
Sulfate LCS for sample(s) 01-06	
Sulfate	95
Chemical Oxygen Demand LCS for sample(s) 01-06	
Chemical Oxygen Demand	96
Chemical Oxygen Demand LCS for sample(s) 01-06	
Chemical Oxygen Demand	100
Hydrocarbons, Total(IR) LCS for sample(s) 07	
Hydrocarbons, Total(IR)	115
Total Metals LCS for sample(s) 07	
Arsenic, Total	89
Barium, Total	95
Cadmium, Total	92
Chromium, Total	93
Copper, Total	97
Lead, Total	95
Manganese, Total	110
Selenium, Total	84
Silver, Total	91
Zinc, Total	95
Total Metals LCS for sample(s) 07	
Mercury, Total	103
Dissolved Metals LCS for sample(s) 01-06	
Mercury, Dissolved	108
SVOC's by GC/MS 8270 LCS for sample(s) 07	
Acenaphthene	120
1,2,4-Trichlorobenzene	110
1,4-Dichlorobenzene	80

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Continued

Parameter	% Recovery
SVOC's by GC/MS 8270 LCS for sample(s) 07	
2,4-Dinitrotoluene	120
n-Nitrosodi-n-propylamine	89
Pyrene	110
p-Chloro-m-cresol	95
2-Chlorophenol	67
4-Nitrophenol	84
Pentachlorophenol	110
Phenol	44
PCB/Pesticides LCS for sample(s) 07	
Lindane	79
Heptachlor	73
Aldrin	105
Endrin	84
Dieldrin	56
4,4'-DDT	76
Alkalinity, Total SPIKE for sample(s) 01-06	
Alkalinity, Total	100
Cyanide, Total SPIKE for sample(s) 01	
Cyanide, Total	61
Chloride SPIKE for sample(s) 01-06	
Chloride	100
Nitrogen, Nitrate SPIKE for sample(s) 01-06	
Nitrogen, Nitrate	78
Sulfate SPIKE for sample(s) 01-06	
Sulfate	93
Chemical Oxygen Demand SPIKE for sample(s) 01-06	
Chemical Oxygen Demand	120
Total Metals SPIKE for sample(s) 07	
Arsenic, Total	100
Barium, Total	98
Cadmium, Total	86
Chromium, Total	85
Copper, Total	110
Lead, Total	90
Manganese, Total	120
Selenium, Total	100
Silver, Total	100
Zinc, Total	64

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Continued

Parameter	% Recovery
Total Metals SPIKE for sample(s) 07	
Mercury, Total	146
Dissolved Metals SPIKE for sample(s) 01-06	
Arsenic, Dissolved	104
Barium, Dissolved	100
Cadmium, Dissolved	105
Chromium, Dissolved	100
Copper, Dissolved	100
Iron, Dissolved	100
Lead, Dissolved	100
Manganese, Dissolved	98
Selenium, Dissolved	127
Silver, Dissolved	84
Zinc, Dissolved	100

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L9809865

Parameter	MS %	MSD %	RPD
Volatile Organics by GC/MS 8260 for sample(s) 07			
Chlorobenzene	83	81	2
Benzene	83	88	6
Toluene	83	88	6
1,1-Dichloroethene	97	95	2
Trichloroethene	83	81	2
SVOC's by GC/MS 8270 for sample(s) 07			
Acenaphthene	130	140	7
1,2,4-Trichlorobenzene	130	130	0
1,4-Dichlorobenzene	100	100	0
2,4-Dinitrotoluene	160	180	12
n-Nitrosodi-n-propylamine	110	110	0
Pyrene	120	130	8
p-Chloro-m-cresol	110	110	0
2-Chlorophenol	84	84	0
4-Nitrophenol	60	92	42
Pentachlorophenol	100	130	26
Phenol	72	60	18
PCB/Pesticides for sample(s) 07			
Lindane	71	72	1
Heptachlor	65	66	1
Aldrin	67	70	4
Endrin	76	78	3
Dieldrin	52	54	4
4,4'-DDT	68	70	3

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 01-06								
Alkalinity, Total	ND	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Blank Analysis for sample(s) 01-06								
Solids, Total Dissolved	ND	mg/l	5.0	30	2540C		18-Dec	D
Blank Analysis for sample(s) 01								
Cyanide, Total	ND	mg/l	0.005	1	9010B		22-Dec	A
Blank Analysis for sample(s) 02-06								
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Blank Analysis for sample(s) 01-06								
Chloride	ND	mg/l	1.0	1	9251		11-Dec	E
Blank Analysis for sample(s) 01-06								
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Blank Analysis for sample(s) 01-06								
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Blank Analysis for sample(s) 01-06								
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	D
Blank Analysis for sample(s) 07								
Hydrocarbons, Total(IR)	ND	mg/kg	40.	4	418.1	21-Dec	23-Dec	S
Blank Analysis for sample(s) 07								
Total Metals				1	3051			
Arsenic, Total	ND	mg/kg	0.20	1	6010B	15-Dec	16-Dec	M
Barium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	M
Cadmium, Total	ND	mg/kg	0.20	1	6010B	15-Dec	16-Dec	M
Chromium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	M
Copper, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	M
Iron, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	M
Lead, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	M
Manganese, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	M
Selenium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	M
Silver, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	M

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 07								
Total Metals				1	3051			
Zinc, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	M
Blank Analysis for sample(s) 07								
Volatile Organics by GC/MS 8260				1	8260B		24-Dec	E
Methylene chloride	ND	ug/kg	25.					
1,1-Dichloroethane	ND	ug/kg	7.5					
Chloroform	ND	ug/kg	7.5					
Carbon tetrachloride	ND	ug/kg	5.0					
1,2-Dichloropropane	ND	ug/kg	18.					
Dibromochloromethane	ND	ug/kg	5.0					
1,1,2-Trichloroethane	ND	ug/kg	7.5					
2-Chloroethylvinyl ether	ND	ug/kg	50.					
Tetrachloroethene	ND	ug/kg	7.5					
Chlorobenzene	ND	ug/kg	18.					
Trichlorofluoromethane	ND	ug/kg	25.					
1,2-Dichloroethane	ND	ug/kg	7.5					
1,1,1-Trichloroethane	ND	ug/kg	5.0					
Bromodichloromethane	ND	ug/kg	5.0					
trans-1,3-Dichloropropene	ND	ug/kg	5.0					
cis-1,3-Dichloropropene	ND	ug/kg	5.0					
1,1-Dichloropropene	ND	ug/kg	120					
Bromoform	ND	ug/kg	5.0					
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0					
Benzene	ND	ug/kg	5.0					
Toluene	ND	ug/kg	7.5					
Ethylbenzene	ND	ug/kg	5.0					
Chloromethane	ND	ug/kg	50.					
Bromomethane	ND	ug/kg	10.					
Vinyl chloride	ND	ug/kg	10.					
Chloroethane	ND	ug/kg	10.					
1,1-Dichloroethene	ND	ug/kg	7.5					
trans-1,2-Dichloroethene	ND	ug/kg	7.5					
Trichloroethene	ND	ug/kg	5.0					
1,2-Dichlorobenzene	ND	ug/kg	50.					
1,3-Dichlorobenzene	ND	ug/kg	50.					
1,4-Dichlorobenzene	ND	ug/kg	50.					
Methyl tert butyl ether	ND	ug/kg	50.					
p/m-Xylene	ND	ug/kg	5.0					
o-Xylene	ND	ug/kg	5.0					
cis-1,2-Dichloroethene	ND	ug/kg	5.0					
Dibromomethane	ND	ug/kg	50.					
1,4-Dichlorobutane	ND	ug/kg	50.					
Iodomethane	ND	ug/kg	50.					
1,2,3-Trichloropropane	ND	ug/kg	50.					
Styrene	ND	ug/kg	5.0					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 07								
Volatile Organics by GC/MS 8260 continued				1	8260B		24-Dec	B
Dichlorodifluoromethane	ND	ug/kg	50.					
Acetone	ND	ug/kg	50.					
Carbon disulfide	ND	ug/kg	50.					
2-Butanone	ND	ug/kg	50.					
Vinyl acetate	ND	ug/kg	50.					
4-Methyl-2-pentanone	ND	ug/kg	50.					
2-Hexanone	ND	ug/kg	50.					
Ethyl methacrylate	ND	ug/kg	50.					
Acrolein	ND	ug/kg	120					
Acrylonitrile	ND	ug/kg	50.					
Bromochloromethane	ND	ug/kg	25.					
Tetrahydrofuran	ND	ug/kg	250					
2,2-Dichloropropane	ND	ug/kg	25.					
1,2-Dibromoethane	ND	ug/kg	25.					
1,3-Dichloropropane	ND	ug/kg	25.					
1,1,1,2-Tetrachloroethane	ND	ug/kg	25.					
Bromobenzene	ND	ug/kg	25.					
n-Butylbenzene	ND	ug/kg	25.					
sec-Butylbenzene	ND	ug/kg	25.					
tert-Butylbenzene	ND	ug/kg	25.					
o-Chlorotoluene	ND	ug/kg	25.					
p-Chlorotoluene	ND	ug/kg	25.					
1,2-Dibromo-3-chloropropane	ND	ug/kg	25.					
Hexachlorobutadiene	ND	ug/kg	25.					
Isopropylbenzene	ND	ug/kg	25.					
p-Isopropyltoluene	ND	ug/kg	25.					
Naphthalene	ND	ug/kg	25.					
n-Propylbenzene	ND	ug/kg	25.					
1,2,3-Trichlorobenzene	ND	ug/kg	25.					
1,2,4-Trichlorobenzene	ND	ug/kg	25.					
1,3,5-Trimethylbenzene	ND	ug/kg	25.					
1,2,4-Trimethylbenzene	ND	ug/kg	25.					
trans-1,4-Dichloro-2-butene	ND	ug/kg	25.					
Ethyl ether	ND	ug/kg	120					
Surrogate Recovery								
1,2-Dichloroethane-d4	98.0	%						
Toluene-d8	98.0	%						
4-Bromofluorobenzene	95.0	%						
Dibromofluoromethane	94.0	%						
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270				1	8270C	11-Dec	14-Dec	M
Acenaphthene	ND	ug/kg	500					
Benzidine	ND	ug/kg	5000					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	M
1,2,4-Trichlorobenzene	ND	ug/kg	500					
Hexachlorobenzene	ND	ug/kg	500					
Bis(2-chloroethyl)ether	ND	ug/kg	500					
1-Chloronaphthalene	ND	ug/kg	500					
2-Chloronaphthalene	ND	ug/kg	500					
1,2-Dichlorobenzene	ND	ug/kg	500					
1,3-Dichlorobenzene	ND	ug/kg	500					
1,4-Dichlorobenzene	ND	ug/kg	500					
3,3'-Dichlorobenzidine	ND	ug/kg	5000					
2,4-Dinitrotoluene	ND	ug/kg	500					
2,6-Dinitrotoluene	ND	ug/kg	500					
Azobenzene	ND	ug/kg	500					
Fluoranthene	ND	ug/kg	500					
4-Chlorophenyl phenyl ether	ND	ug/kg	500					
4-Bromophenyl phenyl ether	ND	ug/kg	500					
Bis(2-chloroisopropyl)ether	ND	ug/kg	500					
Bis(2-chloroethoxy)methane	ND	ug/kg	500					
Hexachlorobutadiene	ND	ug/kg	1000					
Hexachlorocyclopentadiene	ND	ug/kg	1000					
Hexachloroethane	ND	ug/kg	500					
Isophorone	ND	ug/kg	500					
Naphthalene	ND	ug/kg	500					
Nitrobenzene	ND	ug/kg	500					
NDPA/DPA	ND	ug/kg	500					
n-Nitrosodi-n-propylamine	ND	ug/kg	500					
Bis(2-ethylhexyl)phthalate	ND	ug/kg	1000					
Butyl benzyl phthalate	ND	ug/kg	500					
Di-n-butylphthalate	ND	ug/kg	500					
Di-n-octylphthalate	ND	ug/kg	500					
Diethyl phthalate	ND	ug/kg	500					
Dimethyl phthalate	ND	ug/kg	500					
Benzo(a)anthracene	ND	ug/kg	500					
Benzo(a)pyrene	ND	ug/kg	500					
Benzo(b)fluoranthene	ND	ug/kg	500					
Benzo(k)fluoranthene	ND	ug/kg	500					
Chrysene	ND	ug/kg	500					
Acenaphthylene	ND	ug/kg	500					
Anthracene	ND	ug/kg	500					
Benzo(ghi)perylene	ND	ug/kg	500					
Fluorene	ND	ug/kg	500					
Phenanthrene	ND	ug/kg	500					
Dibenzo(a,h)anthracene	ND	ug/kg	500					
Indeno(1,2,3-cd)pyrene	ND	ug/kg	500					
Pyrene	ND	ug/kg	500					
Aniline	ND	ug/kg	1000					
4-Chloroaniline	ND	ug/kg	500					
1-Methylnaphthalene	ND	ug/kg	500					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	II
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	M
2-Nitroaniline	ND	ug/kg	500					
3-Nitroaniline	ND	ug/kg	500					
4-Nitroaniline	ND	ug/kg	500					
Dibenzofuran	ND	ug/kg	500					
a,a-Dimethylphenethylamine	ND	ug/kg	5000					
Hexachloropropene	ND	ug/kg	5000					
Nitrosodi-n-butylamine	ND	ug/kg	1000					
2-Methylnaphthalene	ND	ug/kg	500					
1,2,4,5-Tetrachlorobenzene	ND	ug/kg	2000					
Pentachlorobenzene	ND	ug/kg	2000					
a-Naphthylamine	ND	ug/kg	2000					
b-Naphthylamine	ND	ug/kg	2000					
Phenacetin	ND	ug/kg	1000					
Dimethoate	ND	ug/kg	2000					
4-Aminobiphenyl	ND	ug/kg	1000					
Pentachloronitrobenzene	ND	ug/kg	1000					
Isodrin	ND	ug/kg	1000					
p-Dimethylaminoazobenzene	ND	ug/kg	1000					
Chlorobenzilate	ND	ug/kg	2000					
3-Methylcholanthrene	ND	ug/kg	2000					
Ethyl Methanesulfonate	ND	ug/kg	1500					
Acetophenone	ND	ug/kg	2000					
Nitrosodipiperidine	ND	ug/kg	2000					
7,12-Dimethylbenz(a)anthracene	ND	ug/kg	1000					
n-Nitrosodimethylamine	ND	ug/kg	5000					
2,4,6-Trichlorophenol	ND	ug/kg	500					
p-Chloro-m-cresol	ND	ug/kg	500					
2-Chlorophenol	ND	ug/kg	500					
2,4-Dichlorophenol	ND	ug/kg	1000					
2,4-Dimethylphenol	ND	ug/kg	1000					
2-Nitrophenol	ND	ug/kg	1000					
4-Nitrophenol	ND	ug/kg	1000					
2,4-Dinitrophenol	ND	ug/kg	2000					
4,6-Dinitro-o-cresol	ND	ug/kg	2000					
Pentachlorophenol	ND	ug/kg	2000					
Phenol	ND	ug/kg	500					
2-Methylphenol	ND	ug/kg	500					
3-Methylphenol/4-Methylphenol	ND	ug/kg	500					
2,4,5-Trichlorophenol	ND	ug/kg	500					
2,6-Dichlorophenol	ND	ug/kg	1000					
Benzoic Acid	ND	ug/kg	5000					
Benzyl Alcohol	ND	ug/kg	1000					
Carbazole	ND	ug/kg	500					
Pyridine	ND	ug/kg	5000					
2-Picoline	ND	ug/kg	2000					
Pronamide	ND	ug/kg	2000					
Methyl methanesulfonate	ND	ug/kg	2000					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	M
Surrogate Recovery								
2-Fluorophenol	48.0	%						
Phenol-d6	59.0	%						
Nitrobenzene-d5	92.0	%						
2-Fluorobiphenyl	98.0	%						
2,4,6-Tribromophenol	83.0	%						
4-Terphenyl-d14	126.	%						
Blank Analysis for sample(s) 07								
PCB/Pesticides				1	8082/8081	11-Dec	16-Dec	P
Delta-BHC	ND	ug/kg	5.00					
Lindane	ND	ug/kg	5.00					
Alpha-BHC	ND	ug/kg	5.00					
Beta-BHC	ND	ug/kg	5.00					
Heptachlor	ND	ug/kg	5.00					
Aldrin	ND	ug/kg	5.00					
Heptachlor epoxide	ND	ug/kg	5.00					
Endrin	ND	ug/kg	5.00					
Endrin aldehyde	ND	ug/kg	5.00					
Endrin ketone	ND	ug/kg	5.00					
Dieldrin	ND	ug/kg	5.00					
4,4'-DDE	ND	ug/kg	5.00					
4,4'-DDD	ND	ug/kg	5.00					
4,4'-DDT	ND	ug/kg	5.00					
Endosulfan I	ND	ug/kg	5.00					
Endosulfan II	ND	ug/kg	5.00					
Endosulfan sulfate	ND	ug/kg	5.00					
Methoxychlor	ND	ug/kg	5.00					
Toxaphene	ND	ug/kg	20.0					
Chlordane	ND	ug/kg	20.0					
cis-Chlordane	ND	ug/kg	5.00					
trans-Chlordane	ND	ug/kg	5.00					
Aroclor 1221	ND	ug/kg	25.0					
Aroclor 1232	ND	ug/kg	25.0					
Aroclor 1242/1016	ND	ug/kg	25.0					
Aroclor 1248	ND	ug/kg	25.0					
Aroclor 1254	ND	ug/kg	25.0					
Aroclor 1260	ND	ug/kg	25.0					
Surrogate Recovery								
2,4,5,6-Tetrachloro-m-xylene	48.0	%						
Decachlorobiphenyl	57.0	%						

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

4. Methods for Chemical Analysis of Water and Wastes. EPA 600/4-82-055. 1982.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

CDM Analytical Laboratory

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Cambridge, MA 02139

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Fax: (617) 354-0764

Field Log #: _____ Page 1 of 1

Client: Town of Waltham
Address: Lloyd Ave Waltham, MA
SDG#: 981210-1671 gw2560-
Project Name: Waltham Landfill
TAT: Standard
Project #:
Phone: 617-252-8481
TAT Approved by:
Contact: Paul Tamasi - CDM
Fax #:
Lab Accl. #:
Report to: Paul Tamasi
Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX S - Soil W - Water D - Drinking	# OF CONT.	CDM SAMPLE ID See Attached SDG DR for Aliquot #'s & CDM Bottle Id's	VOA 524.2	VOA 624/8240	VOA 8260	VOA Other	SEMI VOA 525	SEMI VOA 625/8270 A, B/N, AB/N	SEMI VOA PAH	SEMI VOA Other	MISC PEST / PCB	MISC TPH 418.1	MISC PET ID	METALS PP13	METALS RCRA 8	METALS Other	METALS Filtered (Y/N)	OTHER Sub to Alpha Soils	OTHER Sub to Alpha GW
CDM4	12/10/98	10:30	W	4	98-08777															Y		✓
CDM4A		11:00	W	4	98-08778 X																	✓
Stream 1		10:15	W	4	98-08779																	✓
CDM3A		11:45	W	4	98-08780 X																	✓
COVE 1		11:15	W	4	98-08781																	✓
COVE 2		12:15	W	4	98-08782																	✓
Sed 1		12:30	S	2	98-08783																✓	
Sed 2		12:35	S	2																	✓	
Sed 3		12:40	S	2																	✓	
X CDM-3A + CDM-4A are not filtered																						

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (_____) TICS ☐

	Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
	[signature]	12/10/98	1500	[signature]	12/10/98	1500
	Relinquished by: R. Lally	12/10/98	1630	[signature]	12/10/98	16:25
	Relinquished by: [signature]	12/10/98		Received by: [signature]	12/11/98	1125

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Soils - Please composite 3 samples and run composite sample for Total metals, 8260, 8270, and 418.1 (TPH). ~~Please filter metals.~~ Waltham-CDM-013

GW - Run all water samples for HACH 8000 (COD) EPA 353.2 (Nitrate) EPA 9038 (Sulfate)
SM 2540C (TDS) EPA 9012 (Cyanide) EPA 6010A (Landfill metals)
SM 2320B (Alkalinity) EPA 9251 (Chloride) EPA 7470A (Mercury)

~~12/10/98 Soils Sub to Alpha~~

Chain of Custody

Chain of Custody

CDM Analytical Laboratory | 840 Memorial Drive, Cambridge, MA 02139 | Phone: (617) 354-4448 | Fax: (617) 354-0764 | Field Log # _____ | Page 1 of 1

Client: Town of Waltham | Address: Ward Ave, Waltham, MA | SDG#: 981210-1671 gw2560

Project Name: Waltham Landfill | TAT: Standard

Project #: | Phone: 617-252-8481 | TAT Approved by:

Contact: Paul Tamasi - CDM | Fax #: | Lab Acct. #:

Report to: Paul Tamasi | Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: Other	METALS: Filtered (Y/N)	OTHER: Sediment Soils	OTHER: Sediment Sediment bottles
CDM4	12/10/98	10:30	W	4	98-08777															Y		✓
CDM4A		11:00	W	4	98-08778 X																	✓
Stream 1		10:15	W	4	98-08779																	✓
CDM3A		11:45	W	4	98-08780 X																	✓
COVE 1		11:15	W	4	98-08781																	✓
COVE 2		12:15	W	4	98-08782																	✓
Sed 1		12:30	S	2	98-08783																✓	
Sed 2		12:35	S	2																	✓	
Sed 3		12:40	S	2																	✓	
X CDM-3A + CDM-4A are not filtered																						

A - HCl | D - NaOH | P - Plastic

B - HNO_3 | E - NaThio | G - Glass

C - H_2SO_4 | F - Other | V - Vial

Container Type:

Preservative:

Volume:

Samples Received:

- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:

- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (_____) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	12/10/98	1500	[signature]	12/10/98	1530
Relinquished by: [signature]	12/10/98	1630	Received by: [signature]	12/10/98	16:25
Relinquished by:	Date	Time	Received by:	Date	Time

Shipper/Airbill#: | Custody Seal#: | Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Soils - Please composite 3 samples and run composite sample for - Total metals, 8260, 8270, and 418.1 (TPH). ~~(Please filter metals!)~~ Waltham-CDM-013

GW - Run all water samples for HACH 8000 (COD) EPA 353.2 (Nitrate) EPA 9038 (Sulfate)
SM 2540C (TDS) EPA 9012 (Cyanide) EPA 6010A (Landfill metals)
SM 2320B (Alkalinity) EPA 9251 (Chloride) EPA 7470A (Mercury)

~~12/10/98 Soils Sub to Alpha~~

Waltham, Massachusetts

Comprehensive Site Assessment
Waltham Landfill

Volume II: Appendices F Through N

October 1999

Appendix F

Water Quality Analytical Data, Round 1

Client: City of Waltham

Project: Waltham landfill

SDG: 980519-632

Date: 6/4/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980519-632	**Print Date:**	6/4/98
Client:	City of Waltham	**Client Contact:**	JIM LAUERA
Project:	Waltham landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Cove 1	05/19/98	05/19/98	98-04379	AQUEOUS
Cove 2	05/19/98	05/19/98	98-04380	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	3.2	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	91.14	86 - 115
Dibromofluoromethane	99.24	86 - 118
Toluene-d8	94.98	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	260	
Iron	25	5100	
Manganese	5.0	190	
Zinc	20	91	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	1.7	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	110.40	86 - 115
Dibromofluoromethane	104.22	86 - 118
Toluene-d8	105.76	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	230	
Iron	25	5800	
Manganese	5.0	140	
Zinc	20	86	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Preparation Batch: P980526/9012_AQ_P/22 Prep. Analyst: DEVLINHA

Component Name: Cyanide, Total EPA Method #: EPA 9012 Matrix: AQUEOUS
Analytical Batch: I980526/9012_AQUE/22 Analyst: DEVLINHA Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.015	<0.015	1	
Cove 2	98-04380	0.015	<0.015	1	

Component Name: Nitrate EPA Method #: EPA 353.2 Matrix: AQUEOUS
Analytical Batch: I980521/353.2_AQU/65 Analyst: DEVLINHA Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.050	0.36	1	
Cove 2	98-04380	0.050	0.22	1	

Component Name: Total Dissolved Solids EPA Method #: SM 2540C Matrix: AQUEOUS
Analytical Batch: I980529/2540C_AQU/41 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.0	340	1	
Cove 2	98-04380	5.0	280	1	

Component Name: Alkalinity EPA Method #: SM 2320B Matrix: AQUEOUS
Analytical Batch: I980601/2320B_AQU/36 Analyst: NGUYENMH Units: mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 6/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.0	180	1	
Cove 2	98-04380	5.0	160	1	

Component Name: COD EPA Method #: HACH 8000 Matrix: AQUEOUS
Analytical Batch: I980603/8000_AQUE/35 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 6/3/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.0	57	1	
Cove 2	98-04380	5.0	140	1	

Component Name: Chloride EPA Method #: EPA 9251 Matrix: AQUEOUS
Analytical Batch: I980603/9251_AQUE/15 Analyst: DEVLINHA Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 6/3/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	1.0	60	1	
Cove 2	98-04380	1.0	50	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Component Name:	Sulfate	EPA Method #:	EPA 9038	Matrix:	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	10	36	1	
Cove 2	98-04380	10	43	1	

PREPARATION INFORMATION REPORT

SDG #: 980519-632

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030 EPA Method #: EPA 5030
Batch Approved By: GOTTSHALLDL Batch Approved On: 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Cove 2	98-04380	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep EPA Method #: EPA 9012
Batch Approved By: GOTTSHALLDL Batch Approved On: 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 EPA Method #: 3015
Batch Approved By: GOTTSHALLDL Batch Approved On: 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/28/98
Cove 2	98-04380	05/19/98	05/19/98		05/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/26/98
Cove 2	98-04380	05/19/98	05/19/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/20/98
Cove 2	98-04380	05/19/98	05/19/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/29/98	06/01/98
Cove 2	98-04380	05/19/98	05/19/98	05/29/98	06/01/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/22/98	05/22/98
Cove 2	98-04380	05/19/98	05/19/98	05/22/98	05/22/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/21/98	05/21/98
Cove 2	98-04380	05/19/98	05/19/98	05/21/98	05/21/98

HOLDTIME SUMMARY

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/03/98
Cove 2	98-04380	05/19/98	05/19/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	98-04415	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980521/353.2_AQU/65
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	P980524/5030/361
Lab Sample ID:	B98-03066	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980524/8260A_AQU/261
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	Prep Analyst:	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980526/9012_AQUE/22
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03208	Prep Analyst:	
EPA Number:	SM 2540C		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03282	Prep Analyst:	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	Analytical Batch ID:	I980601/2320B_AQU/36
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/1/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	P980601/3015/121
Lab Sample ID:	B98-03298	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.0	<5.0	
Iron	25	<25	
Manganese	5.0	<5.0	

6010A_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	P980601/3015/121
Lab Sample ID:	B98-03298	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03346	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03348	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03352	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03354	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03356	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03379	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	B98-03381	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03016	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980521/353.2_AQU/65
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	P980526/9012_AQ_P/22
Lab Sample ID:	QCS98-03098	Prep. Analyst:	DEVLINHA
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980526/9012_AQUE/22
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03209	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980529/2540C_AQU/41
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03283
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980601/2320B_AQU/36
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	140	104.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03347
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03349
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03353	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03355	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03357	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03380	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
Lab Sample ID:	QCS98-03384	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	LFB98-03067	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980524/8260A_AQU/261
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.0	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.0	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.0	1000.00	93.8			80 - 120		
Iron	25	200.00	103.5			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-04310		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	P980526/9012_AQ_P/22
EPA Method #:	EPA 9012	Prep. Analyst:	DEVLINHA
Lab Sample ID:	98-04319		
Units:	mg/L	Analytical Batch ID:	I980526/9012_AQUE/22
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04319		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	SM 2320B	Prep. Analyst:	
Lab Sample ID:	98-04353		
Units:	mg/L CaCO3	Analytical Batch ID:	I980601/2320B_AQU/36
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	<5.0	<5.0	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/1/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-04379		
Units:	mg/L	Analytical Batch ID:	I980521/353.2_AQU/65
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-04401		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-04404		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04405		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	P980601/3015/121
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.0	120	130	4.672	0 - 20	
Iron	25	810	1100	27.144	0 - 20	
Manganese	5.0	380	400	4.779	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	SM 2320B	Prep. Analyst:	
Lab Sample ID:	98-04444		
Units:	mg/L CaCO3	Analytical Batch ID:	I980601/2320B_AQU/36
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	15	16	3.279	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

353.2_AQUEOUS MS/MSD RPD REPORT

SDG #: 980519-632
Lab Sample ID: 98-04379
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980521/353.2_AQU/65
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	% Analyte Recovery MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Nitrate	99			80 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/26/98

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Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
2320B_AQUEOUS	Alkalinity	mg/L CaCO3	180	160
2540C_AQUEOUS	Total Dissolved Solids	mg/L	340	280
353.2_AQUEOUS	Nitrate	mg/L	0.36	0.22
6010A_AQUEOUS	Barium	ug/L	260	230
	Iron	ug/L	5100	5800
	Manganese	ug/L	190	140
	Zinc	ug/L	91	86
8000_AQUEOUS	COD	mg/L	57	140
8260A_AQUEOUS	1,1,1,2-Tetrachloroet	ug/L	<1.0	<1.0
	1,1,1-Trichloroethane	ug/L	<1.0	<1.0
	1,1,2,2-Tetrachloroet	ug/L	<1.0	<1.0
	1,1,2-Trichloroethane	ug/L	<1.0	<1.0
	1,1-Dichloroethane	ug/L	<1.0	<1.0
	1,1-Dichloroethene	ug/L	<1.0	<1.0
	1,1-Dichloropropene	ug/L	<1.0	<1.0
	1,2,3-Trichlorobenzen	ug/L	<1.0	<1.0
	1,2,3-Trichloropropan	ug/L	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	1,2,4-Trichlorobenzen	ug/L	<1.0	<1.0
	1,2,4-Trimethylbenze	ug/L	<1.0	<1.0
	1,2-Dibromo-3-chloro	ug/L	<1.0	<1.0
	1,2-Dibromoethane	ug/L	<1.0	<1.0
	1,2-Dichlorobenzene	ug/L	<1.0	<1.0
	1,2-Dichloroethane	ug/L	<1.0	<1.0
	1,2-Dichloropropane	ug/L	<1.0	<1.0
	1,3,5-Trimethylbenze	ug/L	<1.0	<1.0
	1,3-Dichlorobenzene	ug/L	<1.0	<1.0
	1,3-Dichloropropane	ug/L	<1.0	<1.0
	1,4-Dichlorobenzene	ug/L	<1.0	<1.0
	2,2-Dichloropropane	ug/L	<1.0	<1.0
	2-Butanone	ug/L	<20	<20
	2-Chlorotoluene	ug/L	<1.0	<1.0
	2-Hexanone	ug/L	<20	<20
	4-Chlorotoluene	ug/L	<1.0	<1.0
	4-Methyl-2-pentanone	ug/L	<20	<20

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	Acetone	ug/L	<20	<20
	Benzene	ug/L	<1.0	<1.0
	Bromobenzene	ug/L	<1.0	<1.0
	Bromochloromethane	ug/L	<1.0	<1.0
	Bromodichloromethan	ug/L	<1.0	<1.0
	Bromoform	ug/L	<1.0	<1.0
	Bromomethane	ug/L	<5.0	<5.0
	Carbon tetrachloride	ug/L	<1.0	<1.0
	Chlorobenzene	ug/L	<1.0	<1.0
	Chloroethane	ug/L	<5.0	<5.0
	Chloroform	ug/L	<5.0	<5.0
	Chloromethane	ug/L	<5.0	<5.0
	cis-1,2-Dichloroethen	ug/L	<1.0	<1.0
	cis-1,3-Dichloroprope	ug/L	<1.0	<1.0
	Dibromochloromethan	ug/L	<1.0	<1.0
	Dibromomethane	ug/L	<1.0	<1.0
	Dichlorodifluorometha	ug/L	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	Ethylbenzene	ug/L	<1.0	<1.0
	Hexachlorobutadiene	ug/L	<1.0	<1.0
	Isopropylbenzene	ug/L	<1.0	<1.0
	Isopropylmethylbenze	ug/L	<1.0	<1.0
	m- and p-Xylenes	ug/L	<1.0	<1.0
	Methyl tert-butyl ethe	ug/L	3.2	1.7
	Methylene chloride	ug/L	<5.0	<5.0
	n-Butylbenzene	ug/L	<1.0	<1.0
	n-Propylbenzene	ug/L	<1.0	<1.0
	Naphthalene	ug/L	<1.0	<1.0
	o-Xylene	ug/L	<1.0	<1.0
	sec-Butylbenzene	ug/L	<1.0	<1.0
	Styrene	ug/L	<1.0	<1.0
	tert-Butylbenzene	ug/L	<1.0	<1.0
	Tetrachloroethene	ug/L	<1.0	<1.0
	Toluene	ug/L	<1.0	<1.0
	trans-1,2-Dichloroethe	ug/L	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Description	Id Text		
			Cove 1	Cove 2
Analysis Name	Name	Units	98-04379	98-04380
8260A_AQUEOUS	trans-1,3-Dichloropro	ug/L	<1.0	<1.0
	Trichloroethene	ug/L	<1.0	<1.0
	Trichlorofluoromethan	ug/L	<1.0	<1.0
	Vinyl chloride	ug/L	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	mg/L	<0.015	<0.015
9038_AQUEOUS	Sulfate	mg/L	36	43
9251_AQUEOUS	Chloride	mg/L	60	50

CDM Analytical Laboratory

840 Memorial Drive
Cambridge, MA 02139
Phone: (617) 354-4448
Fax: (617) 354-0764

Field Log # QF 1447 Page 1 of 1

Client: City of Waltham
Project Name: Waltham Landfill
Project #:
Contact: Sampled by CRB
Report to: Jim Lavila
Bill to:

Address:
Phone: 250-8368 - Burns
Fax #:

SDG#: 980519-632
TAT: STD
TAT Approved by: JB
Lab Acct. #:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: Other	METALS: Filtered (Y/N)	OTHER: CN0	OTHER: Cr+6 chrom	OTHER	OTHER: See below	OTHER	OTHER	OTHER
Cave 1	5/19/98	1:30	W	6	98-04379			✓										✓			~	✓		J			
Cave 2	↓	1:50	↓	↓	98-04380			✓										✓			✓	✓		J			
MW4	↓	3:15	↓	↓	98-04381			✓										✓			✓	✓		J			
										CANCEL				MW4		PER											
										LARRY				WEBSTER		OF											
										CRB				5/20/98		2D											

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature: ____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (____) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
			[illegible].com	5/19/98	1600
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☒ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Chlorides Sulfate Nitrate Nitrogen TDS — Alkalinity Iron - Barium - Zinc - manganese - Total cyanide

Chain of Custody

Client: City of Waltham
Project: Waltham Landfill
SDG: 980518-620
Date: 6/5/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980518-620	**Print Date:**	6/5/98
Client:	City of Waltham	**Client Contact:**	JIM LAMERIA
Project:	Waltham Landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

BATCH NOTES

TDS: I980529/2540C_AQU/41

Samples 98-04310, 98-04319, 98-04320, 98-04321, and 98-04322 were all analyzed one day beyond the EPA recommended maximum holding time due to intervening holiday and laboratory oversight.

RESULT NOTES

98-04319, 4320, 4322 (Iron) E qualifier = determined concentration exceeds system calibration linear range; samples were reanalyzed diluted and the additional results are reported in the single component report (p.18 of 39).

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, RA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
CDM 2	05/18/98	05/18/98	98-04319	AQUEOUS
Duplicate	05/18/98	05/18/98	98-04321	AQUEOUS
CDM 1	05/18/98	05/18/98	98-04320	AQUEOUS
CDM 4	05/18/98	05/18/98	98-04322	AQUEOUS
Trip Blank	05/18/98	05/18/98	98-04323	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	96.92	86 - 115
Dibromofluoromethane	100.32	86 - 118
Toluene-d8	99.58	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	590	
Iron	25	26000	E
Manganese	5.0	540	
Zinc	20	470	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	87.58	86 - 115
Dibromofluoromethane	92.52	86 - 118
Toluene-d8	101.44	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	260	
Iron	25	38000	E
Manganese	5.0	1500	
Zinc	20	380	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	89.62	86 - 115
Dibromofluoromethane	94.16	86 - 118
Toluene-d8	97.48	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	110	
Iron	25	11000	
Manganese	5.0	1300	
Zinc	20	120	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	2.8	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	104.72	86 - 115
Dibromofluoromethane	101.00	86 - 118
Toluene-d8	101.50	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980601/3015/121
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Barium	5.0	5400	
Iron	25	270000	E
Manganese	5.0	1800	
Zinc	20	13000	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/03/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Toluene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	114.36	86 - 115
Dibromofluoromethane	109.76	86 - 118
Toluene-d8	101.30	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Preparation Batch: P980526/9012_AQ_P/22 Prep. Analyst: DEVLINHA

Component Name: Cyanide, Total EPA Method #: EPA 9012 Matrix: AQUEOUS

Analytical Batch: I980526/9012_AQUE/22 Analyst: DEVLINHA Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.015	<0.015	1	
CDM 1	98-04320	0.015	<0.015	1	
Duplicate	98-04321	0.015	<0.015	1	
CDM 4	98-04322	0.015	<0.015	1	

Preparation Batch: P980601/3015/121 Prep. Analyst: LESHINSKYA

Component Name: Iron EPA Method #: EPA 6010A Matrix: AQUEOUS

Analytical Batch: I980603/6010A_AQU/98 Analyst: LESHINSKYA Units: ug/L

Reviewed By - Date: GOTTSHALLDL - 6/4/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	50	27000	2	
CDM 1	98-04320	50	47000	2	
CDM 4	98-04322	500	370000	20	

Component Name: Alkalinity EPA Method #: SM 2320B Matrix: AQUEOUS

Analytical Batch: I980519/2320B_AQU/35 Analyst: DEVLINHA Units: mg/L CaCO3

Reviewed By - Date: GOTTSHALLDL - 5/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.0	660	1	
CDM 1	98-04320	5.0	140	1	
Duplicate	98-04321	5.0	130	1	
CDM 4	98-04322	5.0	900	1	

Component Name: Nitrate EPA Method #: EPA 353.2 Matrix: AQUEOUS

Analytical Batch: I980521/353.2_AQU/65 Analyst: DEVLINHA Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.050	<0.050	1	
CDM 1	98-04320	0.50	4.0	10	
Duplicate	98-04321	0.50	4.0	10	
CDM 4	98-04322	0.050	0.58	1	

Component Name: Total Dissolved Solids EPA Method #: SM 2540C Matrix: AQUEOUS

Analytical Batch: I980529/2540C_AQU/41 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.0	760	1	
CDM 1	98-04320	5.0	240	1	
Duplicate	98-04321	5.0	730	1	
CDM 4	98-04322	5.0	1400	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Component Name:	COD	**EPA Method #:**	HACH 8000	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/8000_AQUE/35	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.0	120	1	
CDM 1	98-04320	5.0	20	1	
Duplicate	98-04321	5.0	31	1	
CDM 4	98-04322	5.0	140	1	

Component Name:	Chloride	**EPA Method #:**	EPA 9251	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/9251_AQUE/15	**Analyst:**	DEVLINHA	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	1.0	22	1	
CDM 1	98-04320	1.0	3.6	1	
Duplicate	98-04321	1.0	3.8	1	
CDM 4	98-04322	1.0	66	1	

Component Name:	Sulfate	**EPA Method #:**	EPA 9038	**Matrix:**	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	10	79	1	
CDM 1	98-04320	10	36	1	
Duplicate	98-04321	10	27	1	
CDM 4	98-04322	10	85	1	

PREPARATION INFORMATION REPORT

SDG #: 980518-620

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030 **EPA Method #:** EPA 5030
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 1	98-04320	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Duplicate	98-04321	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 4	98-04322	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Trip Blank	98-04323	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep **EPA Method #:** EPA 9012
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		DUPLICATE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		MATRIX_SPIKE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/19/98
CDM 1	98-04320	05/18/98	05/18/98		05/19/98
Duplicate	98-04321	05/18/98	05/18/98		05/19/98
CDM 4	98-04322	05/18/98	05/18/98		05/19/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/26/98
CDM 1	98-04320	05/18/98	05/18/98		05/26/98
Duplicate	98-04321	05/18/98	05/18/98		05/26/98
CDM 4	98-04322	05/18/98	05/18/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/20/98
CDM 1	98-04320	05/18/98	05/18/98		05/20/98
Duplicate	98-04321	05/18/98	05/18/98		05/20/98
CDM 4	98-04322	05/18/98	05/18/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/29/98	06/01/98
				05/29/98	06/04/98
CDM 1	98-04320	05/18/98	05/18/98	05/29/98	06/01/98
				05/29/98	06/04/98
Duplicate	98-04321	05/18/98	05/18/98	05/29/98	06/01/98
CDM 4	98-04322	05/18/98	05/18/98	05/29/98	06/01/98
				05/29/98	06/04/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

HOLDTIME SUMMARY

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/22/98	05/22/98
CDM 1	98-04320	05/18/98	05/18/98	05/22/98	05/22/98
Duplicate	98-04321	05/18/98	05/18/98	05/22/98	05/22/98
CDM 4	98-04322	05/18/98	05/18/98	05/22/98	05/22/98
Trip Blank	98-04323	05/18/98	05/18/98	05/22/98	05/22/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/21/98	05/21/98
CDM 1	98-04320	05/18/98	05/18/98	05/21/98	05/21/98
Duplicate	98-04321	05/18/98	05/18/98	05/21/98	05/21/98
CDM 4	98-04322	05/18/98	05/18/98	05/21/98	05/21/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/03/98
CDM 1	98-04320	05/18/98	05/18/98		06/03/98
Duplicate	98-04321	05/18/98	05/18/98		06/03/98
CDM 4	98-04322	05/18/98	05/18/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-02935	Prep Analyst:	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	Analytical Batch ID:	I980519/2320B_AQU/35
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/19/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	98-04415	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980521/353.2_AQU/65
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	P980524/5030/361
Lab Sample ID:	B98-03066	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980524/8260A_AQU/261
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	**Prep Analyst:**	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	P980601/3015/121
Lab Sample ID:	B98-03298	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.0	<5.0	
Iron	25	<25	
Manganese	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03346	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03348	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03352	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03354	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03356	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03379	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-02936	**Prep. Analyst:**	
Units:	mg/L CaCO3		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980519/2320B_AQU/35
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	130	99.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03016	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980521/353.2_AQU/65
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	QCS98-03098	**Prep. Analyst:**	DEVLINHA
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980526/9012_AQUE/22
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03209	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980529/2540C_AQU/41
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03347	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03349	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03353	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03355	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03357	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03380	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	QCS98-03384	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	LFB98-03067	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980524/8260A_AQU/261
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.0	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.0	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.0	1000.00	93.8			80 - 120		
Iron	25	200.00	103.5			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	SM 2320B	Prep. Analyst:	
Lab Sample ID:	98-02644		
Units:	mg/L CaCO3	Analytical Batch ID:	I980519/2320B_AQU/35
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	24	24	0	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/19/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-04310		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	P980526/9012_AQ_P/22
EPA Method #:	EPA 9012	Prep. Analyst:	DEVLINHA
Lab Sample ID:	98-04319		
Units:	mg/L	Analytical Batch ID:	I980526/9012_AQUE/22
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04319		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-04379		
Units:	mg/L	Analytical Batch ID:	I980521/353.2_AQU/65
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-04401		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-04404		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04405		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	P980601/3015/121
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.0	120	130	4.672	0 - 20	
Iron	25	810	1100	27.144	0 - 20	
Manganese	5.0	380	400	4.779	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04320
Matrix: AQUEOUS

Preparation Batch ID: P980524/5030/361
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980524/8260A_AQU/261
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	112			61 - 145		
Benzene	111			76 - 127		
Chlorobenzene	104			75 - 130		
Toluene	99			76 - 125		
Trichloroethene	106			71 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/26/98

9012_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04319
Matrix: AQUEOUS

Preparation Batch ID: P980526/9012_AQ_P/22
Prep. Analyst: DEVLINHA

Analytical Batch ID: I980526/9012_AQUE/22
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Cyanide, Total	94			80 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/26/98

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Laboratory Summary Report

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
2320B_AQUEOUS	Alkalinity	mg/L CaCO3	140	660	900	130	
2540C_AQUEOUS	Total Dissolved Solids	mg/L	240	760	1400	730	
353.2_AQUEOUS	Nitrate	mg/L	4.0	<0.050	0.58	4.0	
6010A_AQUEOUS	Barium	ug/L	260	590	5400	110	
	Iron	ug/L	38000	27000	370000	11000	
	Manganese	ug/L	1500	540	1800	1300	
	Zinc	ug/L	380	470	13000	120	
8000_AQUEOUS	COD	mg/L	20	120	140	31	
8260A_AQUEOUS	1,1,1,2-Tetrachloroeth	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2,2-Tetrachloroeth	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	1,2,4-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,4-Trimethylbenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromo-3-chlorop	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3,5-Trimethylbenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	2,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Butanone	ug/L	<20	<20	<20	<20	<20
	2-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Hexanone	ug/L	<20	<20	<20	<20	<20
	4-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	4-Methyl-2-pentanone	ug/L	<20	<20	<20	<20	<20

Laboratory Summary Report

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Acetone	ug/L	<20	<20	<20	<20	<20
	Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromomethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	Carbon tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Chlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Chloroethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloroform	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloromethane	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	cis-1,2-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	cis-1,3-Dichloropropen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromochloromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Dichlorodifluorometha	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Hexachlorobutadiene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylmethylbenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	m- and p-Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Methyl tert-butyl ether	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Methylene chloride	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0
	n-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	n-Propylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Naphthalene	ug/L	<1.0	<1.0	2.8	<1.0	<1.0
	o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	sec-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	tert-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	trans-1,2-Dichloroethe	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980518-620

	Description	Id Text					
			CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Name	Units	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	trans-1,3-Dichloroprop	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Trichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Trichlorofluoromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
	Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	mg/L	<0.015	<0.015	<0.015	<0.015	
9038_AQUEOUS	Sulfate	mg/L	36	79	85	27	
9251_AQUEOUS	Chloride	mg/L	3.6	22	66	3.8	

Laboratory Summary Report

Client: Dallas Water Utilities

SDG: 980527-692

	Description	Id Text	
			BAICR-1014
Analysis Name	Name	Units	98-04675
5310C_AQUEOUS	TOC	mg/L	2.8

Chain of Custody

CDM Analytical Laboratory 380 Memorial Drive, Cambridge, MA 02139 Phone: (617) 354-4448 Fax: (617) 354-0764

Field Log # Q-1435 Page 1 of 1

Client: City of Waltham Address: SDG#: 980518-620

Project Name: Waltham Landfill TAT: STD

Project #: Phone: 752-8368 Z-BUENS TAT Approved by:

Contact: Sampled by CRB Geological & Environmental Fax#: Lab Acct. #:

Report to: Jim Laurica Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8 *	METALS: Other	METALS: Filtered (Y/N)	OTHER: COD	OTHER: * wet chem
CDM 2	5/18/98	1:20	W	6	98-04319			✓										✓			✓	✓
CDM 1	5/18/98	2:30	W	6	98-04320			✓										✓			✓	✓
Duplicate	5/18/98	2:15	W	6	98-04321			✓										✓			✓	✓
CDM 4	5/18/98	3:00	W	6	98-04322			✓										✓			✓	✓
Trip Blank	5/18/98	3:10	W	1	98-04323			✓														

A - HCl D - NaOH P - Plastic

B - HNO_3 E - NaThio G - Glass

C - H_2SO_4 F - Other V - Vial

Container Type:

Preservative:

Volume:

Samples Received:
- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (_____) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
	5/18/98	4:40		5/18	4:40
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:

* Chlorids
Sulfate
Nitrate nitroges
TDS

Alkalinity
Iron
Barium
Zinc

Manganese
Total cyanide

Client: City of Waltham

Project: Waltham landfill

SDG: 980522-643

Date: 6/24/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980522-643	**Print Date:**	6/24/98
Client:	City of Waltham	**Client Contact:**	
Project:	Waltham landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

BATCH NOTES

VOA: I980608/8260A_AQU/265; Trip blank was analyzed twice to confirm Acetone hit. Second analysis was taken from same vial as original run. Only one vial was submitted. Acetone was not detected in any of the associated samples.

RESULT NOTES

Metals: Samples originally submitted for Fe, Ba, Zn, Mn analyses; additional testing (RCRA8 + Fe, Mn, Cu, Zn) was required and is included in this report. Note sample 98-04434 contained appreciable amount of sediment in the sample. Sample matrix interference (high levels of target and non-target analytes) hindered analysis of some constituents; Silver: M qualifier . Iron recovery of Matrix Spike (MS) was hindered due to high sample concentration relative to spike amount (N qualifier).

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: James F Occhialini

LABORATORY QA/QC REVIEW: Peter T May

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Trip Blank	05/21/98	05/22/98	98-04437	AQUEOUS
CDM-1A	05/21/98	05/22/98	98-04433	AQUEOUS
CDM-2A	05/21/98	05/22/98	98-04434	AQUEOUS
CDM-4A	05/21/98	05/22/98	98-04436	AQUEOUS
CDM-3A	05/21/98	05/22/98	98-04435	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-1A		
Lab Sample ID:	98-04433	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-1A		
Lab Sample ID:	98-04433	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	97.54	86 - 115
Dibromofluoromethane	98.84	86 - 118
Toluene-d8	97.54	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-1A		
Lab Sample ID:	98-04433	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	24	
Cadmium	1.0	<1.0	
Chromium	5.0	5.1	
Copper	5.0	8.2	
Iron	25	10000	
Lead	5.0	<5.0	
Manganese	5.0	190	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	34	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-2A		
Lab Sample ID:	98-04434	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-2A		
Lab Sample ID:	98-04434	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	102.30	86 - 115
Dibromofluoromethane	100.12	86 - 118
Toluene-d8	98.66	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-2A		
Lab Sample ID:	98-04434	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	210	
Barium	5.0	570	
Cadmium	1.0	150	
Chromium	5.0	990	
Copper	5.0	680	
Iron	5000	5100000	
Lead	5.0	140	
Manganese	1000	110000	
Selenium	10	<10	
Silver	5.0	<5.0	M
Zinc	20	3600	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-3A		
Lab Sample ID:	98-04435	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	1.9	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	1.3	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	19	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-3A		
Lab Sample ID:	98-04435	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	102.62	86 - 115
Dibromofluoromethane	98.42	86 - 118
Toluene-d8	101.36	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-3A		
Lab Sample ID:	98-04435	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	12	
Barium	5.0	120	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	990	
Lead	5.0	<5.0	
Manganese	5.0	380	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-4A		
Lab Sample ID:	98-04436	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980528/5030/366
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM-4A		
Lab Sample ID:	98-04436	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	99.40	86 - 115
Dibromofluoromethane	98.36	86 - 118
Toluene-d8	95.82	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/28/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980522-643	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM-4A		
Lab Sample ID:	98-04436	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	160	
Cadmium	1.0	1.7	
Chromium	5.0	19	
Copper	5.0	27	
Iron	25	12000	
Lead	5.0	22	
Manganese	5.0	3300	
Selenium	10	11	
Silver	5.0	<5.0	
Zinc	20	57	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980608/5030/370
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04437	**Analytical Batch ID:**	I980608/8260A_AQU/265
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	2		

Component Name	MRL	Result	Qualifiers
Benzene	2.0	<2.0	
Bromobenzene	2.0	<2.0	
Bromochloromethane	2.0	<2.0	
Bromodichloromethane	2.0	<2.0	
Bromoform	2.0	<2.0	
Bromomethane	10	<10	
2-Butanone	40	<40	
n-Butylbenzene	2.0	<2.0	
sec-Butylbenzene	2.0	<2.0	
tert-Butylbenzene	2.0	<2.0	
Carbon tetrachloride	2.0	<2.0	
Chlorobenzene	2.0	<2.0	
Chloroethane	10	<10	
Chloroform	10	<10	
Chloromethane	10	<10	
2-Chlorotoluene	2.0	<2.0	
4-Chlorotoluene	2.0	<2.0	
1,2-Dibromo-3-chloropropane	2.0	<2.0	
1,2-Dibromoethane	2.0	<2.0	
Dibromochloromethane	2.0	<2.0	
Dibromomethane	2.0	<2.0	
1,2-Dichlorobenzene	2.0	<2.0	
1,3-Dichlorobenzene	2.0	<2.0	
1,4-Dichlorobenzene	2.0	<2.0	
Dichlorodifluoromethane	2.0	<2.0	
1,1-Dichloroethane	2.0	<2.0	
1,2-Dichloroethane	2.0	<2.0	
cis-1,2-Dichloroethene	2.0	<2.0	
trans-1,2-Dichloroethene	2.0	<2.0	
1,2-Dichloropropane	2.0	<2.0	
1,3-Dichloropropane	2.0	<2.0	
2,2-Dichloropropane	2.0	<2.0	
1,1-Dichloropropene	2.0	<2.0	
cis-1,3-Dichloropropene	2.0	<2.0	
trans-1,3-Dichloropropene	2.0	<2.0	
Ethylbenzene	2.0	<2.0	
Hexachlorobutadiene	2.0	<2.0	
2-Hexanone	40	<40	
Isopropylbenzene	2.0	<2.0	
4-Methyl-2-pentanone	40	<40	
Methyl tert-butyl ether	2.0	<2.0	
Methylene chloride	10	<10	
Naphthalene	2.0	<2.0	
n-Propylbenzene	2.0	<2.0	
Styrene	2.0	<2.0	
1,1,1,2-Tetrachloroethane	2.0	<2.0	
1,1,2,2-Tetrachloroethane	2.0	<2.0	
Tetrachloroethene	2.0	<2.0	
Toluene	2.0	<2.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/08/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980608/5030/370
SDG #:	980522-643	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04437	**Analytical Batch ID:**	I980608/8260A_AQU/265
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	2		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	2.0	<2.0	
1,2,4-Trichlorobenzene	2.0	<2.0	
1,1,1-Trichloroethane	2.0	<2.0	
1,1,2-Trichloroethane	2.0	<2.0	
Trichloroethene	2.0	<2.0	
Trichlorofluoromethane	2.0	<2.0	
1,2,4-Trimethylbenzene	2.0	<2.0	
1,3,5-Trimethylbenzene	2.0	<2.0	
1,2,3-Trichloropropane	2.0	<2.0	
Vinyl chloride	2.0	<2.0	
m- and p-Xylenes	2.0	<2.0	
o-Xylene	2.0	<2.0	
1,1-Dichloroethene	2.0	<2.0	
Acetone	40	55	
Isopropylmethylbenzene	2.0	<2.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	90.02	86 - 115
Dibromofluoromethane	93.02	86 - 118
Toluene-d8	98.78	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/08/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980522-643

Preparation Batch: P980528/9012_AQ_P/23 Prep. Analyst: NGUYENMH

Component Name: Cyanide, Total EPA Method #: EPA 9012 Matrix: AQUEOUS

Analytical Batch: I980528/9012_AQUE/23 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 5/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	0.015	<0.015	1	
CDM-2A	98-04434	0.015	<0.015	1	
CDM-3A	98-04435	0.015	<0.015	1	
CDM-4A	98-04436	0.015	<0.015	1	

Preparation Batch: P980619/7470A_PRE/78 Prep. Analyst: LESHINSKYA

Component Name: Mercury EPA Method #: EPA 7470A Matrix: AQUEOUS

Analytical Batch: I980619/7470A_AQU/63 Analyst: LESHINSKYA Units: ug/L

Reviewed By - Date: GOTTSHALLDL - 6/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	0.20	<0.20	1	
CDM-2A	98-04434	0.20	0.50	1	
CDM-3A	98-04435	0.20	<0.20	1	
CDM-4A	98-04436	0.20	<0.20	1	

Component Name: Nitrate EPA Method #: EPA 353.2 Matrix: AQUEOUS

Analytical Batch: I980526/353.2_AQU/66 Analyst: DEVLINHA Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	0.050	<0.050	1	
CDM-2A	98-04434	0.050	<0.050	1	
CDM-3A	98-04435	0.050	<0.050	1	
CDM-4A	98-04436	0.050	<0.050	1	

Component Name: Total Dissolved Solids EPA Method #: SM 2540C Matrix: AQUEOUS

Analytical Batch: I980529/2540C_AQU/41 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	5.0	140	1	
CDM-2A	98-04434	5.0	140	1	
CDM-3A	98-04435	5.0	<5.0	1	
CDM-4A	98-04436	5.0	700	1	

Component Name: Alkalinity EPA Method #: SM 2320B Matrix: AQUEOUS

Analytical Batch: I980601/2320B_AQU/36 Analyst: NGUYENMH Units: mg/L CaCO3

Reviewed By - Date: GOTTSHALLDL - 6/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	5.0	74	1	
CDM-2A	98-04434	5.0	79	1	
CDM-3A	98-04435	5.0	150	1	
CDM-4A	98-04436	5.0	300	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980522-643

Component Name:	COD	EPA Method #:	HACH 8000	Matrix:	AQUEOUS
Analytical Batch:	I980603/8000_AQUE/35	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	5.0	48	1	
CDM-2A	98-04434	5.0	66	1	
CDM-3A	98-04435	5.0	7.0	1	
CDM-4A	98-04436	5.0	16	1	

Component Name:	Chloride	EPA Method #:	EPA 9251	Matrix:	AQUEOUS
Analytical Batch:	I980603/9251_AQUE/15	Analyst:	DEVLINHA	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	1.0	11	1	
CDM-2A	98-04434	1.0	4.1	1	
CDM-3A	98-04435	1.0	27	1	
CDM-4A	98-04436	10	200	10	

Component Name:	Sulfate	EPA Method #:	EPA 9038	Matrix:	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM-1A	98-04433	10	<10	1	
CDM-2A	98-04434	10	<10	1	
CDM-3A	98-04435	10	<10	1	
CDM-4A	98-04436	10	<10	1	

PREPARATION INFORMATION REPORT

SDG #: 980522-643

Preparation Batch ID: P980528/5030/366
Preparation ID: 5030
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 5030
Batch Approved On: 5/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM-2A	98-04434	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM-3A	98-04435	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM-4A	98-04436	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980528/9012_AQ_P/23
Preparation ID: 9012_AQ_Prep
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 9012
Batch Approved On: 5/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM-2A	98-04434	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM-3A	98-04435	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM-4A	98-04436	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015
Batch Approved By: GOTTSHALLDL
EPA Method #: 3015
Batch Approved On: 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-2A	98-04434	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-3A	98-04435	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
		DUPLICATE	Final Volume	50	mL	
			Initial Volume	45	mL	
		MATRIX_SPIKE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-4A	98-04436	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980608/5030/370
Preparation ID: 5030
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 5030
Batch Approved On: 6/8/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Trip Blank	98-04437	SAMPLE	Final Volume	25.0	ml	

PREPARATION INFORMATION REPORT

SDG #: 980522-643

Preparation Batch ID: P980608/5030/370
Preparation ID: 5030 EPA Method #: EPA 5030
Batch Approved By: GOTTSHALLDL Batch Approved On: 6/8/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
			Initial Volume	12.5	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980619/3015/136
Preparation ID: 3015 EPA Method #: 3015
Batch Approved By: GOTTSHALLDL Batch Approved On: 6/23/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-2A	98-04434	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-3A	98-04435	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
		DUPLICATE	Final Volume	50	mL	
			Initial Volume	45	mL	
		MATRIX_SPIKE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM-4A	98-04436	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/7470A_PRE/78
Preparation ID: 7470A_PREP EPA Method #: EPA 7470A
Batch Approved By: GOTTSHALLDL Batch Approved On: 6/19/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM-1A	98-04433	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM-2A	98-04434	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM-3A	98-04435	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM-4A	98-04436	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		05/28/98
CDM-2A	98-04434	05/21/98	05/22/98		05/28/98
CDM-3A	98-04435	05/21/98	05/22/98		05/28/98
CDM-4A	98-04436	05/21/98	05/22/98		05/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		05/26/98
CDM-2A	98-04434	05/21/98	05/22/98		05/26/98
CDM-3A	98-04435	05/21/98	05/22/98		05/26/98
CDM-4A	98-04436	05/21/98	05/22/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		05/22/98
CDM-2A	98-04434	05/21/98	05/22/98		05/22/98
CDM-3A	98-04435	05/21/98	05/22/98		05/22/98
CDM-4A	98-04436	05/21/98	05/22/98		05/22/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	05/28/98	06/01/98
CDM-2A	98-04434	05/21/98	05/22/98	05/28/98	06/01/98
CDM-3A	98-04435	05/21/98	05/22/98	05/28/98	06/01/98
CDM-4A	98-04436	05/21/98	05/22/98	05/28/98	06/01/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	06/18/98	06/18/98
CDM-2A	98-04434	05/21/98	05/22/98	06/18/98	06/18/98
CDM-3A	98-04435	05/21/98	05/22/98	06/18/98	06/18/98
CDM-4A	98-04436	05/21/98	05/22/98	06/18/98	06/18/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		06/02/98

HOLDTIME SUMMARY

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-2A	98-04434	05/21/98	05/22/98		06/02/98
CDM-3A	98-04435	05/21/98	05/22/98		06/02/98
CDM-4A	98-04436	05/21/98	05/22/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	05/27/98	05/27/98
CDM-2A	98-04434	05/21/98	05/22/98	05/27/98	05/27/98
CDM-3A	98-04435	05/21/98	05/22/98	05/27/98	05/27/98
CDM-4A	98-04436	05/21/98	05/22/98	05/27/98	05/27/98
Trip Blank	98-04437	05/21/98	05/22/98	05/28/98	05/28/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98	05/27/98	05/28/98
CDM-2A	98-04434	05/21/98	05/22/98	05/27/98	05/28/98
CDM-3A	98-04435	05/21/98	05/22/98	05/27/98	05/28/98
CDM-4A	98-04436	05/21/98	05/22/98	05/27/98	05/28/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		06/03/98
CDM-2A	98-04434	05/21/98	05/22/98		06/03/98
CDM-3A	98-04435	05/21/98	05/22/98		06/03/98
CDM-4A	98-04436	05/21/98	05/22/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM-1A	98-04433	05/21/98	05/22/98		06/02/98
CDM-2A	98-04434	05/21/98	05/22/98		06/02/98
CDM-3A	98-04435	05/21/98	05/22/98		06/02/98
CDM-4A	98-04436	05/21/98	05/22/98		06/02/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	98-04597	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980526/353.2_AQU/66
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	P980528/5030/366
Lab Sample ID:	B98-03191	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980528/8260A_AQU/264
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/5030/366
Lab Sample ID:	B98-03191	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980528/8260A_AQU/264
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

9012_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	P980528/9012_AQ_P/23
Lab Sample ID:	B98-03199	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980528/9012_AQUE/23
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/28/98

9012_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	P980528/9012_AQ_P/23
Lab Sample ID:	B98-03201	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980528/9012_AQUE/23
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/28/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03208	Prep Analyst:	
EPA Number:	SM 2540C		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03282	Prep Analyst:	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	Analytical Batch ID:	I980601/2320B_AQU/36
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/1/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	P980601/3015/121
Lab Sample ID:	B98-03298	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.0	<5.0	
Iron	25	<25	
Manganese	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03346	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03348	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03352	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03354	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03356	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	B98-03379	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980608/5030/370
Lab Sample ID:	B98-03468	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980608/8260A_AQU/265
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980608/5030/370
Lab Sample ID:	B98-03468	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980608/8260A_AQU/265
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/8/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	B98-03772	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	<5.0	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	B98-03779	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	QCS98-03095	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980526/353.2_AQU/66
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	0.86	97.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	P980528/9012_AQ_P/23
Lab Sample ID:	QCS98-03200	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980528/9012_AQUE/23
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	94.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/28/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	P980528/9012_AQ_P/23
Lab Sample ID:	QCS98-03202	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980528/9012_AQUE/23
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.20	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/28/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03209
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980529/2540C_AQU/41
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/29/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03283
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980601/2320B_AQU/36
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	140	104.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980522-643
Lab Sample ID: QCS98-03347
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	QCS98-03349	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	QCS98-03353	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	QCS98-03355	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	QCS98-03357	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980603/8000_AQUE/35
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	QCS98-03380	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
Lab Sample ID:	QCS98-03384	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980528/5030/366
Lab Sample ID:	LFB98-03192	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980528/8260A_AQU/264
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	103.4	109.3	5.51	61 - 145	0 - 14	
Benzene	1.0	50.00	107.4	110.4	2.70	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	109.4	110.2	0.75	75 - 130	0 - 13	
Toluene	1.0	50.00	97.1	102.0	4.96	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	105.6	107.8	2.08	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/28/98

SDG #:	980522-643	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.0	1000.00	93.8			80 - 120		
Iron	25	200.00	103.5			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

SDG #:	980522-643	**Preparation Batch ID:**	P980608/5030/370
Lab Sample ID:	LFB98-03469	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980608/8260A_AQU/265
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	110.2	104.3	5.54	61 - 145	0 - 14	
Benzene	1.0	50.00	109.8	106.8	2.71	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	108.4	107.6	0.78	75 - 130	0 - 13	
Toluene	1.0	50.00	105.5	107.8	2.21	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	108.0	106.6	1.34	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/8/98

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980522-643	Preparation Batch ID:	P980619/3015/136
Lab Sample ID:	LFB98-03773	Prep. Analyst:	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980619/6010A_AQU/107
Units:	ug/L	Analyst:	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.0	100.00	100.4			80 - 120		
Barium	5.0	1000.00	93.8			80 - 120		
Cadmium	1.0	50.00	89.4			80 - 120		
Chromium	5.0	100.00	91.8			80 - 120		
Copper	5.0	100.00	98.6			80 - 120		
Iron	25	200.00	103.3			80 - 120		
Lead	5.0	100.00	88.2			80 - 120		
Manganese	5.0	100.00	88.4			80 - 120		
Selenium	10	50.00	111.3			80 - 120		
Silver	5.0	100.00	106.3			80 - 120		
Zinc	20	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/23/98

SDG #:	980522-643	Preparation Batch ID:	P980619/7470A_PRE/78
Lab Sample ID:	LFB98-03778	Prep. Analyst:	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980619/7470A_AQU/63
Units:	ug/L	Analyst:	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.2	5.00	97.6			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/19/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-04310		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	P980619/7470A_PRE/78
EPA Method #:	EPA 7470A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-04319		
Units:	ug/L	Analytical Batch ID:	I980619/7470A_AQU/63
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	0.22	0.26	20.238	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/19/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04319		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	SM 2320B	Prep. Analyst:	
Lab Sample ID:	98-04353		
Units:	mg/L CaCO3	Analytical Batch ID:	I980601/2320B_AQU/36
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	<5.0	<5.0	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/1/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	P980528/9012_AQ_P/23
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-04398		
Units:	mg/L	Analytical Batch ID:	I980528/9012_AQUE/23
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/28/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-04401		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-04402		
Units:	mg/L	Analytical Batch ID:	I980526/353.2_AQU/66
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	1.2	1.2	0.722	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-04404		
Units:	mg/L	Analytical Batch ID:	I980529/2540C_AQU/41
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04405		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	P980601/3015/121
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	Analytical Batch ID:	I980602/6010A_AQU/95
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.0	120	130	4.672	0 - 20	
Iron	25	810	1100	27.144	0 - 20	

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980601/3015/121
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Manganese	5.0	380	400	4.779	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	P980619/3015/136
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.0	12	12	6.193	0 - 20	
Barium	5.0	120	130	4.672	0 - 20	
Cadmium	1.0	<1.0	<1.0	N/A	0 - 20	
Chromium	5.0	<5.0	<5.0	N/A	0 - 20	
Copper	5.0	<5.0	<5.0	N/A	0 - 20	
Iron	25	990	1100	7.863	0 - 20	
Lead	5.0	<5.0	<5.0	N/A	0 - 20	
Manganese	5.0	380	400	4.779	0 - 20	
Selenium	10	<10	<10	N/A	0 - 20	
Silver	5.0	<5.0	<5.0	N/A	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04444		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	15	16	3.279	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980522-643	Preparation Batch ID:	P980528/9012_AQ_P/23
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-04452		
Units:	mg/L	Analytical Batch ID:	I980528/9012_AQUE/23
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/28/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980522-643
Lab Sample ID: 98-04434
Matrix: AQUEOUS

Preparation Batch ID: P980528/5030/366
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980528/8260A_AQU/264
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	115			61 - 145		
Benzene	110			76 - 127		
Chlorobenzene	109			75 - 130		
Toluene	102			76 - 125		
Trichloroethene	107			71 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 5/28/98

6010A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980522-643
Lab Sample ID: 98-04435
Matrix: AQUEOUS

Preparation Batch ID: P980601/3015/121
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980602/6010A_AQU/95
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Barium	91			80 - 120		
Iron	228			80 - 120		N
Manganese	97			80 - 120		
Zinc	91			80 - 120		
Arsenic	98			80 - 120		
Barium	91			80 - 120		
Cadmium	86			80 - 120		
Chromium	88			80 - 120		
Copper	96			80 - 120		
Iron	149			80 - 120		N
Lead	89			80 - 120		
Manganese	97			80 - 120		
Selenium	111			80 - 120		
Silver	103			80 - 120		
Zinc	91			80 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/23/98

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Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
2320B_AQUEOUS	Alkalinity	mg/L CaCO3	74	79	150	300	
2540C_AQUEOUS	Total Dissolved Solids	mg/L	140	140	<5.0	700	
353.2_AQUEOUS	Nitrate	mg/L	<0.050	<0.050	<0.050	<0.050	
6010A_AQUEOUS	Arsenic	ug/L	<5.0	210	12	<5.0	
	Barium	ug/L	24	570	120	160	
	Cadmium	ug/L	<1.0	150	<1.0	1.7	
	Chromium	ug/L	5.1	990	<5.0	19	
	Copper	ug/L	8.2	680	<5.0	27	
	Iron	ug/L	10000	5100000	990	12000	
	Lead	ug/L	<5.0	140	<5.0	22	
	Manganese	ug/L	190	110000	380	3300	
	Selenium	ug/L	<10	<10	<10	11	
	Silver	ug/L	<5.0	<5.0	<5.0	<5.0	
	Zinc	ug/L	34	3600	<20	57	
7470A_AQUEOUS	Mercury	ug/L	<0.20	0.50	<0.20	<0.20	
8000_AQUEOUS	COD	mg/L	48	66	7.0	16	
8260A_AQUEOUS	1,1,1,2-Tetrachloroet	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1,2,2-Tetrachloroet	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,1-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,3-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,3-Trichloropropan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,4-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2,4-Trimethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dibromo-3-chloro	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dichlorobenzene	ug/L	<1.0	<1.0	1.3	<1.0	<2.0
	1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,3,5-Trimethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	1,3-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	2,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	2-Butanone	ug/L	<20	<20	<20	<20	<40
	2-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	2-Hexanone	ug/L	<20	<20	<20	<20	<40
	4-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	4-Methyl-2-pentanone	ug/L	<20	<20	<20	<20	<40
	Acetone	ug/L	<20	<20	<20	<20	55
	Benzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromochloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromodichloromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Bromomethane	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	Carbon tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Chlorobenzene	ug/L	<1.0	<1.0	1.9	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	Chloroethane	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	Chloroform	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	Chloromethane	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	cis-1,2-Dichloroethen	ug/L	<1.0	<1.0	19	<1.0	<2.0
	cis-1,3-Dichloroprope	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Dibromochloromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Dichlorodifluorometha	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Hexachlorobutadiene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Isopropylmethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	m- and p-Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Methyl tert-butyl ethe	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Methylene chloride	ug/L	<5.0	<5.0	<5.0	<5.0	<10
	n-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	n-Propylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980522-643

	Description	Id Text					
			CDM-1A	CDM-2A	CDM-3A	CDM-4A	Trip Blank
Analysis Name	Name	Units	98-04433	98-04434	98-04435	98-04436	98-04437
8260A_AQUEOUS	Naphthalene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	sec-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Styrene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	tert-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Toluene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	trans-1,2-Dichloroethe	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	trans-1,3-Dichloropro	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Trichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Trichlorofluoromethan	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
	Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0	<2.0
9012_AQUEOUS	Cyanide, Total	mg/L	<0.015	<0.015	<0.015	<0.015	
9038_AQUEOUS	Sulfate	mg/L	<10	<10	<10	<10	
9251_AQUEOUS	Chloride	mg/L	11	4.1	27	200	

Chain of Custody

CDM Analytical Laboratory

840 Memorial Drive
Cambridge, MA 02139

Phone: (617) 354-4448
Fax: (617) 354-0764

Field Log # QA# 1459 Page 1 of 1

Client: City of Waltham
Project Name: Waltham Landfill
Project #:
Contact: Sampled by CRB Geological + Environmental
Report to: Jim Laurila Bill to:

Address:
Phone: 252-8368 Burns
Fax #:

SDG#: 980522-643
TAT: STD
TAT Approved by:
Lab Acct. #:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: Other	METALS: Filtered (Y/N)	OTHER: COD	OTHER: Lutchem	OTHER: See below
Trip blank	5/21/98	9:00	W	1	98-04437			✓										✓			✓	✓	✓
CDM 1A	"	10:50	"	6	98-04433			✓										✓			✓	✓	✓
CDM 2A	"		"	"	98-04434			✓										✓			✓	✓	✓
CDM 3A	"	2:30	"	"	98-04435			✓										✓			✓	✓	✓
CDM 4A	↓	2:00	↓	↓	98-04436			✓										✓			✓	✓	✓

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Split sample for Hg

Samples Received:
- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
Fax Results ☐
State Forms ☐
SMART Report ☐
Disk Deliverable ☐
(_____) TICS ☐

Samples Relinquished by:
Relinquished by:

Received by:
Received by:
Received by:

Date / Time
5/21/98 1540
Date / Time
Date / Time

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex

Other NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:
Chlorides
Sulfate
Nitrate Nitrogen
TDS
Alkalinity
Iron
Barium
Zinc
Manganese
Total Cyanide

Client: City of Waltham
Project: Waltham landfill
SDG: 980519-632
Date: 6/24/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980519-632	**Print Date:**	6/24/98
Client:	City of Waltham	**Client Contact:**	
Project:	Waltham landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples. No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

Note that results for these samples were originally reported on 6/4/98. It was discovered that additional metals analyses were needed; the additional metals results plus all of the original results are included in this report.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge complete & accurate.

LABORATORY MANAGEMENT REVIEW: James F. Osborne

LABORATORY QA/QC REVIEW: Peter May-1

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48, VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Cove 1	05/19/98	05/19/98	98-04379	AQUEOUS
Cove 2	05/19/98	05/19/98	98-04380	AQUEOUS
MW-4	05/19/98	05/19/98	98-04381	AQUEOUS

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	3.2	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	91.14	86 - 115
Dibromofluoromethane	99.24	86 - 118
Toluene-d8	94.98	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 1		
Lab Sample ID:	98-04379	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	5.2	
Barium	5	260	
Cadmium	1	<1.0	
Chromium	5	<5.0	
Copper	5	9.8	
Iron	25	5100	
Lead	5	8.4	
Manganese	5	190	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	91	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	1.7	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980519-632	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	110.40	86 - 115
Dibromofluoromethane	104.22	86 - 118
Toluene-d8	105.76	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980519-632	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 2		
Lab Sample ID:	98-04380	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	<5.0	
Barium	5	230	
Cadmium	1	<1.0	
Chromium	5	<5.0	
Copper	5	17	
Iron	25	5800	
Lead	5	18	
Manganese	5	140	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	86	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Preparation Batch: P980526/9012_AQ_P/22 **Prep. Analyst:** DEVLINHA

Component Name: Cyanide, Total **EPA Method #:** EPA 9012 **Matrix:** AQUEOUS
Analytical Batch: I980526/9012_AQUE/22 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.015	<0.015	1	
Cove 2	98-04380	0.015	<0.015	1	

Preparation Batch: P980619/7470A_PRE/78 **Prep. Analyst:** LESHINSKYA

Component Name: Mercury **EPA Method #:** EPA 7470A **Matrix:** AQUEOUS
Analytical Batch: I980619/7470A_AQU/63 **Analyst:** LESHINSKYA **Units:** ug/L
Reviewed By - Date: GOTTSHALLDL - 6/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.200	<0.20	1	
Cove 2	98-04380	0.200	<0.20	1	

Component Name: Nitrate **EPA Method #:** EPA 353.2 **Matrix:** AQUEOUS
Analytical Batch: I980521/353.2_AQU/65 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	0.050	0.36	1	
Cove 2	98-04380	0.050	0.22	1	

Component Name: Total Dissolved Solids **EPA Method #:** SM 2540C **Matrix:** AQUEOUS
Analytical Batch: I980529/2540C_AQU/41 **Analyst:** NGUYENMH **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/29/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.000	340	1	
Cove 2	98-04380	5.000	280	1	

Component Name: Alkalinity **EPA Method #:** SM 2320B **Matrix:** AQUEOUS
Analytical Batch: I980601/2320B_AQU/36 **Analyst:** NGUYENMH **Units:** mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 6/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.000	180	1	
Cove 2	98-04380	5.000	160	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980519-632

Component Name:	COD	**EPA Method #:**	HACH 8000	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/8000_AQUE/35	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	5.000	57	1	
Cove 2	98-04380	5.000	140	1	

Component Name:	Chloride	**EPA Method #:**	EPA 9251	**Matrix:**	AQUEOUS
Analytical Batch:	I980603/9251_AQUE/15	**Analyst:**	DEVLINHA	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	1.000	60	1	
Cove 2	98-04380	1.000	50	1	

Component Name:	Sulfate	**EPA Method #:**	EPA 9038	**Matrix:**	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	**Analyst:**	NGUYENMH	**Units:**	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-04379	10.000	36	1	
Cove 2	98-04380	10.000	43	1	

PREPARATION INFORMATION REPORT

SDG #: 980519-632

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 5030
Batch Approved On: 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Cove 2	98-04380	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 9012
Batch Approved On: 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015
Batch Approved By: GOTTSHALLDL
EPA Method #: 3015
Batch Approved On: 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/3015/136
Preparation ID: 3015
Batch Approved By: GOTTSHALLDL
EPA Method #: 3015
Batch Approved On: 6/23/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-04380	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/7470A_PRE/78
Preparation ID: 7470A_PREP
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 7470A
Batch Approved On: 6/19/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-04379	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Cove 2	98-04380	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/28/98
Cove 2	98-04380	05/19/98	05/19/98		05/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/26/98
Cove 2	98-04380	05/19/98	05/19/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		05/20/98
Cove 2	98-04380	05/19/98	05/19/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/28/98	06/01/98
Cove 2	98-04380	05/19/98	05/19/98	05/28/98	06/01/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	06/18/98	06/18/98
Cove 2	98-04380	05/19/98	05/19/98	06/18/98	06/18/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/22/98	05/22/98
Cove 2	98-04380	05/19/98	05/19/98	05/22/98	05/22/98

HOLDTIME SUMMARY

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98	05/21/98	05/21/98
Cove 2	98-04380	05/19/98	05/19/98	05/21/98	05/21/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/03/98
Cove 2	98-04380	05/19/98	05/19/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Cove 1	98-04379	05/19/98	05/19/98		06/02/98
Cove 2	98-04380	05/19/98	05/19/98		06/02/98

353.2 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	98-04415	**Prep Analyst:**	
EPA Number:	EPA 353.2		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.05	<0.050	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

8260A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.00	<1.0	
1,1,1-Trichloroethane	1.00	<1.0	
1,1,2,2-Tetrachloroethane	1.00	<1.0	
1,1,2-Trichloroethane	1.00	<1.0	
1,1-Dichloroethane	1.00	<1.0	
1,1-Dichloroethene	1.00	<1.0	
1,1-Dichloropropene	1.00	<1.0	
1,2,3-Trichlorobenzene	1.00	<1.0	
1,2,3-Trichloropropane	1.00	<1.0	
1,2,4-Trichlorobenzene	1.00	<1.0	
1,2,4-Trimethylbenzene	1.00	<1.0	
1,2-Dibromo-3-chloropropane	1.00	<1.0	
1,2-Dibromoethane	1.00	<1.0	
1,2-Dichlorobenzene	1.00	<1.0	
1,2-Dichloroethane	1.00	<1.0	
1,2-Dichloropropane	1.00	<1.0	
1,3,5-Trimethylbenzene	1.00	<1.0	
1,3-Dichlorobenzene	1.00	<1.0	
1,3-Dichloropropane	1.00	<1.0	
1,4-Dichlorobenzene	1.00	<1.0	
2,2-Dichloropropane	1.00	<1.0	
2-Butanone	20.00	<20	
2-Chlorotoluene	1.00	<1.0	
2-Hexanone	20.00	<20	
4-Chlorotoluene	1.00	<1.0	
4-Methyl-2-pentanone	20.00	<20	
Acetone	20.00	<20	
Benzene	1.00	<1.0	

8260A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
Bromobenzene	1.00	<1.0	
Bromochloromethane	1.00	<1.0	
Bromodichloromethane	1.00	<1.0	
Bromoform	1.00	<1.0	
Bromomethane	5.00	<5.0	
Carbon tetrachloride	1.00	<1.0	
Chlorobenzene	1.00	<1.0	
Chloroethane	5.00	<5.0	
Chloroform	5.00	<5.0	
Chloromethane	5.00	<5.0	
Dibromochloromethane	1.00	<1.0	
Dibromomethane	1.00	<1.0	
Dichlorodifluoromethane	1.00	<1.0	
Ethylbenzene	1.00	<1.0	
Hexachlorobutadiene	1.00	<1.0	
Isopropylbenzene	1.00	<1.0	
Isopropylmethylbenzene	1.00	<1.0	
Methyl tert-butyl ether	1.00	<1.0	
Methylene chloride	5.00	<5.0	
Naphthalene	1.00	<1.0	
Styrene	1.00	<1.0	
Tetrachloroethene	1.00	<1.0	
Toluene	1.00	<1.0	
Trichloroethene	1.00	<1.0	
Trichlorofluoromethane	1.00	<1.0	
Vinyl chloride	1.00	<1.0	
cis-1,2-Dichloroethene	1.00	<1.0	
cis-1,3-Dichloropropene	1.00	<1.0	
m- and p-Xylenes	1.00	<1.0	
n-Butylbenzene	1.00	<1.0	
n-Propylbenzene	1.00	<1.0	
o-Xylene	1.00	<1.0	
sec-Butylbenzene	1.00	<1.0	
tert-Butylbenzene	1.00	<1.0	
trans-1,2-Dichloroethene	1.00	<1.0	
trans-1,3-Dichloropropene	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	**Prep Analyst:**	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.02	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

2320B AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03282	**Prep Analyst:**	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

6010A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.00	<5.0	
Iron	25.00	<25	

6010A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Manganese	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03346	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03348	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03352	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03354	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03356	**Prep Analyst:**	
EPA Number:	HACH 8000		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03379	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038 AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

6010A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	B98-03772	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.00	<5.0	
Barium	5.00	<5.0	
Cadmium	1.00	<1.0	
Chromium	5.00	<5.0	
Copper	5.00	<5.0	
Iron	25.00	<25	
Lead	5.00	<5.0	
Manganese	5.00	<5.0	
Selenium	10.00	<10	
Silver	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A AQUEOUS BLANK REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	B98-03779	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

353.2 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03016	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980521/353.2_AQU/65
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.05	0.88	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	QCS98-03098	**Prep. Analyst:**	DEVLINHA
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980526/9012_AQUE/22
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.02	0.20	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03209	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980529/2540C_AQU/41
		Analysis Analyst:	NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	1200.00	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

2320B AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03283
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980601/2320B_AQU/36
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.00	131.00	140	104.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/1/98

9251 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03347
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9251 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03349
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980603/9251_AQUE/15
Analysis Analyst: DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03353
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

8000 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03355
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

8000 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980519-632
Lab Sample ID: QCS98-03357
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	272.00	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

9038 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03380	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038 AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03384	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	LFB98-03067	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980524/8260A_AQU/261
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.00	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.00	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.00	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.00	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.00	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

6010A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	LFB98-03299	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980602/6010A_AQU/95
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.00	1000.00	93.8			80 - 120		
Iron	25.00	200.00	103.5			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	LFB98-03773	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/6010A_AQU/107
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.00	100.00	100.4			80 - 120		
Barium	5.00	1000.00	93.8			80 - 120		
Cadmium	1.00	50.00	89.4			80 - 120		
Chromium	5.00	100.00	91.8			80 - 120		
Copper	5.00	100.00	98.6			80 - 120		

6010A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	LFB98-03773	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/6010A_AQU/107
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Iron	25.00	200.00	103.3			80 - 120		
Lead	5.00	100.00	88.2			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Selenium	10.00	50.00	111.3			80 - 120		
Silver	5.00	100.00	106.3			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	LFB98-03778	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/7470A_AQU/63
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.20	5.00	97.6			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

2540C AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04310		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9012 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980526/9012_AQ_P/22
EPA Method #:	EPA 9012	**Prep. Analyst:**	DEVLINHA
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.02	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

7470A AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/7470A_PRE/78
EPA Method #:	EPA 7470A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04319		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	0.22	0.26	20.238	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

8000 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04319		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

2320B AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04353		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.00	<5.0	<5.0	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

353.2 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 353.2	**Prep. Analyst:**	
Lab Sample ID:	98-04379		
Units:	mg/L	**Analytical Batch ID:**	I980521/353.2_AQU/65
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.05	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9038 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04401		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

2540C AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2540C	**Prep. Analyst:**	
Lab Sample ID:	98-04404		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

8000 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	HACH 8000	**Prep. Analyst:**	
Lab Sample ID:	98-04405		
Units:	mg/L	**Analytical Batch ID:**	I980603/8000_AQUE/35
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980601/3015/121
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.00	120	130	4.672	0 - 20	
Iron	25.00	810	1100	27.144	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	P980619/3015/136
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.00	12	12	6.193	0 - 20	
Barium	5.00	120	130	4.672	0 - 20	
Cadmium	1.00	<1.0	<1.0	N/A	0 - 20	
Chromium	5.00	<5.0	<5.0	N/A	0 - 20	
Copper	5.00	<5.0	<5.0	N/A	0 - 20	
Iron	25.00	990	1100	7.863	0 - 20	
Lead	5.00	<5.0	<5.0	N/A	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Selenium	10.00	<10	<10	N/A	0 - 20	
Silver	5.00	<5.0	<5.0	N/A	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

2320B AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	SM 2320B	**Prep. Analyst:**	
Lab Sample ID:	98-04444		
Units:	mg/L CaCO3	**Analytical Batch ID:**	I980601/2320B_AQU/36
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.00	15	16	3.279	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/1/98

9251 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 9251	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.00	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9038 AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980519-632	**Preparation Batch ID:**	
EPA Method #:	EPA 9038	**Prep. Analyst:**	
Lab Sample ID:	98-04450		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

353.2 AQUEOUS MS/MSD RPD REPORT

SDG #: 980519-632
Lab Sample ID: 98-04379
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980521/353.2_AQU/65
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	% Analyte Recovery MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Nitrate	99			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

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Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
2320B_AQUEOUS	Alkalinity	180	160
2540C_AQUEOUS	Total Dissolved Solids	340	280
353.2_AQUEOUS	Nitrate	0.36	0.22
6010A_AQUEOUS	Arsenic	5.2	<5.0
	Barium	260	230
	Cadmium	<1.0	<1.0
	Chromium	<5.0	<5.0
	Copper	9.8	17
	Iron	5100	5800
	Lead	8.4	18
	Manganese	190	140
	Selenium	<10	<10
	Silver	<5.0	<5.0
	Zinc	91	86
7470A_AQUEOUS	Mercury	<0.20	<0.20
8000_AQUEOUS	COD	57	140
8260A_AQUEOUS	1,1,1,2-Tetrachloroeth	<1.0	<1.0
	1,1,1-Trichloroethane	<1.0	<1.0
	1,1,2,2-Tetrachloroeth	<1.0	<1.0
	1,1,2-Trichloroethane	<1.0	<1.0
	1,1-Dichloroethane	<1.0	<1.0
	1,1-Dichloroethene	<1.0	<1.0
	1,1-Dichloropropene	<1.0	<1.0
	1,2,3-Trichlorobenzen	<1.0	<1.0
	1,2,3-Trichloropropan	<1.0	<1.0
	1,2,4-Trichlorobenzen	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
8260A_AQUEOUS	1,2,4-Trimethylbenzer	<1.0	<1.0
	1,2-Dibromo-3-chloro	<1.0	<1.0
	1,2-Dibromoethane	<1.0	<1.0
	1,2-Dichlorobenzene	<1.0	<1.0
	1,2-Dichloroethane	<1.0	<1.0
	1,2-Dichloropropane	<1.0	<1.0
	1,3,5-Trimethylbenzer	<1.0	<1.0
	1,3-Dichlorobenzene	<1.0	<1.0
	1,3-Dichloropropane	<1.0	<1.0
	1,4-Dichlorobenzene	<1.0	<1.0
	2,2-Dichloropropane	<1.0	<1.0
	2-Butanone	<20	<20
	2-Chlorotoluene	<1.0	<1.0
	2-Hexanone	<20	<20
	4-Chlorotoluene	<1.0	<1.0
	4-Methyl-2-pentanon	<20	<20
	Acetone	<20	<20
	Benzene	<1.0	<1.0
	Bromobenzene	<1.0	<1.0
	Bromochloromethane	<1.0	<1.0
	Bromodichloromethai	<1.0	<1.0
	Bromoform	<1.0	<1.0
	Bromomethane	<5.0	<5.0
	Carbon tetrachloride	<1.0	<1.0
	Chlorobenzene	<1.0	<1.0
	Chloroethane	<5.0	<5.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
8260A_AQUEOUS	Chloroform	<5.0	<5.0
	Chloromethane	<5.0	<5.0
	cis-1,2-Dichloroethen	<1.0	<1.0
	cis-1,3-Dichloroprope	<1.0	<1.0
	Dibromochlorometha	<1.0	<1.0
	Dibromomethane	<1.0	<1.0
	Dichlorodifluorometh	<1.0	<1.0
	Ethylbenzene	<1.0	<1.0
	Hexachlorobutadiene	<1.0	<1.0
	Isopropylbenzene	<1.0	<1.0
	Isopropylmethylbenz	<1.0	<1.0
	m- and p-Xylenes	<1.0	<1.0
	Methyl tert-butyl ethe	3.2	1.7
	Methylene chloride	<5.0	<5.0
	n-Butylbenzene	<1.0	<1.0
	n-Propylbenzene	<1.0	<1.0
	Naphthalene	<1.0	<1.0
	o-Xylene	<1.0	<1.0
	sec-Butylbenzene	<1.0	<1.0
	Styrene	<1.0	<1.0
	tert-Butylbenzene	<1.0	<1.0
	Tetrachloroethene	<1.0	<1.0
	Toluene	<1.0	<1.0
	trans-1,2-Dichloroeth	<1.0	<1.0
	trans-1,3-Dichloropro	<1.0	<1.0
	Trichloroethene	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980519-632

	Client Identifier	Cove 1	Cove 2
Analysis Name	Lab ID	98-04379	98-04380
8260A_AQUEOUS	Trichlorofluoromethan	<1.0	<1.0
	Vinyl chloride	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	<0.015	<0.015
9038_AQUEOUS	Sulfate	36	43
9251_AQUEOUS	Chloride	60	50

Chain of Custody

CDM Analytical Laboratory
840 Memorial Drive, Cambridge, MA 02139
Phone: (617) [illegible] 4448
Fax: (617) 354-0764

Field Log # LX 14 17 Page 1 of 1

Client: City of Waltham
Address:
SDG#: 980519-632
Project Name: Waltham Landfill
TAT: STD
Project #:
Phone: 252-8368 - Burns
TAT Approved by: JB
Contact: Sampled by CRB
Fax #:
Lab Acct. #:
Report to: Jim Lavila
Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX S - Soil W - Water D - Drinking	# OF CONT.	CDM SAMPLE ID See Attached SDG DR for Aliquot #'s & CDM Bottle Id's	VOA 524.2	VOA 624/8240	VOA 8260 ✓	VOA Other	SEMI VOA 525	SEMI VOA 625/8270 A, B/N, AB/N	SEMI VOA PAH	SEMI VOA Other	MISC PEST / PCB	MISC TPH 418.1	MISC PET ID	METALS PP13	METALS RCRA 8 ✓	METALS Other	METALS Filtered (Y/N)	OTHER ✓	OTHER 4 extra ✓	OTHER	OTHER see below ✓	OTHER	OTHER
Cove 1	5/14/98	1:30	W	6	98-04379			✓										✓			✓	✓		✓		
Cove 2	↓	1:50	↓	↓	98-04380			✓										✓			✓	✓		✓		
mw4	↓	3:15	↓	↓	98-04381			✓										✓			✓	✓		✓		

CANCEL MW4 PER LARGE WEBSTER OF CRB 5/20/98 JB

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature: ____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:
Fax Results ☐
State Forms ☐
SMART Report ☐
Disk Deliverable ☐
(____) TICS ☐

	Date	Time		Date	Time
Sampled & Relinquished by:			Received by: [illegible]	5/19/98	1600
Relinquished by:			Received by:		
Relinquished by:			Received by:		

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☒ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Chlorides, Sulfate, Nitrate Nitrogen, TDS — Alkalinity, Iron, Barium, Zinc — manganese, Total cyanide

Client: City of Waltham

Project: Waltham Landfill

SDG: 980518-620

Date: 6/24/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980518-620	**Print Date:**	6/24/98
Client:	City of Waltham	**Client Contact:**	
Project:	Waltham Landfill	**Address:**	Camp Dresser & McKee Ten Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples. No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

NOTES

SDG 980518-620: Results for this sample group were originally reported on 6/5/98; after which, iy was discovered that the trace metals target list was incomplete. Additional testing was conducted on these samples and this report contains the results reported on 6/5/98 as well as any additional metals results needed.

TDS: I980529/2540C_AQU/41; Samples , 98-04319, 98-04320, 98-04321, and 98-04322 were all analyzed one day beyond the EPA recommended maximum holding time due to intervening holiday and laboratory oversight.

RESULT NOTES

Metals: It should be noted that the analysis of these samples for trace metals was complicated by the large amounts of sediment found in the preserved samples. The sediment contributed to matrix interferences both as non-target and target chemicals requiring dilution.

98-04322 (Silver) M qualifier = Sample matrix interference is suspected, which may have biased results for this analyte. Sample result should be considered an estimate.
I980619/6010A_AQU/107; All samples were reanalyzed for silver on 6/19/98. The concentrations of samples 98-04322 (potential high bias) and 98-04434 (potential low bias) were confirmed. Sample matrix interference is suspected due to very high levels of aluminum and iron.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
CDM 2	05/18/98	05/18/98	98-04319	AQUEOUS
Duplicate	05/18/98	05/18/98	98-04321	AQUEOUS
CDM 1	05/18/98	05/18/98	98-04320	AQUEOUS
CDM 4	05/18/98	05/18/98	98-04322	AQUEOUS
Trip Blank	05/18/98	05/18/98	98-04323	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	96.92	86 - 115
Dibromofluoromethane	100.32	86 - 118
Toluene-d8	99.58	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 2		
Lab Sample ID:	98-04319	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	9.5	
Barium	5	590	
Cadmium	1	2.0	
Chromium	5	11	
Copper	5	70	
Iron	50	27000	
Lead	5	430	
Manganese	5	540	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	470	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	87.58	86 - 115
Dibromofluoromethane	92.52	86 - 118
Toluene-d8	101.44	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 1		
Lab Sample ID:	98-04320	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	11	
Barium	5	260	
Cadmium	1	4.0	
Chromium	5	66	
Copper	5	740	
Iron	50	47000	
Lead	5	1300	
Manganese	5	1500	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	380	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	89.62	86 - 115
Dibromofluoromethane	94.16	86 - 118
Toluene-d8	97.48	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Duplicate		
Lab Sample ID:	98-04321	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	<5.0	
Barium	5	110	
Cadmium	1	1.3	
Chromium	5	19	
Copper	5	220	
Iron	25	11000	
Lead	5	380	
Manganese	5	1300	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	120	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	2.8	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	104.72	86 - 115
Dibromofluoromethane	101.00	86 - 118
Toluene-d8	101.50	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980619/3015/136
SDG #:	980518-620	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 4		
Lab Sample ID:	98-04322	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	120	
Barium	5	5400	
Cadmium	1	83	
Chromium	5	2000	
Copper	5	17000	
Iron	500	370000	
Lead	5	14000	
Manganese	5	1800	
Selenium	10	28	
Silver	5	55	M
Zinc	20	13000	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 06/23/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980524/5030/361
SDG #:	980518-620	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Trip Blank		
Lab Sample ID:	98-04323	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	114.36	86 - 115
Dibromofluoromethane	109.76	86 - 118
Toluene-d8	101.30	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 05/26/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Preparation Batch: P980526/9012_AQ_P/22 **Prep. Analyst:** DEVLINHA

Component Name: Cyanide, Total **EPA Method #:** EPA 9012 **Matrix:** AQUEOUS
Analytical Batch: I980526/9012_AQUE/22 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.015	<0.015	1	
CDM 1	98-04320	0.015	<0.015	1	
Duplicate	98-04321	0.015	<0.015	1	
CDM 4	98-04322	0.015	<0.015	1	

Preparation Batch: P980619/7470A_PRE/78 **Prep. Analyst:** LESHINSKYA

Component Name: Mercury **EPA Method #:** EPA 7470A **Matrix:** AQUEOUS
Analytical Batch: I980619/7470A_AQU/63 **Analyst:** LESHINSKYA **Units:** ug/L
Reviewed By - Date: GOTTSHALLDL - 6/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.200	0.22	1	
CDM 1	98-04320	0.200	<0.20	1	
Duplicate	98-04321	0.200	0.26	1	
CDM 4	98-04322	0.200	3.3	1	

Component Name: Alkalinity **EPA Method #:** SM 2320B **Matrix:** AQUEOUS
Analytical Batch: I980519/2320B_AQU/35 **Analyst:** DEVLINHA **Units:** mg/L CaCO3
Reviewed By - Date: GOTTSHALLDL - 5/19/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.000	660	1	
CDM 1	98-04320	5.000	140	1	
Duplicate	98-04321	5.000	130	1	
CDM 4	98-04322	5.000	900	1	

Component Name: Nitrate **EPA Method #:** EPA 353.2 **Matrix:** AQUEOUS
Analytical Batch: I980521/353.2_AQU/65 **Analyst:** DEVLINHA **Units:** mg/L
Reviewed By - Date: GOTTSHALLDL - 5/26/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	0.050	<0.050	1	
CDM 1	98-04320	0.500	4.0	10	
Duplicate	98-04321	0.500	4.0	10	
CDM 4	98-04322	0.050	0.58	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980518-620

Component Name:	Total Dissolved Solids	EPA Method #:	SM 2540C	Matrix:	AQUEOUS
Analytical Batch:	I980529/2540C_AQU/41	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 5/29/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.000	760	1	
CDM 1	98-04320	5.000	240	1	
Duplicate	98-04321	5.000	730	1	
CDM 4	98-04322	5.000	1400	1	

Component Name:	COD	EPA Method #:	HACH 8000	Matrix:	AQUEOUS
Analytical Batch:	I980603/8000_AQUE/35	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	5.000	120	1	
CDM 1	98-04320	5.000	20	1	
Duplicate	98-04321	5.000	31	1	
CDM 4	98-04322	5.000	140	1	

Component Name:	Chloride	EPA Method #:	EPA 9251	Matrix:	AQUEOUS
Analytical Batch:	I980603/9251_AQUE/15	Analyst:	DEVLINHA	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/3/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	1.000	22	1	
CDM 1	98-04320	1.000	3.6	1	
Duplicate	98-04321	1.000	3.8	1	
CDM 4	98-04322	1.000	66	1	

Component Name:	Sulfate	EPA Method #:	EPA 9038	Matrix:	AQUEOUS
Analytical Batch:	I980604/9038_AQUE/15	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 6/4/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 2	98-04319	10.000	79	1	
CDM 1	98-04320	10.000	36	1	
Duplicate	98-04321	10.000	27	1	
CDM 4	98-04322	10.000	85	1	

PREPARATION INFORMATION REPORT

SDG #: 980518-620

Preparation Batch ID: P980524/5030/361
Preparation ID: 5030 **EPA Method #:** EPA 5030
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 1	98-04320	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Duplicate	98-04321	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 4	98-04322	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Trip Blank	98-04323	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980526/9012_AQ_P/22
Preparation ID: 9012_AQ_Prep **EPA Method #:** EPA 9012
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 5/26/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		DUPLICATE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		MATRIX_SPIKE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015 **EPA Method #:** 3015
Batch Approved By: GOTTSHALLDL **Batch Approved On:** 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

PREPARATION INFORMATION REPORT

SDG #: 980518-620

Preparation Batch ID: P980601/3015/121
Preparation ID: 3015
EPA Method #: 3015
Batch Approved By: GOTTSHALLDL
Batch Approved On: 6/3/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Duplicate	98-04321	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/3015/136
Preparation ID: 3015
EPA Method #: 3015
Batch Approved By: GOTTSHALLDL
Batch Approved On: 6/23/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1	98-04320	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Duplicate	98-04321	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4	98-04322	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980619/7470A_PRE/78
Preparation ID: 7470A_PREP
EPA Method #: EPA 7470A
Batch Approved By: GOTTSHALLDL
Batch Approved On: 6/19/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2	98-04319	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		DUPLICATE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		MATRIX_SPIKE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 1	98-04320	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Duplicate	98-04321	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 4	98-04322	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/19/98
CDM 1	98-04320	05/18/98	05/18/98		05/19/98
Duplicate	98-04321	05/18/98	05/18/98		05/19/98
CDM 4	98-04322	05/18/98	05/18/98		05/19/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/26/98
CDM 1	98-04320	05/18/98	05/18/98		05/26/98
Duplicate	98-04321	05/18/98	05/18/98		05/26/98
CDM 4	98-04322	05/18/98	05/18/98		05/26/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		05/20/98
CDM 1	98-04320	05/18/98	05/18/98		05/20/98
Duplicate	98-04321	05/18/98	05/18/98		05/20/98
CDM 4	98-04322	05/18/98	05/18/98		05/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/28/98	06/01/98
CDM 1	98-04320	05/18/98	05/18/98	05/28/98	06/01/98
Duplicate	98-04321	05/18/98	05/18/98	05/28/98	06/01/98
CDM 4	98-04322	05/18/98	05/18/98	05/28/98	06/01/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	06/18/98	06/18/98
CDM 1	98-04320	05/18/98	05/18/98	06/18/98	06/18/98
Duplicate	98-04321	05/18/98	05/18/98	06/18/98	06/18/98
CDM 4	98-04322	05/18/98	05/18/98	06/18/98	06/18/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98

HOLDTIME SUMMARY

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/22/98	05/22/98
CDM 1	98-04320	05/18/98	05/18/98	05/22/98	05/22/98
Duplicate	98-04321	05/18/98	05/18/98	05/22/98	05/22/98
CDM 4	98-04322	05/18/98	05/18/98	05/22/98	05/22/98
Trip Blank	98-04323	05/18/98	05/18/98	05/22/98	05/22/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98	05/21/98	05/21/98
CDM 1	98-04320	05/18/98	05/18/98	05/21/98	05/21/98
Duplicate	98-04321	05/18/98	05/18/98	05/21/98	05/21/98
CDM 4	98-04322	05/18/98	05/18/98	05/21/98	05/21/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/03/98
CDM 1	98-04320	05/18/98	05/18/98		06/03/98
Duplicate	98-04321	05/18/98	05/18/98		06/03/98
CDM 4	98-04322	05/18/98	05/18/98		06/03/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 2	98-04319	05/18/98	05/18/98		06/02/98
CDM 1	98-04320	05/18/98	05/18/98		06/02/98
Duplicate	98-04321	05/18/98	05/18/98		06/02/98
CDM 4	98-04322	05/18/98	05/18/98		06/02/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-02935	Prep Analyst:	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	Analytical Batch ID:	I980519/2320B_AQU/35
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Alkalinity	5.00	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/19/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	98-04415	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980521/353.2_AQU/65
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Result	Qualifier
Nitrate	0.05	<0.050	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	P980524/5030/361
Lab Sample ID:	B98-03066	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980524/8260A_AQU/261
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.00	<1.0	
1,1,1-Trichloroethane	1.00	<1.0	
1,1,2,2-Tetrachloroethane	1.00	<1.0	
1,1,2-Trichloroethane	1.00	<1.0	
1,1-Dichloroethane	1.00	<1.0	
1,1-Dichloroethene	1.00	<1.0	
1,1-Dichloropropene	1.00	<1.0	
1,2,3-Trichlorobenzene	1.00	<1.0	
1,2,3-Trichloropropane	1.00	<1.0	
1,2,4-Trichlorobenzene	1.00	<1.0	
1,2,4-Trimethylbenzene	1.00	<1.0	
1,2-Dibromo-3-chloropropane	1.00	<1.0	
1,2-Dibromoethane	1.00	<1.0	
1,2-Dichlorobenzene	1.00	<1.0	
1,2-Dichloroethane	1.00	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,2-Dichloropropane	1.00	<1.0	
1,3,5-Trimethylbenzene	1.00	<1.0	
1,3-Dichlorobenzene	1.00	<1.0	
1,3-Dichloropropane	1.00	<1.0	
1,4-Dichlorobenzene	1.00	<1.0	
2,2-Dichloropropane	1.00	<1.0	
2-Butanone	20.00	<20	
2-Chlorotoluene	1.00	<1.0	
2-Hexanone	20.00	<20	
4-Chlorotoluene	1.00	<1.0	
4-Methyl-2-pentanone	20.00	<20	
Acetone	20.00	<20	
Benzene	1.00	<1.0	
Bromobenzene	1.00	<1.0	
Bromochloromethane	1.00	<1.0	
Bromodichloromethane	1.00	<1.0	
Bromoform	1.00	<1.0	
Bromomethane	5.00	<5.0	
Carbon tetrachloride	1.00	<1.0	
Chlorobenzene	1.00	<1.0	
Chloroethane	5.00	<5.0	
Chloroform	5.00	<5.0	
Chloromethane	5.00	<5.0	
Dibromochloromethane	1.00	<1.0	
Dibromomethane	1.00	<1.0	
Dichlorodifluoromethane	1.00	<1.0	
Ethylbenzene	1.00	<1.0	
Hexachlorobutadiene	1.00	<1.0	
Isopropylbenzene	1.00	<1.0	
Isopropylmethylbenzene	1.00	<1.0	
Methyl tert-butyl ether	1.00	<1.0	
Methylene chloride	5.00	<5.0	
Naphthalene	1.00	<1.0	
Styrene	1.00	<1.0	
Tetrachloroethene	1.00	<1.0	
Toluene	1.00	<1.0	
Trichloroethene	1.00	<1.0	
Trichlorofluoromethane	1.00	<1.0	
Vinyl chloride	1.00	<1.0	
cis-1,2-Dichloroethene	1.00	<1.0	
cis-1,3-Dichloropropene	1.00	<1.0	
m- and p-Xylenes	1.00	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980524/5030/361
Lab Sample ID:	B98-03066	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980524/8260A_AQU/261
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
n-Butylbenzene	1.00	<1.0	
n-Propylbenzene	1.00	<1.0	
o-Xylene	1.00	<1.0	
sec-Butylbenzene	1.00	<1.0	
tert-Butylbenzene	1.00	<1.0	
trans-1,2-Dichloroethene	1.00	<1.0	
trans-1,3-Dichloropropene	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	B98-03097	**Prep Analyst:**	DEVLINHA
EPA Number:	EPA 9012		
Units:	mg/L	**Analytical Batch ID:**	I980526/9012_AQUE/22
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.02	<0.015	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03208	**Prep Analyst:**	
EPA Number:	SM 2540C		
Units:	mg/L	**Analytical Batch ID:**	I980529/2540C_AQU/41
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.00	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
Lab Sample ID:	B98-03298	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	5.00	<5.0	
Iron	25.00	<25	
Manganese	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03346	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03348	**Prep Analyst:**	
EPA Number:	EPA 9251		
Units:	mg/L	**Analytical Batch ID:**	I980603/9251_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	DEVLINHA

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03352	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03354	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

8000_AQUEOUS BLANK REPORT

SDG #:	980518-620	Preparation Batch ID:	
Lab Sample ID:	B98-03356	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03379	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	B98-03381	**Prep Analyst:**	
EPA Number:	EPA 9038		
Units:	mg/L	**Analytical Batch ID:**	I980604/9038_AQUE/15
Matrix:	AQUEOUS	**Analysis Analyst:**	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	B98-03772	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.00	<5.0	
Barium	5.00	<5.0	
Cadmium	1.00	<1.0	
Chromium	5.00	<5.0	
Copper	5.00	<5.0	
Iron	25.00	<25	
Lead	5.00	<5.0	
Manganese	5.00	<5.0	
Selenium	10.00	<10	
Silver	5.00	<5.0	
Zinc	20.00	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	B98-03779	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	**Analytical Batch ID:**	I980619/7470A_AQU/63
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-02936	**Prep. Analyst:**	
Units:	mg/L CaCO3		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980519/2320B_AQU/35
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.00	131.00	130	99.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/19/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03016	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980521/353.2_AQU/65
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.05	0.88	0.82	93.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980526/9012_AQ_P/22
Lab Sample ID:	QCS98-03098	**Prep. Analyst:**	DEVLINHA
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980526/9012_AQUE/22
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.02	0.20	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/26/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03209	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980529/2540C_AQU/41
		Analysis Analyst:	NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	1200.00	1200	101.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 5/29/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03347	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	240	97.3	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03349	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980603/9251_AQUE/15
		Analysis Analyst:	DEVLINHA

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	10.00	242.00	230	95.8	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03353
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	70	102.9	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03355
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	68.00	67	98.5	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980518-620
Lab Sample ID: QCS98-03357
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	272.00	270	99.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 6/3/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03380	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	250	98.0	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	
Lab Sample ID:	QCS98-03384	**Prep. Analyst:**	
Units:	mg/L		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980604/9038_AQUE/15
		Analysis Analyst:	NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	254.00	260	101.2	80 - 120	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/4/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	Preparation Batch ID:	P980524/5030/361
Lab Sample ID:	LFB98-03067	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980524/8260A_AQU/261
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.00	50.00	106.9	109.9	2.73	61 - 145	0 - 14	
Benzene	1.00	50.00	108.3	109.7	1.36	76 - 127	0 - 11	
Chlorobenzene	1.00	50.00	104.4	107.5	2.93	75 - 130	0 - 13	
Toluene	1.00	50.00	105.6	100.6	4.79	76 - 125	0 - 13	
Trichloroethene	1.00	50.00	105.6	104.8	0.72	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	Preparation Batch ID:	P980601/3015/121
Lab Sample ID:	LFB98-03299	Prep. Analyst:	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980602/6010A_AQU/95
Units:	ug/L	Analyst:	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Barium	5.00	1000.00	93.8			80 - 120		
Iron	25.00	200.00	103.5			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	Preparation Batch ID:	P980619/3015/136
Lab Sample ID:	LFB98-03773	Prep. Analyst:	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980619/6010A_AQU/107
Units:	ug/L	Analyst:	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.00	100.00	100.4			80 - 120		
Barium	5.00	1000.00	93.8			80 - 120		
Cadmium	1.00	50.00	89.4			80 - 120		
Chromium	5.00	100.00	91.8			80 - 120		
Copper	5.00	100.00	98.6			80 - 120		

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/3015/136
Lab Sample ID:	LFB98-03773	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/6010A_AQU/107
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Iron	25.00	200.00	103.3			80 - 120		
Lead	5.00	100.00	88.2			80 - 120		
Manganese	5.00	100.00	88.4			80 - 120		
Selenium	10.00	50.00	111.3			80 - 120		
Silver	5.00	100.00	106.3			80 - 120		
Zinc	20.00	100.00	95.1			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

7470A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/7470A_PRE/78
Lab Sample ID:	LFB98-03778	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980619/7470A_AQU/63
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.20	5.00	97.6			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/19/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980518-620
EPA Method #: SM 2320B
Lab Sample ID: 98-02644
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980519/2320B_AQU/35
Analysis Analyst: DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.00	24	24	0	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/19/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980518-620
EPA Method #: SM 2540C
Lab Sample ID: 98-04310
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980529/2540C_AQU/41
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	380	380	0.261	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980518-620
EPA Method #: EPA 9012
Lab Sample ID: 98-04319
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID: P980526/9012_AQ_P/22
Prep. Analyst: DEVLINHA

Analytical Batch ID: I980526/9012_AQUE/22
Analysis Analyst: DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.02	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	P980619/7470A_PRE/78
EPA Method #:	EPA 7470A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-04319		
Units:	ug/L	Analytical Batch ID:	I980619/7470A_AQU/63
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	0.22	0.26	20.238	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/19/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-04319		
Units:	mg/L	Analytical Batch ID:	I980603/8000_AQUE/35
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	120	100	17.352	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-04379		
Units:	mg/L	Analytical Batch ID:	I980521/353.2_AQU/65
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.05	0.36	0.38	4.324	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980518-620
EPA Method #: EPA 9038
Lab Sample ID: 98-04401
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980604/9038_AQUE/15
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	34	33	2.985	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980518-620
EPA Method #: SM 2540C
Lab Sample ID: 98-04404
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980529/2540C_AQU/41
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	55	42	26.804	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/29/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980518-620
EPA Method #: HACH 8000
Lab Sample ID: 98-04405
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980603/8000_AQUE/35
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	540	540	0.185	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980601/3015/121
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980602/6010A_AQU/95
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Barium	5.00	120	130	4.672	0 - 20	
Iron	25.00	810	1100	27.144	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/3/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	**Preparation Batch ID:**	P980619/3015/136
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-04435		
Units:	ug/L	**Analytical Batch ID:**	I980619/6010A_AQU/107
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.00	12	12	6.193	0 - 20	
Barium	5.00	120	130	4.672	0 - 20	
Cadmium	1.00	<1.0	<1.0	N/A	0 - 20	
Chromium	5.00	<5.0	<5.0	N/A	0 - 20	
Copper	5.00	<5.0	<5.0	N/A	0 - 20	
Iron	25.00	990	1100	7.863	0 - 20	
Lead	5.00	<5.0	<5.0	N/A	0 - 20	
Manganese	5.00	380	400	4.779	0 - 20	
Selenium	10.00	<10	<10	N/A	0 - 20	
Silver	5.00	<5.0	<5.0	N/A	0 - 20	
Zinc	20.00	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 6/23/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980603/9251_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	DEVLINHA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.00	15	15	0.027	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/3/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980518-620	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-04450		
Units:	mg/L	Analytical Batch ID:	I980604/9038_AQUE/15
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	16	17	6.061	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/4/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04320
Matrix: AQUEOUS

Preparation Batch ID: P980524/5030/361
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980524/8260A_AQU/261
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	112			61 - 145		
Benzene	111			76 - 127		
Chlorobenzene	104			75 - 130		
Toluene	99			76 - 125		
Trichloroethene	106			71 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 5/26/98

9012_AQUEOUS MS/MSD RPD REPORT

SDG #: 980518-620
Lab Sample ID: 98-04319
Matrix: AQUEOUS

Preparation Batch ID: P980526/9012_AQ_P/22
Prep. Analyst: DEVLINHA

Analytical Batch ID: I980526/9012_AQUE/22
Analyst: DEVLINHA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Cyanide, Total	94			80 - 120		
Mercury	95			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 6/19/98

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Laboratory Summary Report

Client: City of Waltham **SDG:** 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
2320B_AQUEOUS	Alkalinity	140	660	900	130	
2540C_AQUEOUS	Total Dissolved Solid	240	760	1400	730	
353.2_AQUEOUS	Nitrate	4.0	<0.050	0.58	4.0	
6010A_AQUEOUS	Arsenic	11	9.5	120	<5.0	
	Barium	260	590	5400	110	
	Cadmium	4.0	2.0	83	1.3	
	Chromium	66	11	2000	19	
	Copper	740	70	17000	220	
	Iron	47000	27000	370000	11000	
	Lead	1300	430	14000	380	
	Manganese	1500	540	1800	1300	
	Selenium	<10	<10	28	<10	
	Silver	<5.0	<5.0	55	<5.0	
	Zinc	380	470	13000	120	
7470A_AQUEOUS	Mercury	<0.20	0.22	3.3	0.26	
8000_AQUEOUS	COD	20	120	140	31	
8260A_AQUEOUS	1,1,1,2-Tetrachloroet	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2,2-Tetrachloroet	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichlorobenzen	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichloropropan	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2,4-Trichlorobenzen	<1.0	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham SDG: 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	1,2,4-Trimethylbenze	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromo-3-chloro	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromoethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3,5-Trimethylbenze	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	1,3-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0
	1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	2,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Butanone	<20	<20	<20	<20	<20
	2-Chlorotoluene	<1.0	<1.0	<1.0	<1.0	<1.0
	2-Hexanone	<20	<20	<20	<20	<20
	4-Chlorotoluene	<1.0	<1.0	<1.0	<1.0	<1.0
	4-Methyl-2-pentanone	<20	<20	<20	<20	<20
	Acetone	<20	<20	<20	<20	<20
	Benzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromochloromethan	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromodichlorometha	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0
	Bromomethane	<5.0	<5.0	<5.0	<5.0	<5.0
	Carbon tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0
	Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Chloroethane	<5.0	<5.0	<5.0	<5.0	<5.0

Laboratory Summary Report

Client: City of Waltham

SDG: 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Chloroform	<5.0	<5.0	<5.0	<5.0	<5.0
	Chloromethane	<5.0	<5.0	<5.0	<5.0	<5.0
	cis-1,2-Dichloroethen	<1.0	<1.0	<1.0	<1.0	<1.0
	cis-1,3-Dichloroprope	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromochlorometha	<1.0	<1.0	<1.0	<1.0	<1.0
	Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0
	Dichlorodifluorometh	<1.0	<1.0	<1.0	<1.0	<1.0
	Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Hexachlorobutadiene	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Isopropylmethylbenz	<1.0	<1.0	<1.0	<1.0	<1.0
	m- and p-Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0
	Methyl tert-butyl ethe	<1.0	<1.0	<1.0	<1.0	<1.0
	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0
	n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Naphthalene	<1.0	<1.0	2.8	<1.0	<1.0
	o-Xylene	<1.0	<1.0	<1.0	<1.0	<1.0
	sec-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Styrene	<1.0	<1.0	<1.0	<1.0	<1.0
	tert-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0
	Tetrachloroethene	<1.0	<1.0	<1.0	<1.0	<1.0
	Toluene	<1.0	<1.0	<1.0	<1.0	<1.0
	trans-1,2-Dichloroeth	<1.0	<1.0	<1.0	<1.0	<1.0
	trans-1,3-Dichloropro	<1.0	<1.0	<1.0	<1.0	<1.0
	Trichloroethene	<1.0	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: City of Waltham SDG: 980518-620

	Client Identifier	CDM 1	CDM 2	CDM 4	Duplicate	Trip Blank
Analysis Name	Lab ID	98-04320	98-04319	98-04322	98-04321	98-04323
8260A_AQUEOUS	Trichlorofluorometha	<1.0	<1.0	<1.0	<1.0	<1.0
	Vinyl chloride	<1.0	<1.0	<1.0	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	<0.015	<0.015	<0.015	<0.015	
9038_AQUEOUS	Sulfate	36	79	85	27	
9251_AQUEOUS	Chloride	3.6	22	66	3.8	

Chain of Custody

CDM Analytical Laboratory 840 Memorial Drive, Cambridge, MA 02139 Phone: (617) 354-4448 Fax: (617) 354-0764

Field Log # Q#1435 Page 1 of ..

Client City of Waltham Address: SDG#: 980518-620

Project Name Waltham Landfill TAT: STD

Project # Phone: 782-8300 ext. Burns TAT Approved by:

Contact Sampled by CRB Geological - Environ Fax#: Lab Acct. #:

Report to Jim Lawless Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX S - Soil W - Water D - Drinking	# OF CONT	CDM SAMPLE ID See Attached SDG DR for Aliquot #'s & CDM Bottle Id's	VOA 524.2	VOA 624/8240	VOA 8260	VOA Other	SEMI VOA 525	SEMI VOA 625/8270 A, B/N, AB/N	SEMI VOA PAH	SEMI VOA Other	MISC PEST / PCB	MISC TPH 418.1	MISC PET ID	METALS PP13	METALS RCRA 8 *	METALS Other	METALS Filtered (Y/N)	OTHER Cl,SO4,NO3	OTHER Alk, Fe, Mn, Ba, Zn, TDS
COM 2	5/18/98	1:20	W	6	98-04319			✓										✓			✓	✓
CDM 1	5/18/98	2:30	W	6	98-04320			✓										✓			✓	✓
Duplicate	5/18/98	7:15	W	6	98-04321			✓										✓			✓	✓
CDM 4	5/19/98	3:20	W	6	98-04322			✓										✓			✓	✓
Trip Blank	5/19/98	3:15	W	1	98-04323			✓														

A - HCl D - NaOH P - Plastic

B - HNO_3 E - NaThio G - Glass

C - H_2SO_4 F - Other V - Vial

Container Type:

Preservative:

Volume:

Samples Received:

- Cooler Temperature °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:

Fax Results ☐

State Forms ☐

SMART Report ☐

Disk Deliverable ☐

(_____) TICS ☐

Sampled & Relinquished by:	Date 5/19/98	Time 4:40	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:

Received by:	Date 5/19	Time 4:40
Received by:	Date	Time
Received by:	Date	Time

Shipper/Airbill#: Courier Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:

* Chlorids
Sulfate
Nitrate nitroges
TDS

Alkalinity
Iron *
Barium *
Zinc *

Manganese *
Total cyanide

Appendix G

Water Quality Analytical Data, Round 2

Client: Woerd Avenue Landfill

Project: Monitoring

SDG: 980819-1155

Date: 9/4/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980819-1155	Print Date:	9/4/98
Client:	Woerd Avenue Landfill	Client Contact:	
Project:	Monitoring	Address:	Camp Dresser & McKee Inc. 10 Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples. No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
TB	08/17/98	08/19/98	98-06556	AQUEOUS
DM 1A	08/18/98	08/19/98	98-06553	AQUEOUS
DM 1	08/18/98	08/19/98	98-06554	AQUEOUS
DM 1 Dup	08/18/98	08/19/98	98-06555	AQUEOUS

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980828/3015/169
SDG #:	980819-1155	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 1A		
Lab Sample ID:	98-06553	**Analytical Batch ID:**	I980828/6010A_AQU/137
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	<5.0	
Barium	5	5.8	
Cadmium	1	11	
Chromium	5	<5.0	
Copper	5	6.8	
Iron	25	300	
Lead	5	<5.0	
Manganese	5	170	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	150	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 08/31/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	Preparation Batch ID:	P980828/5030/484
SDG #:	980819-1155	Prep. Analyst:	MITCHELLMR
Client Sample ID:	CDM 1A		
Lab Sample ID:	98-06553	Analytical Batch ID:	I980828/8260A_AQU/335
Matrix:	AQUEOUS	Analyst:	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approval Date: 08/31/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980828/5030/484
SDG #:	980819-1155	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1A		
Lab Sample ID:	98-06553	**Analytical Batch ID:**	I980828/8260A_AQU/335
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	102.94	86 - 115
Dibromofluoromethane	103.14	86 - 118
Toluene-d8	98.38	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 08/31/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	Preparation Batch ID:	P980828/3015/169
SDG #:	980819-1155	Prep. Analyst:	LESHINSKYA
Client Sample ID:	CDM 1		
Lab Sample ID:	98-06554	Analytical Batch ID:	I980828/6010A_AQU/137
Matrix:	AQUEOUS	Analyst:	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	<5.0	
Barium	5	37	
Cadmium	1	7.5	
Chromium	5	<5.0	
Copper	5	8.3	
Iron	25	770	
Lead	5	<5.0	
Manganese	5	1300	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	56	

atch Approved By: GOTTSHALLDL

Batch Approval Date: 08/31/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980828/5030/484
SDG #:	980819-1155	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-06554	**Analytical Batch ID:**	I980828/8260A_AQU/335
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 08/31/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980828/5030/484
SDG #:	980819-1155	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1		
Lab Sample ID:	98-06554	**Analytical Batch ID:**	I980828/8260A_AQU/335
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	111.70	86 - 115
Dibromofluoromethane	105.94	86 - 118
Toluene-d8	102.26	88 - 110

Batch Approved By: GOTTSHALLDL Batch Approval Date: 08/31/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980828/3015/169
SDG #:	980819-1155	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 1 Dup		
Lab Sample ID:	98-06555	**Analytical Batch ID:**	I980828/6010A_AQU/137
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5	<5.0	
Barium	5	35	
Cadmium	1	<1.0	
Chromium	5	<5.0	
Copper	5	<5.0	
Iron	25	<25	
Lead	5	<5.0	
Manganese	5	1200	
Selenium	10	<10	
Silver	5	<5.0	
Zinc	20	39	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 08/31/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	Preparation Batch ID:	P980828/5030/484
SDG #:	980819-1155	Prep. Analyst:	MITCHELLMR
Client Sample ID:	CDM 1 Dup		
Lab Sample ID:	98-06555	Analytical Batch ID:	I980828/8260A_AQU/335
Matrix:	AQUEOUS	Analyst:	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1	<1.0	
Bromobenzene	1	<1.0	
Bromochloromethane	1	<1.0	
Bromodichloromethane	1	<1.0	
Bromoform	1	<1.0	
Bromomethane	5	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1	<1.0	
sec-Butylbenzene	1	<1.0	
tert-Butylbenzene	1	<1.0	
Carbon tetrachloride	1	<1.0	
Chlorobenzene	1	<1.0	
Chloroethane	5	<5.0	
Chloroform	5	<5.0	
Chloromethane	5	<5.0	
2-Chlorotoluene	1	<1.0	
4-Chlorotoluene	1	<1.0	
1,2-Dibromo-3-chloropropane	1	<1.0	
1,2-Dibromoethane	1	<1.0	
Dibromochloromethane	1	<1.0	
Dibromomethane	1	<1.0	
1,2-Dichlorobenzene	1	<1.0	
1,3-Dichlorobenzene	1	<1.0	
1,4-Dichlorobenzene	1	<1.0	
Dichlorodifluoromethane	1	<1.0	
1,1-Dichloroethane	1	<1.0	
1,2-Dichloroethane	1	<1.0	
cis-1,2-Dichloroethene	1	<1.0	
trans-1,2-Dichloroethene	1	<1.0	
1,2-Dichloropropane	1	<1.0	
1,3-Dichloropropane	1	<1.0	
2,2-Dichloropropane	1	<1.0	
1,1-Dichloropropene	1	<1.0	
cis-1,3-Dichloropropene	1	<1.0	
trans-1,3-Dichloropropene	1	<1.0	
Ethylbenzene	1	<1.0	
Hexachlorobutadiene	1	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1	<1.0	
Methylene chloride	5	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approval Date: 08/31/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980828/5030/484
SDG #:	980819-1155	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 1 Dup		
Lab Sample ID:	98-06555	**Analytical Batch ID:**	I980828/8260A_AQU/335
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Naphthalene	1	<1.0	
n-Propylbenzene	1	<1.0	
Styrene	1	<1.0	
1,1,1,2-Tetrachloroethane	1	<1.0	
1,1,2,2-Tetrachloroethane	1	<1.0	
Tetrachloroethene	1	<1.0	
Toluene	1	<1.0	
1,2,3-Trichlorobenzene	1	<1.0	
1,2,4-Trichlorobenzene	1	<1.0	
1,1,1-Trichloroethane	1	<1.0	
1,1,2-Trichloroethane	1	<1.0	
Trichloroethene	1	<1.0	
Trichlorofluoromethane	1	<1.0	
1,2,4-Trimethylbenzene	1	<1.0	
1,3,5-Trimethylbenzene	1	<1.0	
1,2,3-Trichloropropane	1	<1.0	
Vinyl chloride	1	<1.0	
m- and p-Xylenes	1	<1.0	
o-Xylene	1	<1.0	
1,1-Dichloroethene	1	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	100.04	86 - 115
Dibromofluoromethane	102.40	86 - 118
Toluene-d8	97.78	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 08/31/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980819-1155

Preparation Batch: P980826/7470A_PRE/91 Prep. Analyst: NGUYENP

Component Name: Mercury EPA Method #: EPA 7470A Matrix: AQUEOUS

Analytical Batch: I980826/7470A_AQU/74 Analyst: NGUYENP Units: ug/L

Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	0.200	<0.20	1	
CDM 1	98-06554	0.200	<0.20	1	
CDM 1 Dup	98-06555	0.200	<0.20	1	

Preparation Batch: P980828/9012_AQ_P/29 Prep. Analyst: NGUYENMH

Component Name: Cyanide, Total EPA Method #: EPA 9012 Matrix: AQUEOUS

Analytical Batch: I980831/9012_AQUE/29 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	0.015	<0.015	1	
CDM 1	98-06554	0.015	<0.015	1	
CDM 1 Dup	98-06555	0.015	<0.015	1	

Component Name: Nitrate EPA Method #: EPA 353.2 Matrix: AQUEOUS

Analytical Batch: I980825/353.2_AQU/81 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	0.050	0.42	1	
CDM 1	98-06554	0.500	4.0	10	
CDM 1 Dup	98-06555	0.500	4.0	10	

Component Name: COD EPA Method #: HACH 8000 Matrix: AQUEOUS

Analytical Batch: I980826/8000_AQUE/37 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	5.000	9.0	1	
CDM 1	98-06554	5.000	24	1	
CDM 1 Dup	98-06555	5.000	14	1	

Component Name: Alkalinity EPA Method #: SM 2320B Matrix: AQUEOUS

Analytical Batch: I980828/2320B_AQU/45 Analyst: NGUYENMH Units: mg/L CaCO3

Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	5.000	91	1	
CDM 1	98-06554	5.000	130	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980819-1155

Component Name:	Alkalinity	EPA Method #:	SM 2320B	Matrix:	AQUEOUS
Analytical Batch:	I980828/2320B_AQU/45	Analyst:	NGUYENMH	Units:	mg/L CaCO3
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1 Dup	98-06555	5.000	130	1	

Component Name:	Total Dissolved Solids	EPA Method #:	SM 2540C	Matrix:	AQUEOUS
Analytical Batch:	I980828/2540C_AQU/48	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	5.000	140	1	
CDM 1	98-06554	5.000	200	1	
CDM 1 Dup	98-06555	5.000	200	1	

Component Name:	Sulfate	EPA Method #:	EPA 9038	Matrix:	AQUEOUS
Analytical Batch:	I980901/9038_AQUE/19	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	10.000	10	1	
CDM 1	98-06554	10.000	35	1	
CDM 1 Dup	98-06555	10.000	36	1	

Component Name:	Chloride	EPA Method #:	EPA 9251	Matrix:	AQUEOUS
Analytical Batch:	I980901/9251_AQUE/20	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 1A	98-06553	1.000	9.9	1	
CDM 1	98-06554	1.000	3.4	1	
CDM 1 Dup	98-06555	1.000	2.9	1	

PREPARATION INFORMATION REPORT

SDG #: 980819-1155

eparation Batch ID: P980826/7470A_PRE/91
reparation ID: 7470A_PREP
tch Approved By: OCCHIALINIJF
EPA Method #: EPA 7470A
Batch Approved On: 8/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 1A	98-06553	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 1	98-06554	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 1 Dup	98-06555	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

eparation Batch ID: P980828/3015/169
eparation ID: 3015
tch Approved By: GOTTSHALLDL
EPA Method #: 3015
Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 1A	98-06553	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1	98-06554	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 1 Dup	98-06555	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

eparation Batch ID: P980828/5030/484
eparation ID: 5030
tch Approved By: GOTTSHALLDL
EPA Method #: EPA 5030
Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 1A	98-06553	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 1	98-06554	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 1 Dup	98-06555	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

eparation Batch ID: P980828/9012_AQ_P/29
eparation ID: 9012_AQ_Prep
tch Approved By: GOTTSHALLDL
EPA Method #: EPA 9012
Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 1A	98-06553	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		DUPLICATE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
		MATRIX_SPIKE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 1	98-06554	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

PREPARATION INFORMATION REPORT

SDG #: 980819-1155

Preparation Batch ID: P980828/9012_AQ_P/29
Preparation ID: 9012_AQ_Prep
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 9012
Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 1 Dup	98-06555	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98		08/27/98
CDM 1	98-06554	08/18/98	08/19/98		08/27/98
CDM 1 Dup	98-06555	08/18/98	08/19/98		08/27/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98		08/25/98
CDM 1	98-06554	08/18/98	08/19/98		08/25/98
CDM 1 Dup	98-06555	08/18/98	08/19/98		08/25/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98		08/20/98
CDM 1	98-06554	08/18/98	08/19/98		08/20/98
CDM 1 Dup	98-06555	08/18/98	08/19/98		08/20/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98	08/26/98	08/26/98
CDM 1	98-06554	08/18/98	08/19/98	08/26/98	08/26/98
CDM 1 Dup	98-06555	08/18/98	08/19/98	08/26/98	08/26/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98	08/24/98	08/25/98
CDM 1	98-06554	08/18/98	08/19/98	08/24/98	08/25/98
CDM 1 Dup	98-06555	08/18/98	08/19/98	08/24/98	08/25/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98		08/25/98
CDM 1	98-06554	08/18/98	08/19/98		08/25/98
CDM 1 Dup	98-06555	08/18/98	08/19/98		08/25/98

HOLDTIME SUMMARY

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98	08/27/98	08/27/98
CDM 1	98-06554	08/18/98	08/19/98	08/27/98	08/27/98
CDM 1 Dup	98-06555	08/18/98	08/19/98	08/27/98	08/27/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98	08/26/98	08/26/98
CDM 1	98-06554	08/18/98	08/19/98	08/26/98	08/26/98
CDM 1 Dup	98-06555	08/18/98	08/19/98	08/26/98	08/26/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98		09/01/98
CDM 1	98-06554	08/18/98	08/19/98		09/01/98
CDM 1 Dup	98-06555	08/18/98	08/19/98		09/01/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 1A	98-06553	08/18/98	08/19/98		08/31/98
CDM 1	98-06554	08/18/98	08/19/98		08/31/98
CDM 1 Dup	98-06555	08/18/98	08/19/98		08/31/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	
Lab Sample ID:	B98-05304	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.05	<0.050	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	
Lab Sample ID:	B98-05306	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.05	<0.050	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

8000_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	
Lab Sample ID:	B98-05319	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.00	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980826/7470A_PRE/91
Lab Sample ID:	B98-05335	Prep Analyst:	NGUYENP
EPA Number:	EPA 7470A		
Units:	ug/L	Analytical Batch ID:	I980826/7470A_AQU/74
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENP

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	
Lab Sample ID:	B98-05385	Prep Analyst:	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	Analytical Batch ID:	I980828/2320B_AQU/45
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.00	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	
Lab Sample ID:	B98-05390	Prep Analyst:	
EPA Number:	SM 2540C		
Units:	mg/L	Analytical Batch ID:	I980828/2540C_AQU/48
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.00	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/3015/169
Lab Sample ID:	B98-05394	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980828/6010A_AQU/137
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Antimony	30.00	<30	
Arsenic	10.00	<10	

6010A_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/3015/169
Lab Sample ID:	B98-05394	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980828/6010A_AQU/137
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Barium	500.00	<500	
Beryllium	2.00	<2.0	
Cadmium	1.00	<1.0	
Chromium	10.00	<10	
Cobalt	10.00	<10	
Copper	200.00	<200	
Lead	10.00	<10	
Nickel	50.00	<50	
Selenium	20.00	<20	
Silver	10.00	<10	
Thallium	10.00	<10	
Vanadium	40.00	<40	
Zinc	50.00	<50	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05406	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.02	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05408	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.02	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8260A_AQUEOUS BLANK REPORT

SDG #: 980819-1155
Lab Sample ID: B98-05410
EPA Number: EPA 8260A
Units: ug/L
Matrix: AQUEOUS

Preparation Batch ID: P980828/5030/484
Prep Analyst: MITCHELLMR

Analytical Batch ID: I980828/8260A_AQU/335
Analysis Analyst: MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.00	<1.0	
1,1,1-Trichloroethane	1.00	<1.0	
1,1,2,2-Tetrachloroethane	1.00	<1.0	
1,1,2-Trichloroethane	1.00	<1.0	
1,1-Dichloroethane	1.00	<1.0	
1,1-Dichloroethene	1.00	<1.0	
1,1-Dichloropropene	1.00	<1.0	
1,2,3-Trichlorobenzene	1.00	<1.0	
1,2,3-Trichloropropane	1.00	<1.0	
1,2,4-Trichlorobenzene	1.00	<1.0	
1,2,4-Trimethylbenzene	1.00	<1.0	
1,2-Dibromo-3-chloropropane	1.00	<1.0	
1,2-Dibromoethane	1.00	<1.0	
1,2-Dichlorobenzene	1.00	<1.0	
1,2-Dichloroethane	1.00	<1.0	
1,2-Dichloropropane	1.00	<1.0	
1,3,5-Trimethylbenzene	1.00	<1.0	
1,3-Dichlorobenzene	1.00	<1.0	
1,3-Dichloropropane	1.00	<1.0	
1,4-Dichlorobenzene	1.00	<1.0	
2,2-Dichloropropane	1.00	<1.0	
2-Butanone	20.00	<20	
2-Chlorotoluene	1.00	<1.0	
2-Hexanone	20.00	<20	
4-Chlorotoluene	1.00	<1.0	
4-Methyl-2-pentanone	20.00	<20	
Acetone	20.00	<20	
Benzene	1.00	<1.0	
Bromobenzene	1.00	<1.0	
Bromochloromethane	1.00	<1.0	
Bromodichloromethane	1.00	<1.0	
Bromoform	1.00	<1.0	
Bromomethane	5.00	<5.0	
Carbon tetrachloride	1.00	<1.0	
Chlorobenzene	1.00	<1.0	
Chloroethane	5.00	<5.0	
Chloroform	5.00	<5.0	
Chloromethane	5.00	<5.0	
Dibromochloromethane	1.00	<1.0	
Dibromomethane	1.00	<1.0	
Dichlorodifluoromethane	1.00	<1.0	
Ethylbenzene	1.00	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/5030/484
Lab Sample ID:	B98-05410	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980828/8260A_AQU/335
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
Hexachlorobutadiene	1.00	<1.0	
Isopropylbenzene	1.00	<1.0	
Isopropylmethylbenzene	1.00	<1.0	
Methyl tert-butyl ether	1.00	<1.0	
Methylene chloride	5.00	<5.0	
Naphthalene	1.00	<1.0	
Styrene	1.00	<1.0	
Tetrachloroethene	1.00	<1.0	
Toluene	1.00	<1.0	
Trichloroethene	1.00	<1.0	
Trichlorofluoromethane	1.00	<1.0	
Vinyl chloride	1.00	<1.0	
cis-1,2-Dichloroethene	1.00	<1.0	
cis-1,3-Dichloropropene	1.00	<1.0	
m- and p-Xylenes	1.00	<1.0	
n-Butylbenzene	1.00	<1.0	
n-Propylbenzene	1.00	<1.0	
o-Xylene	1.00	<1.0	
sec-Butylbenzene	1.00	<1.0	
tert-Butylbenzene	1.00	<1.0	
trans-1,2-Dichloroethene	1.00	<1.0	
trans-1,3-Dichloropropene	1.00	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9251_AQUEOUS BLANK REPORT

SDG #:	980819-1155	Preparation Batch ID:	
Lab Sample ID:	B98-05462	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS BLANK REPORT

SDG #: 980819-1155
Lab Sample ID: B98-05464
EPA Number: EPA 9251
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.00	<1.0	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #: 980819-1155
Lab Sample ID: B98-05473
EPA Number: EPA 9038
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:

Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #: 980819-1155
Lab Sample ID: B98-05477
EPA Number: EPA 9038
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:

Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10.00	<10	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05305
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980825/353.2_AQU/81
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.05	1.28	1.4	110.3	80 - 120	

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05307
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980825/353.2_AQU/81
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.05	1.28	1.3	99.2	80 - 120	

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05320
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980826/8000_AQUE/37
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.00	77.70	74	95.2	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05386
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980828/2320B_AQU/45
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.00	116.00	120	105.2	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05391
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980828/2540C_AQU/48
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	750.00	730	97.6	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05407
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID: P980828/9012_AQ_P/29
Prep. Analyst: NGUYENMH
Analytical Batch ID: I980831/9012_AQUE/29
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.02	0.20	0.21	103.5	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05409
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID: P980828/9012_AQ_P/29
Prep. Analyst: NGUYENMH

Analytical Batch ID: I980831/9012_AQUE/29
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.02	0.20	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05463
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.00	12.20	11	89.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05466
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.00	12.20	11	91.8	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05474
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	122.00	130	104.0	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980819-1155
Lab Sample ID: QCS98-05478
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Spike Amount	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10.00	122.00	120	103.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

7470A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980826/7470A_PRE/91
Lab Sample ID:	LFB98-05336	Prep. Analyst:	NGUYENP
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980826/7470A_AQU/74
Units:	ug/L	Analyst:	NGUYENP

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.20	5.00	83.6			80 - 120		

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

6010A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/3015/169
Lab Sample ID:	LFB98-05395	Prep. Analyst:	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980828/6010A_AQU/137
Units:	ug/L	Analyst:	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Antimony	30.00	50.00	109.9			80 - 120		
Arsenic	10.00	100.00	100.1			80 - 120		
Barium	500.00	1000.00	93.4			80 - 120		
Beryllium	2.00	50.00	98.3			80 - 120		
Cadmium	1.00	50.00	104.9			80 - 120		
Chromium	10.00	100.00	101.4			80 - 120		
Cobalt	10.00	100.00	96.9			80 - 120		
Copper	200.00	100.00	94.4			80 - 120		
Lead	10.00	100.00	99.3			80 - 120		
Nickel	50.00	100.00	92.6			80 - 120		
Selenium	20.00	50.00	93.5			80 - 120		
Silver	10.00	100.00	100.8			80 - 120		
Thallium	10.00	50.00	100.2			80 - 120		
Vanadium	40.00	200.00	102.8			80 - 120		
Zinc	50.00	100.00	118.5			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/5030/484
Lab Sample ID:	LFB98-05411	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980828/8260A_AQU/335
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.00	50.00	96.8	95.8	1.10	61 - 145	0 - 14	
Benzene	1.00	50.00	101.6	102.0	0.35	76 - 127	0 - 11	
Chlorobenzene	1.00	50.00	103.4	103.1	0.29	75 - 130	0 - 13	
Toluene	1.00	50.00	103.6	100.3	3.20	76 - 125	0 - 13	
Trichloroethene	1.00	50.00	101.8	101.5	0.32	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.02	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	100	110	7.339	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980826/7470A_PRE/91
EPA Method #:	EPA 7470A	Prep. Analyst:	NGUYENP
Lab Sample ID:	98-06545		
Units:	ug/L	Analytical Batch ID:	I980826/7470A_AQU/74
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENP

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	<0.20	<0.20	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/3015/169
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06546		
Units:	ug/L	Analytical Batch ID:	I980828/6010A_AQU/137
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Antimony	30.00	<30	<30	N/A	0 - 20	
Arsenic	10.00	<10	<10	N/A	0 - 20	
Barium	500.00	<500	<500	N/A	0 - 20	
Beryllium	2.00	<2.0	<2.0	N/A	0 - 20	
Cadmium	1.00	1.3	1.3	4.974	0 - 20	
Chromium	10.00	<10	<10	N/A	0 - 20	
Cobalt	10.00	<10	<10	N/A	0 - 20	
Copper	200.00	<200	<200	N/A	0 - 20	
Lead	10.00	<10	<10	N/A	0 - 20	
Nickel	50.00	<50	<50	N/A	0 - 20	
Selenium	20.00	<20	<20	N/A	0 - 20	
Silver	10.00	<10	<10	N/A	0 - 20	
Thallium	10.00	<10	<10	N/A	0 - 20	
Vanadium	40.00	<40	<40	N/A	0 - 20	
Zinc	50.00	<50	<50	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.02	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980819-1155
EPA Method #: SM 2320B
Lab Sample ID: 98-06553
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980828/2320B_AQU/45
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.00	91	92	1.533	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980819-1155
EPA Method #: SM 2540C
Lab Sample ID: 98-06553
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980828/2540C_AQU/48
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.00	140	130	8	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980819-1155
EPA Method #: EPA 9038
Lab Sample ID: 98-06553
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	10	<10	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980819-1155
EPA Method #: EPA 9251
Lab Sample ID: 98-06553
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.00	9.9	9.9	0.202	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980819-1155
EPA Method #: HACH 8000
Lab Sample ID: 98-06555
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980826/8000_AQUE/37
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.00	14	13	7.407	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980819-1155
EPA Method #: EPA 353.2
Lab Sample ID: 98-06559
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980825/353.2_AQU/81
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	2.50	32	32	0	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-06579		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.05	<0.050	<0.050	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-06678		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10.00	12	12	0.206	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980819-1155	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-06678		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.00	13	14	4.726	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9012_AQUEOUS MS/MSD RPD REPORT

SDG #: 980819-1155
Lab Sample ID: 98-06357
Matrix: AQUEOUS

Preparation Batch ID: P980828/9012_AQ_P/29
Prep. Analyst: NGUYENMH

Analytical Batch ID: I980831/9012_AQUE/29
Analyst: NGUYENMH

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Cyanide, Total	94			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS MS/MSD RPD REPORT

SDG #: 980819-1155
Lab Sample ID: 98-06553
Matrix: AQUEOUS

Preparation Batch ID: P980828/9012_AQ_P/29
Prep. Analyst: NGUYENMH

Analytical Batch ID: I980831/9012_AQUE/29
Analyst: NGUYENMH

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Cyanide, Total	103			80 - 120		
Sulfate	107			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9038_AQUEOUS MS/MSD RPD REPORT

SDG #: 980819-1155
Lab Sample ID: 98-06678
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9038_AQUE/19
Analyst: NGUYENMH

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Sulfate	91			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS MS/MSD RPD REPORT

SDG #: 980819-1155
Lab Sample ID: 98-06553
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analyst: NGUYENMH

Component Name	% Analyte Recovery MS	% Analyte Recovery MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Chloride	98			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS MS/MSD RPD REPORT

SDG #: 980819-1155
Lab Sample ID: 98-06678
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analyst: NGUYENMH

Component Name	% Analyte Recovery MS	% Analyte Recovery MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Chloride	108			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

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Client: Woerd Avenue Landfill SDG: 980819-1155

	Client Identifier	CDM 1	CDM 1 Dup	CDM 1A
Analysis Name	Lab ID	98-06554	98-06555	98-06553
2320B_AQUEOUS	Alkalinity	130	130	91
2540C_AQUEOUS	Total Dissolved Solids	200	200	140
353.2_AQUEOUS	Nitrate	4.0	4.0	0.42
6010A_AQUEOUS	Arsenic	<5.0	<5.0	<5.0
	Barium	37	35	5.8
	Cadmium	7.5	<1.0	11
	Chromium	<5.0	<5.0	<5.0
	Copper	8.3	<5.0	6.8
	Iron	770	<25	300
	Lead	<5.0	<5.0	<5.0
	Manganese	1300	1200	170
	Selenium	<10	<10	<10
	Silver	<5.0	<5.0	<5.0
	Zinc	56	39	150
7470A_AQUEOUS	Mercury	<0.20	<0.20	<0.20
8000_AQUEOUS	COD	24	14	9.0
8260A_AQUEOUS	1,1,1,2-Tetrachloroet	<1.0	<1.0	<1.0
	1,1,1-Trichloroethane	<1.0	<1.0	<1.0
	1,1,2,2-Tetrachloroet	<1.0	<1.0	<1.0
	1,1,2-Trichloroethane	<1.0	<1.0	<1.0
	1,1-Dichloroethane	<1.0	<1.0	<1.0
	1,1-Dichloroethene	<1.0	<1.0	<1.0
	1,1-Dichloropropene	<1.0	<1.0	<1.0
	1,2,3-Trichlorobenzen	<1.0	<1.0	<1.0
	1,2,3-Trichloropropan	<1.0	<1.0	<1.0
	1,2,4-Trichlorobenzen	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: Woerd Avenue Landfill SDG: 980819-1155

	Client Identifier	CDM 1	CDM 1 Dup	CDM 1A
Analysis Name	Lab ID	98-06554	98-06555	98-06553
8260A_AQUEOUS	1,2,4-Trimethylbenze	<1.0	<1.0	<1.0
	1,2-Dibromo-3-chloro	<1.0	<1.0	<1.0
	1,2-Dibromoethane	<1.0	<1.0	<1.0
	1,2-Dichlorobenzene	<1.0	<1.0	<1.0
	1,2-Dichloroethane	<1.0	<1.0	<1.0
	1,2-Dichloropropane	<1.0	<1.0	<1.0
	1,3,5-Trimethylbenze	<1.0	<1.0	<1.0
	1,3-Dichlorobenzene	<1.0	<1.0	<1.0
	1,3-Dichloropropane	<1.0	<1.0	<1.0
	1,4-Dichlorobenzene	<1.0	<1.0	<1.0
	2,2-Dichloropropane	<1.0	<1.0	<1.0
	2-Butanone	<20	<20	<20
	2-Chlorotoluene	<1.0	<1.0	<1.0
	2-Hexanone	<20	<20	<20
	4-Chlorotoluene	<1.0	<1.0	<1.0
	4-Methyl-2-pentanone	<20	<20	<20
	Acetone	<20	<20	<20
	Benzene	<1.0	<1.0	<1.0
	Bromobenzene	<1.0	<1.0	<1.0
	Bromochloromethane	<1.0	<1.0	<1.0
	Bromodichloromethan	<1.0	<1.0	<1.0
	Bromoform	<1.0	<1.0	<1.0
	Bromomethane	<5.0	<5.0	<5.0
	Carbon tetrachloride	<1.0	<1.0	<1.0
	Chlorobenzene	<1.0	<1.0	<1.0
	Chloroethane	<5.0	<5.0	<5.0

	Client Identifier	CDM 1	CDM 1 Dup	CDM 1A
Analysis Name	Lab ID	98-06554	98-06555	98-06553
8260A_AQUEOUS	Chloroform	<5.0	<5.0	<5.0
	Chloromethane	<5.0	<5.0	<5.0
	cis-1,2-Dichloroethen	<1.0	<1.0	<1.0
	cis-1,3-Dichloroprope	<1.0	<1.0	<1.0
	Dibromochloromethan	<1.0	<1.0	<1.0
	Dibromomethane	<1.0	<1.0	<1.0
	Dichlorodifluorometha	<1.0	<1.0	<1.0
	Ethylbenzene	<1.0	<1.0	<1.0
	Hexachlorobutadiene	<1.0	<1.0	<1.0
	Isopropylbenzene	<1.0	<1.0	<1.0
	Isopropylmethylbenze	<1.0	<1.0	<1.0
	m- and p-Xylenes	<1.0	<1.0	<1.0
	Methyl tert-butyl ethe	<1.0	<1.0	<1.0
	Methylene chloride	<5.0	<5.0	<5.0
	n-Butylbenzene	<1.0	<1.0	<1.0
	n-Propylbenzene	<1.0	<1.0	<1.0
	Naphthalene	<1.0	<1.0	<1.0
	o-Xylene	<1.0	<1.0	<1.0
	sec-Butylbenzene	<1.0	<1.0	<1.0
	Styrene	<1.0	<1.0	<1.0
	tert-Butylbenzene	<1.0	<1.0	<1.0
	Tetrachloroethene	<1.0	<1.0	<1.0
	Toluene	<1.0	<1.0	<1.0
	trans-1,2-Dichloroethe	<1.0	<1.0	<1.0
	trans-1,3-Dichloropro	<1.0	<1.0	<1.0
	Trichloroethene	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: Woerd Avenue Landfill

SDG: 980819-1155

	Client Identifier	CDM 1	CDM 1 Dup	CDM 1A
Analysis Name	Lab ID	98-06554	98-06555	98-06553
8260A_AQUEOUS	Trichlorofluoromethan	<1.0	<1.0	<1.0
	Vinyl chloride	<1.0	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	<0.015	<0.015	<0.015
9038_AQUEOUS	Sulfate	35	36	10
9251_AQUEOUS	Chloride	3.4	2.9	9.9

Client: Woerd Avenue Landfill

Project: Monitoring

SDG: 980821-1165

Date: 9/8/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980821-1165	**Print Date:**	9/8/98
Client:	Woerd Avenue Landfill	**Client Contact:**	
Project:	Monitoring	**Address:**	Camp Dresser & McKee Inc. 10 Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

BATCH NOTES

I980901/8260A_AQU/340; B98-05452 is the blank associated with the North Wake program (project specific RLs).

RESULT NOTES

98-06579 (Manganese) N Footnote : Determination of spike recovery hindered by high native concentration relative to spike amount,

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
TB	08/17/98	08/21/98	98-06582	AQUEOUS
DM 4	08/19/98	08/21/98	98-06580	AQUEOUS
DM 3A	08/19/98	08/21/98	98-06579	AQUEOUS
DM 4A	08/19/98	08/21/98	98-06581	AQUEOUS

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980831/3015/171
SDG #:	980821-1165	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 3A		
Lab Sample ID:	98-06579	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	9.8	
Barium	5.0	160	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	390	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	Preparation Batch ID:	P980901/5030/489
SDG #:	980821-1165	Prep. Analyst:	MITCHELLMR
Client Sample ID:	CDM 3A		
Lab Sample ID:	98-06579	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analyst:	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
:ert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	1.6	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
,2-Dichlorobenzene	1.0	1.2	
,3-Dichlorobenzene	1.0	<1.0	
,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
,1-Dichloroethane	1.0	<1.0	
,2-Dichloroethane	1.0	<1.0	
is-1,2-Dichloroethene	1.0	21	
rans-1,2-Dichloroethene	1.0	<1.0	
,2-Dichloropropane	1.0	<1.0	
,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
,1-Dichloropropene	1.0	<1.0	
is-1,3-Dichloropropene	1.0	<1.0	
rans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
sopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
,1,1,2-Tetrachloroethane	1.0	<1.0	
,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approval Date: 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1165	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 3A		
Lab Sample ID:	98-06579	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	102.58	86 - 115
Dibromofluoromethane	103.56	86 - 118
Toluene-d8	100.04	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	Preparation Batch ID:	P980831/3015/171
SDG #:	980821-1165	Prep. Analyst:	LESHINSKYA
Client Sample ID:	CDM 4		
Lab Sample ID:	98-06580	Analytical Batch ID:	I980831/6010A_AQU/139
Matrix:	AQUEOUS	Analyst:	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	860	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	9.1	
Manganese	5.0	200	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	77	

Batch Approved By: GOTTSHALLDL Batch Approval Date: 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1165	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-06580	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	1.2	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	Preparation Batch ID:	P980901/5030/489
SDG #:	980821-1165	Prep. Analyst:	MITCHELLMR
Client Sample ID:	CDM 4		
Lab Sample ID:	98-06580	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analyst:	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	97.36	86 - 115
Dibromofluoromethane	106.04	86 - 118
Toluene-d8	97.36	88 - 110

Batch Approved By: GOTTSHALLDL Batch Approval Date: 09/01/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980831/3015/171
SDG #:	980821-1165	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 4A		
Lab Sample ID:	98-06581	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	98	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	2700	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	29	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	Preparation Batch ID:	P980901/5030/489
SDG #:	980821-1165	Prep. Analyst:	MITCHELLMR
Client Sample ID:	CDM 4A		
Lab Sample ID:	98-06581	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analyst:	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
ert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
-Chlorotoluene	1.0	<1.0	
,2-Dibromo-3-chloropropane	1.0	<1.0	
,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
,2-Dichlorobenzene	1.0	<1.0	
,3-Dichlorobenzene	1.0	<1.0	
,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
,1-Dichloroethane	1.0	<1.0	
,2-Dichloroethane	1.0	<1.0	
is-1,2-Dichloroethene	1.0	<1.0	
rans-1,2-Dichloroethene	1.0	<1.0	
,2-Dichloropropane	1.0	<1.0	
,3-Dichloropropane	1.0	<1.0	
,2-Dichloropropane	1.0	<1.0	
,1-Dichloropropene	1.0	<1.0	
is-1,3-Dichloropropene	1.0	<1.0	
rans-1,3-Dichloropropene	1.0	<1.0	
thylbenzene	1.0	<1.0	
lexachlorobutadiene	1.0	<1.0	
-Hexanone	20	<20	
sopropylbenzene	1.0	<1.0	
-Methyl-2-pentanone	20	<20	
lethyl tert-butyl ether	1.0	<1.0	
lethylene chloride	5.0	<5.0	
aphthalene	1.0	<1.0	
-Propylbenzene	1.0	<1.0	
tyrene	1.0	<1.0	
,1,1,2-Tetrachloroethane	1.0	<1.0	
1,2,2-Tetrachloroethane	1.0	<1.0	
etrachloroethene	1.0	<1.0	
oluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approval Date: 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1165	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 4A		
Lab Sample ID:	98-06581	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	110.54	86 - 115
Dibromofluoromethane	108.92	86 - 118
Toluene-d8	102.86	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	Preparation Batch ID:	P980831/5030/487
SDG #:	980821-1165	Prep. Analyst:	MITCHELLMR
Client Sample ID:	TB		
Lab Sample ID:	98-06582	Analytical Batch ID:	I980831/8260A_AQU/338
Matrix:	AQUEOUS	Analyst:	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approval Date: 08/31/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	Preparation Batch ID:	P980831/5030/487
SDG #:	980821-1165	Prep. Analyst:	MITCHELLMR
Client Sample ID:	TB		
Lab Sample ID:	98-06582	Analytical Batch ID:	I980831/8260A_AQU/338
Matrix:	AQUEOUS	Analyst:	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	104.54	86 - 115
Dibromofluoromethane	106.02	86 - 118
Toluene-d8	102.38	88 - 110

Batch Approved By: GOTTSHALLDL Batch Approval Date: 08/31/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1165

Preparation Batch: P980826/7470A_PRE/93 Prep. Analyst: LESHINSKYA

Component Name: Mercury EPA Method #: EPA 7470A Matrix: AQUEOUS
Analytical Batch: I980826/7470A_AQU/76 Analyst: LESHINSKYA Units: ug/L
Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	0.20	<0.20	1	
CDM 4	98-06580	0.20	<0.20	1	
CDM 4A	98-06581	0.20	<0.20	1	

Preparation Batch: P980828/9012_AQ_P/29 Prep. Analyst: NGUYENMH

Component Name: Cyanide, Total EPA Method #: EPA 9012 Matrix: AQUEOUS
Analytical Batch: I980831/9012_AQUE/29 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	0.015	<0.015	1	
CDM 4	98-06580	0.015	<0.015	1	
CDM 4A	98-06581	0.015	<0.015	1	

Component Name: Nitrate EPA Method #: EPA 353.2 Matrix: AQUEOUS
Analytical Batch: I980825/353.2_AQU/81 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	0.050	<0.050	1	
CDM 4	98-06580	0.050	1.4	1	
CDM 4A	98-06581	0.050	<0.050	1	

Component Name: COD EPA Method #: HACH 8000 Matrix: AQUEOUS
Analytical Batch: I980826/8000_AQUE/37 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	5.0	19	1	
CDM 4A	98-06581	5.0	12	1	

Component Name: COD EPA Method #: HACH 8000 Matrix: AQUEOUS
Analytical Batch: I980826/8000_AQUE/38 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 4	98-06580	5.0	140	1	

Component Name: Total Dissolved Solids EPA Method #: SM 2540C Matrix: AQUEOUS
Analytical Batch: I980828/2540C_AQU/48 Analyst: NGUYENMH Units: mg/L
Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	5.0	290	1	
CDM 4	98-06580	5.0	1100	1	
CDM 4A	98-06581	5.0	690	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1165

Component Name:	Alkalinity	EPA Method #:	SM 2320B	Matrix:	AQUEOUS
Analytical Batch:	I980901/2320B_AQU/46	Analyst:	NGUYENMH	Units:	mg/L CaCO3
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	5.0	180	1	
CDM 4	98-06580	5.0	1000	1	
CDM 4A	98-06581	5.0	300	1	

Component Name:	Sulfate	EPA Method #:	EPA 9038	Matrix:	AQUEOUS
Analytical Batch:	I980901/9038_AQUE/19	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	10	13	1	
CDM 4	98-06580	10	75	1	
CDM 4A	98-06581	10	<10	1	

Component Name:	Chloride	EPA Method #:	EPA 9251	Matrix:	AQUEOUS
Analytical Batch:	I980901/9251_AQUE/20	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
CDM 3A	98-06579	1.0	29	1	
CDM 4	98-06580	1.0	58	1	
CDM 4A	98-06581	10	240	10	

PREPARATION INFORMATION REPORT

DG #: 980821-1165

eparation Batch ID: P980826/7470A_PRE/93
eparation ID: 7470A_PREP — EPA Method #: EPA 7470A
tch Approved By: OCCHIALINIJF — Batch Approved On: 8/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 3A	98-06579	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 4	98-06580	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 4A	98-06581	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

eparation Batch ID: P980828/9012_AQ_P/29
eparation ID: 9012_AQ_Prep — EPA Method #: EPA 9012
tch Approved By: GOTTSHALLDL — Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 3A	98-06579	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 4	98-06580	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 4A	98-06581	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

eparation Batch ID: P980831/3015/171
eparation ID: 3015 — EPA Method #: 3015
tch Approved By: GOTTSHALLDL — Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 3A	98-06579	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
		DUPLICATE	Final Volume	50	mL	
			Initial Volume	45	mL	
		MATRIX_SPIKE	Final Volume	50	mL	
			Initial Volume	45	mL	
		MS_DUPLICATE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4	98-06580	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 4A	98-06581	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

eparation Batch ID: P980831/5030/487
eparation ID: 5030 — EPA Method #: EPA 5030
tch Approved By: GOTTSHALLDL — Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
TB	98-06582	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

eparation Batch ID: P980901/5030/489
eparation ID: 5030 — EPA Method #: EPA 5030
tch Approved By: GOTTSHALLDL — Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 3A	98-06579	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

PREPARATION INFORMATION REPORT

SDG #: 980821-1165

Preparation Batch ID: P980901/5030/489
Preparation ID: 5030
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 5030
Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 4	98-06580	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 4A	98-06581	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

ent Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
M 3A	98-06579	08/19/98	08/21/98		08/28/98
M 4	98-06580	08/19/98	08/21/98		08/28/98
M 4A	98-06581	08/19/98	08/21/98		08/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

ent Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
M 3A	98-06579	08/19/98	08/21/98		08/25/98
M 4	98-06580	08/19/98	08/21/98		08/25/98
M 4A	98-06581	08/19/98	08/21/98		08/25/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

ent Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
M 3A	98-06579	08/19/98	08/21/98		08/21/98
M 4	98-06580	08/19/98	08/21/98		08/21/98
M 4A	98-06581	08/19/98	08/21/98		08/21/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

ent Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
M 3A	98-06579	08/19/98	08/21/98	08/27/98	08/28/98
M 4	98-06580	08/19/98	08/21/98	08/27/98	08/28/98
M 4A	98-06581	08/19/98	08/21/98	08/27/98	08/28/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

ent Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
M 3A	98-06579	08/19/98	08/21/98	08/26/98	08/26/98
M 4	98-06580	08/19/98	08/21/98	08/26/98	08/26/98
M 4A	98-06581	08/19/98	08/21/98	08/26/98	08/26/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

ent Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
M 3A	98-06579	08/19/98	08/21/98		08/25/98
M 4	98-06580	08/19/98	08/21/98		08/25/98
M 4A	98-06581	08/19/98	08/21/98		08/25/98

HOLDTIME SUMMARY

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 3A	98-06579	08/19/98	08/21/98	08/31/98	08/31/98
CDM 4	98-06580	08/19/98	08/21/98	08/31/98	08/31/98
CDM 4A	98-06581	08/19/98	08/21/98	08/31/98	08/31/98
TB	98-06582	08/17/98	08/21/98	08/28/98	08/28/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 3A	98-06579	08/19/98	08/21/98	08/26/98	08/26/98
CDM 4	98-06580	08/19/98	08/21/98	08/26/98	08/26/98
CDM 4A	98-06581	08/19/98	08/21/98	08/26/98	08/26/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 3A	98-06579	08/19/98	08/21/98		09/01/98
CDM 4	98-06580	08/19/98	08/21/98		09/01/98
CDM 4A	98-06581	08/19/98	08/21/98		09/01/98

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
CDM 3A	98-06579	08/19/98	08/21/98		08/31/98
CDM 4	98-06580	08/19/98	08/21/98		08/31/98
CDM 4A	98-06581	08/19/98	08/21/98		08/31/98

353.2_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05304
EPA Number: EPA 353.2
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980825/353.2_AQU/81
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

353.2_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05306
EPA Number: EPA 353.2
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980825/353.2_AQU/81
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

8000_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05319
EPA Number: HACH 8000
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980826/8000_AQUE/37
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

8000_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05326
EPA Number: HACH 8000
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980826/8000_AQUE/38
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980826/7470A_PRE/93
Lab Sample ID:	B98-05349	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	Analytical Batch ID:	I980826/7470A_AQU/76
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	B98-05390	Prep Analyst:	
EPA Number:	SM 2540C		
Units:	mg/L	Analytical Batch ID:	I980828/2540C_AQU/48
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05406	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05408	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980831/5030/487
Lab Sample ID:	B98-05432	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980831/8260A_AQU/338
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980831/5030/487
Lab Sample ID:	B98-05432	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980831/8260A_AQU/338
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980831/3015/171
Lab Sample ID:	B98-05436	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980831/6010A_AQU/139
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	<5.0	

6010A_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980831/3015/171
Lab Sample ID:	B98-05436	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980831/6010A_AQU/139
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	B98-05451	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	

8260A_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05451
EPA Number: EPA 8260A
Units: ug/L
Matrix: AQUEOUS

Preparation Batch ID: P980901/5030/489
Prep Analyst: MITCHELLMR
Analytical Batch ID: I980901/8260A_AQU/340
Analysis Analyst: MITCHELLMR

Component Name	MRL	Result	Qualifier
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	B98-05452	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	5.0	<5.0	
1,1,1-Trichloroethane	5.0	<5.0	
1,1,2,2-Tetrachloroethane	5.0	<5.0	
1,1,2-Trichloroethane	5.0	<5.0	
1,1-Dichloroethane	5.0	<5.0	
1,1-Dichloroethene	5.0	<5.0	
1,2,3-Trichloropropane	15	<15	
1,2-Dibromo-3-chloropropane	25	<25	
1,2-Dibromoethane	5.0	<5.0	
1,2-Dichlorobenzene	5.0	<5.0	
1,2-Dichloroethane	5.0	<5.0	
1,2-Dichloropropane	5.0	<5.0	
1,4-Dichlorobenzene	5.0	<5.0	
2-Butanone	100	<100	
2-Hexanone	50	<50	
4-Methyl-2-pentanone	100	<100	
Acetone	100	<100	
Acrylonitrile	200	<200	
Benzene	5.0	<5.0	
Bromochloromethane	5.0	<5.0	
Bromodichloromethane	5.0	<5.0	
Bromoform	5.0	<5.0	
Bromomethane	10	<10	
Carbon disulfide	100	<100	
Carbon tetrachloride	10	<10	
Chlorobenzene	5.0	<5.0	
Chloroethane	10	<10	
Chloroform	5.0	<5.0	
Chloromethane	10	<10	
Dibromochloromethane	5.0	<5.0	
Dibromomethane	10	<10	
Dichlorodifluoromethane	5.0	<5.0	
Ethylbenzene	5.0	<5.0	
Iodomethane	10	<10	
Methylene chloride	10	<10	
Styrene	10	<10	
Tetrachloroethene	5.0	<5.0	
Toluene	5.0	<5.0	
Trichloroethene	5.0	<5.0	
Trichlorofluoromethane	5.0	<5.0	
Vinyl acetate	50	<50	
Vinyl chloride	10	<10	

8260A_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05452
EPA Number: EPA 8260A
Units: ug/L
Matrix: AQUEOUS

Preparation Batch ID: P980901/5030/489
Prep Analyst: MITCHELLMR
Analytical Batch ID: I980901/8260A_AQU/340
Analysis Analyst: MITCHELLMR

Component Name	MRL	Result	Qualifier
cis-1,2-Dichloroethene	5.0	<5.0	
cis-1,3-Dichloropropene	10	<10	
m- and p-Xylenes	5.0	<5.0	
o-Xylene	5.0	<5.0	
trans-1,2-Dichloroethene	5.0	<5.0	
trans-1,3-Dichloropropene	10	<10	
trans-1,4-Dichloro-2-butene	100	<100	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9251_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05462
EPA Number: EPA 9251
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9251_AQUEOUS BLANK REPORT

SDG #: 980821-1165
Lab Sample ID: B98-05464
EPA Number: EPA 9251
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	B98-05473	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	B98-05477	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	B98-05483	Prep Analyst:	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	Analytical Batch ID:	I980901/2320B_AQU/46
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1165
Lab Sample ID: QCS98-05305
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980825/353.2_AQU/81
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	1.4	110.3	80 - 120	

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1165
Lab Sample ID: QCS98-05307
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980825/353.2_AQU/81
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	1.3	99.2	80 - 120	

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1165
Lab Sample ID: QCS98-05320
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980826/8000_AQUE/37
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	74	95.2	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	QCS98-05327	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980826/8000_AQUE/38
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	310	100.1	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	QCS98-05391	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980828/2540C_AQU/48
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	730	97.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	QCS98-05407	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/9012_AQUE/29
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.21	103.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	QCS98-05409	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/9012_AQUE/29
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	QCS98-05463	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/9251_AQUE/20
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.0	11	89.3	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
Lab Sample ID:	QCS98-05466	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/9251_AQUE/20
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.0	11	91.8	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1165
Lab Sample ID: QCS98-05474
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	130	104.0	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1165
Lab Sample ID: QCS98-05478
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	120	103.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1165
Lab Sample ID: QCS98-05484
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/2320B_AQU/46
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	120	101.7	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

7470A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980826/7470A_PRE/93
Lab Sample ID:	LFB98-05350	Prep. Analyst:	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980826/7470A_AQU/76
Units:	ug/L	Analyst:	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.2	5.00	102.4			80 - 120		

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

SDG #:	980821-1165	Preparation Batch ID:	P980831/3015/171
Lab Sample ID:	LFB98-05437	Prep. Analyst:	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/6010A_AQU/139
Units:	ug/L	Analyst:	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.0	100.00	93.6			80 - 120		
Barium	5.0	1000.00	93.0			80 - 120		
Cadmium	1.0	50.00	98.3			80 - 120		
Chromium	5.0	100.00	99.2			80 - 120		
Copper	5.0	100.00	90.6			80 - 120		
Iron	25	200.00	91.6			80 - 120		
Lead	5.0	100.00	95.4			80 - 120		
Manganese	5.0	100.00	94.0			80 - 120		
Selenium	10	50.00	111.3			80 - 120		
Silver	5.0	100.00	95.6			80 - 120		
Zinc	20	100.00	100.6			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

SDG #:	980821-1165	Preparation Batch ID:	P980831/5030/487
Lab Sample ID:	LFB98-05433	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/8260A_AQU/338
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	107.2	111.2	3.63	61 - 145	0 - 14	
Benzene	1.0	50.00	105.6	106.4	0.68	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	104.9	103.8	1.02	75 - 130	0 - 13	
Toluene	1.0	50.00	102.5	105.4	2.75	76 - 125	0 - 13	

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980831/5030/487
Lab Sample ID:	LFB98-05433	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/8260A_AQU/338
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Trichloroethene	1.0	50.00	102.5	104.6	2.03	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

SDG #:	980821-1165	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	LFB98-05453	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/8260A_AQU/340
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	104.9	105.3	0.34	61 - 145	0 - 14	
Benzene	1.0	50.00	105.6	104.7	0.86	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	105.3	103.8	1.42	75 - 130	0 - 13	
Toluene	1.0	50.00	106.9	94.3	12.53	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	105.1	102.9	2.14	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	100	110	7.339	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980828/2540C_AQU/48
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	140	130	8	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	10	<10	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	9.9	9.9	0.202	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-06555		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	14	13	7.407	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-06559		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	2.5	32	32	0	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980831/3015/171
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06579		
Units:	ug/L	Analytical Batch ID:	I980831/6010A_AQU/139
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.0	9.8	8.4	15.358	0 - 20	
Barium	5.0	160	160	0.755	0 - 20	
Cadmium	1.0	<1.0	<1.0	N/A	0 - 20	
Chromium	5.0	<5.0	<5.0	N/A	0 - 20	
Copper	5.0	<5.0	<5.0	N/A	0 - 20	
Iron	25	<25	<25	N/A	0 - 20	
Lead	5.0	<5.0	<5.0	N/A	0 - 20	
Manganese	5.0	390	380	0.919	0 - 20	
Selenium	10	<10	<10	N/A	0 - 20	
Silver	5.0	<5.0	<5.0	N/A	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-06579		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	<0.050	<0.050	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	SM 2320B	Prep. Analyst:	
Lab Sample ID:	98-06579		
Units:	mg/L CaCO3	Analytical Batch ID:	I980901/2320B_AQU/46
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	180	180	0.271	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	P980826/7470A_PRE/93
EPA Method #:	EPA 7470A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06616		
Units:	ug/L	Analytical Batch ID:	I980826/7470A_AQU/76
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	<0.20	<0.20	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-06678		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	12	12	0.206	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1165	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-06678		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	13	14	4.726	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

353.2_AQUEOUS MS/MSD RPD REPORT

G #: 980821-1165
b Sample ID: 98-06559
trix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980825/353.2_AQU/81
Analyst: NGUYENMH

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Nitrate	91			80 - 120		

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

353.2_AQUEOUS MS/MSD RPD REPORT

G #: 980821-1165
o Sample ID: 98-06579
trix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980825/353.2_AQU/81
Analyst: NGUYENMH

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Nitrate	102			80 - 120		

6010A_AQUEOUS MS/MSD RPD REPORT

G #: 980821-1165
o Sample ID: 98-06579
trix: AQUEOUS

Preparation Batch ID: P980831/3015/171
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980831/6010A_AQU/139
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Arsenic	95	96	0.84	80 - 120	0 - 20	
Barium	90	91	0.31	80 - 120	0 - 20	
Cadmium	97	97	0.44	80 - 120	0 - 20	
Chromium	96	96	0.34	80 - 120	0 - 20	
Copper	98	98	0.09	80 - 120	0 - 20	
Iron	94	94	0.45	80 - 120	0 - 20	
Lead	93	92	0.83	80 - 120	0 - 20	
Manganese	69	70	0.35	80 - 120	0 - 20	N
Selenium	98	96	2.61	80 - 120	0 - 20	
Silver	88	87	1.21	80 - 120	0 - 20	
Zinc	100	100	0.02	80 - 120	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

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	Description	Id Text				
			CDM 3A	CDM 4	CDM 4A	TB
Analysis Name	Name	Units	98-06579	98-06580	98-06581	98-06582
8260A_AQUEOUS	1,1,1-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
	1,1,2,2-Tetrachloroet	ug/L	<1.0	<1.0	<1.0	<1.0
	1,1,2-Trichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
	1,1-Dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2,3-Trichloropropan	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2,4-Trichlorobenzen	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2,4-Trimethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromo-3-chloro	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2-Dibromoethane	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2-Dichlorobenzene	ug/L	1.2	<1.0	<1.0	<1.0
	1,2-Dichloroethane	ug/L	<1.0	<1.0	<1.0	<1.0
	1,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
	1,3,5-Trimethylbenze	ug/L	<1.0	<1.0	<1.0	<1.0
	1,3-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: Woerd Avenue Landfill

SDG: 980821-1165

	Description	Id Text				
			CDM 3A	CDM 4	CDM 4A	TB
Analysis Name	Name	Units	98-06579	98-06580	98-06581	98-06582
8260A_AQUEOUS	1,3-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
	1,4-Dichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
	2,2-Dichloropropane	ug/L	<1.0	<1.0	<1.0	<1.0
	2-Butanone	ug/L	<20	<20	<20	<20
	2-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0
	2-Hexanone	ug/L	<20	<20	<20	<20
	4-Chlorotoluene	ug/L	<1.0	<1.0	<1.0	<1.0
	4-Methyl-2-pentanone	ug/L	<20	<20	<20	<20
	Acetone	ug/L	<20	<20	<20	<20
	Benzene	ug/L	<1.0	<1.0	<1.0	<1.0
	Bromobenzene	ug/L	<1.0	<1.0	<1.0	<1.0
	Bromochloromethan	ug/L	<1.0	<1.0	<1.0	<1.0
	Bromodichlorometha	ug/L	<1.0	<1.0	<1.0	<1.0
	Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0
	Bromomethane	ug/L	<5.0	<5.0	<5.0	<5.0
	Carbon tetrachloride	ug/L	<1.0	<1.0	<1.0	<1.0
	Chlorobenzene	ug/L	1.6	<1.0	<1.0	<1.0

	Description	Id Text				
			CDM 3A	CDM 4	CDM 4A	TB
Analysis Name	Name	Units	98-06579	98-06580	98-06581	98-06582
8260A_AQUEOUS	Chloroethane	ug/L	<5.0	<5.0	<5.0	<5.0
	Chloroform	ug/L	<5.0	<5.0	<5.0	<5.0
	Chloromethane	ug/L	<5.0	<5.0	<5.0	<5.0
	cis-1,2-Dichloroethen	ug/L	21	<1.0	<1.0	<1.0
	cis-1,3-Dichloroprope	ug/L	<1.0	<1.0	<1.0	<1.0
	Dibromochlorometha	ug/L	<1.0	<1.0	<1.0	<1.0
	Dibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0
	Dichlorodifluorometh	ug/L	<1.0	<1.0	<1.0	<1.0
	Ethylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
	Hexachlorobutadiene	ug/L	<1.0	<1.0	<1.0	<1.0
	Isopropylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
	Isopropylmethylbenz	ug/L	<1.0	<1.0	<1.0	<1.0
	m- and p-Xylenes	ug/L	<1.0	<1.0	<1.0	<1.0
	Methyl tert-butyl ethe	ug/L	<1.0	<1.0	<1.0	<1.0
	Methylene chloride	ug/L	<5.0	<5.0	<5.0	<5.0
	n-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
	n-Propylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0

Laboratory Summary Report

Client: Woerd Avenue Landfill SDG: 980821-1165

	Description	Id Text				
			CDM 3A	CDM 4	CDM 4A	TB
Analysis Name	Name	Units	98-06579	98-06580	98-06581	98-06582
8260A_AQUEOUS	Naphthalene	ug/L	<1.0	1.2	<1.0	<1.0
	o-Xylene	ug/L	<1.0	<1.0	<1.0	<1.0
	sec-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
	Styrene	ug/L	<1.0	<1.0	<1.0	<1.0
	tert-Butylbenzene	ug/L	<1.0	<1.0	<1.0	<1.0
	Tetrachloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
	Toluene	ug/L	<1.0	<1.0	<1.0	<1.0
	trans-1,2-Dichloroeth	ug/L	<1.0	<1.0	<1.0	<1.0
	trans-1,3-Dichloropro	ug/L	<1.0	<1.0	<1.0	<1.0
	Trichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0
	Trichlorofluorometha	ug/L	<1.0	<1.0	<1.0	<1.0
	Vinyl chloride	ug/L	<1.0	<1.0	<1.0	<1.0
9012_AQUEOUS	Cyanide, Total	mg/L	<0.015	<0.015	<0.015	
9038_AQUEOUS	Sulfate	mg/L	13	75	<10	
9251_AQUEOUS	Chloride	mg/L	29	58	240	

Client: Woerd Avenue Landfill

Project: Monitoring

SDG: 980821-1170

Date: 9/15/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980821-1170	**Print Date:**	9/15/98
Client:	Woerd Avenue Landfill	**Client Contact:**	
Project:	Monitoring	**Address:**	Camp Dresser & McKee Inc. 10 Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

BATCH NOTES

I980904/8260A_SOI/157

Sample and its spike were analyzed at lesser volumes due to matrix problems when analyzed undiluted.

I980910/8081_SOIL/56

Recovery of one of the two surrogates for samples
98-06610, MS98-06610, 98-06609, 98-06610, and 98-06611 were outside the recommended quality control criteria. Matrix interference is suspected.

RESULT NOTES

98-06610 (Arsenic)

RPD is not determinable for this sample due to low original concentration (less than 10x MDL).

98-06610 (Iron, Lead)

N Footnote. High native concentration interfered with spike recovery.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Cove 1	08/20/98	08/21/98	98-06614	AQUEOUS
Stream 1	08/20/98	08/21/98	98-06609	SOIL
Stream 1	08/20/98	08/21/98	98-06613	AQUEOUS
Swale 1	08/20/98	08/21/98	98-06610	SOIL
Cove 1	08/20/98	08/21/98	98-06611	SOIL
Cove 2	08/20/98	08/21/98	98-06612	SOIL
Cove 2	08/20/98	08/21/98	98-06615	AQUEOUS
CDM 2	08/20/98	08/21/98	98-06616	AQUEOUS
CDM 2A	08/20/98	08/21/98	98-06617	AQUEOUS

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980904/5030/495
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06613	**Analytical Batch ID:**	I980904/8260A_AQU/342
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	2		

Component Name	MRL	Result	Qualifiers
Benzene	2.0	<2.0	
Bromobenzene	2.0	<2.0	
Bromochloromethane	2.0	<2.0	
Bromodichloromethane	2.0	<2.0	
Bromoform	2.0	<2.0	
Bromomethane	10	<10	
2-Butanone	40	<40	
n-Butylbenzene	2.0	<2.0	
sec-Butylbenzene	2.0	<2.0	
tert-Butylbenzene	2.0	<2.0	
Carbon tetrachloride	2.0	<2.0	
Chlorobenzene	2.0	<2.0	
Chloroethane	10	<10	
Chloroform	10	<10	
Chloromethane	10	<10	
2-Chlorotoluene	2.0	<2.0	
4-Chlorotoluene	2.0	<2.0	
1,2-Dibromo-3-chloropropane	2.0	<2.0	
1,2-Dibromoethane	2.0	<2.0	
Dibromochloromethane	2.0	<2.0	
Dibromomethane	2.0	<2.0	
1,2-Dichlorobenzene	2.0	<2.0	
1,3-Dichlorobenzene	2.0	<2.0	
1,4-Dichlorobenzene	2.0	<2.0	
Dichlorodifluoromethane	2.0	<2.0	
1,1-Dichloroethane	2.0	<2.0	
1,2-Dichloroethane	2.0	<2.0	
cis-1,2-Dichloroethene	2.0	<2.0	
trans-1,2-Dichloroethene	2.0	<2.0	
1,2-Dichloropropane	2.0	<2.0	
1,3-Dichloropropane	2.0	<2.0	
2,2-Dichloropropane	2.0	<2.0	
1,1-Dichloropropene	2.0	<2.0	
cis-1,3-Dichloropropene	2.0	<2.0	
trans-1,3-Dichloropropene	2.0	<2.0	
Ethylbenzene	2.0	<2.0	
Hexachlorobutadiene	2.0	<2.0	
2-Hexanone	40	<40	
Isopropylbenzene	2.0	<2.0	
4-Methyl-2-pentanone	40	<40	
Methyl tert-butyl ether	2.0	<2.0	
Methylene chloride	10	<10	
Naphthalene	2.0	<2.0	
n-Propylbenzene	2.0	<2.0	
Styrene	2.0	<2.0	
1,1,1,2-Tetrachloroethane	2.0	<2.0	
1,1,2,2-Tetrachloroethane	2.0	<2.0	
Tetrachloroethene	2.0	<2.0	
Toluene	2.0	<2.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980904/5030/495
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06613	**Analytical Batch ID:**	I980904/8260A_AQU/342
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	2		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	2.0	<2.0	
1,2,4-Trichlorobenzene	2.0	<2.0	
1,1,1-Trichloroethane	2.0	<2.0	
1,1,2-Trichloroethane	2.0	<2.0	
Trichloroethene	2.0	<2.0	
Trichlorofluoromethane	2.0	<2.0	
1,2,4-Trimethylbenzene	2.0	<2.0	
1,3,5-Trimethylbenzene	2.0	<2.0	
1,2,3-Trichloropropane	2.0	<2.0	
Vinyl chloride	2.0	<2.0	
m- and p-Xylenes	2.0	<2.0	
o-Xylene	2.0	<2.0	
1,1-Dichloroethene	2.0	<2.0	
Acetone	40	99	
Isopropylmethylbenzene	2.0	<2.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	100.54	86 - 115
Dibromofluoromethane	108.42	86 - 118
Toluene-d8	97.60	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980831/3015/171
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06613	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	13	
Barium	5.0	24	
Cadmium	1.0	<1.0	
Chromium	5.0	32	
Copper	5.0	340	
Iron	25	810	
Lead	5.0	18	
Manganese	5.0	34	
Selenium	10	13	
Silver	5.0	<5.0	
Zinc	20	94	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06614	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	3.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06614	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	103.76	86 - 115
Dibromofluoromethane	101.96	86 - 118
Toluene-d8	101.06	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980831/3015/171
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06614	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	480	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	360	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	65	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06615	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06615	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	98.94	86 - 115
Dibromofluoromethane	105.92	86 - 118
Toluene-d8	98.24	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980831/3015/171
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06615	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	57	
Selenium	10	<10	
Silver	5.0	5.7	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-06616	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	2.1	
tert-Butylbenzene	1.0	1.5	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	2.3	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	2.2	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2		
Lab Sample ID:	98-06616	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	95.60	86 - 115
Dibromofluoromethane	105.96	86 - 118
Toluene-d8	96.98	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980831/3015/171
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 2		
Lab Sample ID:	98-06616	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	1100	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	140	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2A		
Lab Sample ID:	98-06617	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
2-Butanone	20	<20	
n-Butylbenzene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
2-Chlorotoluene	1.0	<1.0	
4-Chlorotoluene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
2-Hexanone	20	<20	
Isopropylbenzene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
Styrene	1.0	<1.0	
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

8260A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980901/5030/489
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	CDM 2A		
Lab Sample ID:	98-06617	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analyst:**	MITCHELLMR
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
o-Xylene	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
Acetone	20	<20	
Isopropylmethylbenzene	1.0	<1.0	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	105.84	86 - 115
Dibromofluoromethane	113.28	86 - 118
Toluene-d8	100.98	88 - 110

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

6010A_AQUEOUS ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980831/3015/171
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	CDM 2A		
Lab Sample ID:	98-06617	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analyst:**	LESHINSKYA
Units:	ug/L		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	5.0	<5.0	
Barium	5.0	7.6	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	250	
Lead	5.0	<5.0	
Manganese	5.0	220	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/01/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1170

Preparation Batch: P980826/7470A_PRE/93 — Prep. Analyst: LESHINSKYA

Component Name: Mercury — EPA Method #: EPA 7470A — Matrix: AQUEOUS

Analytical Batch: I980826/7470A_AQU/76 — Analyst: LESHINSKYA — Units: ug/L

Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	0.20	<0.20	1	
Cove 1	98-06614	0.20	<0.20	1	
Cove 2	98-06615	0.20	<0.20	1	
CDM 2	98-06616	0.20	<0.20	1	
CDM 2A	98-06617	0.20	<0.20	1	

Preparation Batch: P980828/9012_AQ_P/29 — Prep. Analyst: NGUYENMH

Component Name: Cyanide, Total — EPA Method #: EPA 9012 — Matrix: AQUEOUS

Analytical Batch: I980831/9012_AQUE/29 — Analyst: NGUYENMH — Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	0.015	0.029	1	
Cove 1	98-06614	0.015	<0.015	1	
Cove 2	98-06615	0.015	<0.015	1	
CDM 2	98-06616	0.015	<0.015	1	
CDM 2A	98-06617	0.015	<0.015	1	

Preparation Batch: P980901/7471A_PRE/68 — Prep. Analyst: LESHINSKYA

Component Name: Mercury — EPA Method #: EPA 7471A — Matrix: SOIL

Analytical Batch: I980901/7471A_SOI/67 — Analyst: LESHINSKYA — Units: mg/Kg dry

Reviewed By - Date: GOTTSHALLDL - 9/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06609	0.65	1.0	1	
Swale 1	98-06610	0.38	<0.38	1	
Cove 1	98-06611	0.55	<0.55	1	
Cove 2	98-06612	0.48	<0.48	1	

Preparation Batch: P980904/9071A/52 — Prep. Analyst: BUIT

Component Name: TPH — EPA Method #: EPA 418.1 — Matrix: SOIL

Analytical Batch: I980904/418.1_SOI/50 — Analyst: BUIT — Units: mg/Kg dry

Reviewed By - Date: GOTTSHALLDL - 9/4/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06609	55	2800	1	
Swale 1	98-06610	32	490	1	
Cove 1	98-06611	540	5100	10	
Cove 2	98-06612	39	670	1	

Component Name: Nitrate — EPA Method #: EPA 353.2 — Matrix: AQUEOUS

Analytical Batch: I980825/353.2_AQU/81 — Analyst: NGUYENMH — Units: mg/L

Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	0.050	<0.050	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1170

Component Name:	Nitrate	EPA Method #:	EPA 353.2	Matrix:	AQUEOUS
Analytical Batch:	I980825/353.2_AQU/81	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	OCCHIALINIJF - 8/28/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-06614	0.050	0.46	1	
Cove 2	98-06615	0.050	0.055	1	
CDM 2	98-06616	0.050	<0.050	1	
CDM 2A	98-06617	0.050	<0.050	1	

Component Name:	COD	EPA Method #:	HACH 8000	Matrix:	AQUEOUS
Analytical Batch:	I980826/8000_AQUE/37	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-06614	5.0	48	1	
Cove 2	98-06615	5.0	54	1	
CDM 2	98-06616	5.0	120	1	
CDM 2A	98-06617	5.0	33	1	

Component Name:	COD	EPA Method #:	HACH 8000	Matrix:	AQUEOUS
Analytical Batch:	I980826/8000_AQUE/38	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	5.0	230	1	

Component Name:	Total Dissolved Solids	EPA Method #:	SM 2540C	Matrix:	AQUEOUS
Analytical Batch:	I980828/2540C_AQU/48	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	5.0	1000	1	
Cove 1	98-06614	5.0	550	1	
Cove 2	98-06615	5.0	500	1	
CDM 2	98-06616	5.0	700	1	
CDM 2A	98-06617	5.0	700	1	

Component Name:	Alkalinity	EPA Method #:	SM 2320B	Matrix:	AQUEOUS
Analytical Batch:	I980901/2320B_AQU/46	Analyst:	NGUYENMH	Units:	mg/L CaCO3
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	5.0	510	1	
Cove 1	98-06614	5.0	390	1	
Cove 2	98-06615	5.0	380	1	
CDM 2	98-06616	5.0	640	1	
CDM 2A	98-06617	5.0	63	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1170

Component Name:	Sulfate	EPA Method #:	EPA 9038	Matrix:	AQUEOUS
Analytical Batch:	I980901/9038_AQUE/19	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	10	140	1	
Cove 1	98-06614	10	<10	1	
Cove 2	98-06615	10	<10	1	
CDM 2	98-06616	10	<10	1	
CDM 2A	98-06617	10	<10	1	

Component Name:	Chloride	EPA Method #:	EPA 9251	Matrix:	AQUEOUS
Analytical Batch:	I980901/9251_AQUE/20	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	10	230	10	
Cove 1	98-06614	10	110	10	
Cove 2	98-06615	1.0	64	1	
CDM 2	98-06616	1.0	58	1	
CDM 2A	98-06617	1.0	3.8	1	

SDG #: 980821-1170

% Solids Results

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609		Percent Solids	44.6	%	
Swale 1	98-06610		Percent Solids	77.0	%	
Cove 1	98-06611		Percent Solids	45.7	%	
Cove 2	98-06612		Percent Solids	63.5	%	

Preparation Batch ID: P980826/7470A_PRE/93
Preparation ID: 7470A_PREP
EPA Method #: EPA 7470A
Batch Approved By: OCCHIALINIJF
Batch Approved On: 8/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Cove 1	98-06614	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Cove 2	98-06615	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 2	98-06616	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		DUPLICATE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		MATRIX_SPIKE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 2A	98-06617	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

Preparation Batch ID: P980828/9012_AQ_P/29
Preparation ID: 9012_AQ_Prep
EPA Method #: EPA 9012
Batch Approved By: GOTTSHALLDL
Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 1	98-06614	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 2	98-06615	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 2	98-06616	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 2A	98-06617	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980831/3015/171
Preparation ID: 3015
EPA Method #: 3015
Batch Approved By: GOTTSHALLDL
Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 1	98-06614	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-06615	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 2	98-06616	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

PREPARATION INFORMATION REPORT

SDG #: 980821-1170

Preparation Batch ID: P980831/3015/171
Preparation ID: 3015
Batch Approved By: GOTTSHALLDL
EPA Method #: 3015
Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2A	98-06617	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980901/5030/489
Preparation ID: 5030
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 5030
Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-06614	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Cove 2	98-06615	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 2	98-06616	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 2A	98-06617	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980901/7471A_PRE/68
Preparation ID: 7471A_PREP
Batch Approved By: GOTTSHALLDL
EPA Method #:
Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.52	g	
Swale 1	98-06610	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.51	g	
Cove 1	98-06611	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.60	g	
Cove 2	98-06612	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.49	g	

Preparation Batch ID: P980903/3051/133
Preparation ID: 3051
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 3051
Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	500	mL	
			Initial Weight	0.477	g	
Swale 1	98-06610	SAMPLE	Final Volume	500	mL	
			Initial Weight	0.519	g	
		DUPLICATE	Final Volume	500	mL	
			Initial Weight	0.500	g	
		MATRIX_SPIKE	Final Volume	500	mL	
			Initial Weight	0.522	g	
Cove 1	98-06611	SAMPLE	Final Volume	500	mL	
			Initial Weight	0.500	g	
Cove 2	98-06612	SAMPLE	Final Volume	500	mL	

PREPARATION INFORMATION REPORT

SDG #: 980821-1170

Preparation Batch ID: P980903/3051/133
Preparation ID: 3051 EPA Method #: EPA 3051
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
			Initial Weight	0.644	g	

Preparation Batch ID: P980903/5035_SOIL/156
Preparation ID: 5035_SOIL_PREP EPA Method #: EPA 5035
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Swale 1	98-06610	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	
Cove 1	98-06611	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	
Cove 2	98-06612	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980904/5030/495
Preparation ID: 5030 EPA Method #: EPA 5030
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	12.5	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980904/5035_SOIL/157
Preparation ID: 5035_SOIL_PREP EPA Method #: EPA 5035
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	5.00	g	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Weight	5.00	g	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980904/9071A/52
Preparation ID: 9071A EPA Method #: EPA 9071A
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.5	g	
Swale 1	98-06610	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.7	g	
Cove 1	98-06611	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.5	g	
Cove 2	98-06612	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.4	g	

PREPARATION INFORMATION REPORT

SDG #: 980821-1170

Preparation Batch ID: P980908/3550_8270/82
Preparation ID: 3550_8270B
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 3550
Batch Approved On: 9/8/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.4	g	
			Surrogate Volume	1.0	mL	
Swale 1	98-06610	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.1	g	
			Surrogate Volume	1.0	mL	
Cove 1	98-06611	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.3	g	
			Surrogate Volume	1.0	mL	
		DUPLICATE	Final Volume	5.00	mL	
			Initial Weight	30.4	g	
			Surrogate Volume	1.0	mL	
Cove 2	98-06612	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.8	g	
			Surrogate Volume	1.0	mL	

Preparation Batch ID: P980910/3550_8081/57
Preparation ID: 3550_8081
Batch Approved By: GOTTSHALLDL
EPA Method #: EPA 3550
Batch Approved On: 9/10/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.6	g	
			Surrogate Volume	1.00	mL	
		DUPLICATE	Final Volume	10.0	mL	
			Initial Weight	30.3	g	
			Surrogate Volume	1.00	mL	
Swale 1	98-06610	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.2	g	
			Surrogate Volume	1.00	mL	
		MATRIX_SPIKE	Final Volume	10.0	mL	
			Initial Weight	30.3	g	
			Surrogate Volume	1.00	mL	
Cove 1	98-06611	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.1	g	
			Surrogate Volume	1.00	mL	
Cove 2	98-06612	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.0	g	
			Surrogate Volume	1.00	mL	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		08/28/98
Cove 1	98-06614	08/20/98	08/21/98		08/28/98
Cove 2	98-06615	08/20/98	08/21/98		08/28/98
CDM 2	98-06616	08/20/98	08/21/98		08/28/98
CDM 2A	98-06617	08/20/98	08/21/98		08/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		08/25/98
Cove 1	98-06614	08/20/98	08/21/98		08/25/98
Cove 2	98-06615	08/20/98	08/21/98		08/25/98
CDM 2	98-06616	08/20/98	08/21/98		08/25/98
CDM 2A	98-06617	08/20/98	08/21/98		08/25/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		08/21/98
Cove 1	98-06614	08/20/98	08/21/98		08/21/98
Cove 2	98-06615	08/20/98	08/21/98		08/21/98
CDM 2	98-06616	08/20/98	08/21/98		08/21/98
CDM 2A	98-06617	08/20/98	08/21/98		08/21/98

Analysis: 418.1_SOIL
Analysis Desc: Total Petroleum Hydrocarbons by IR
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	09/02/98	09/04/98
Swale 1	98-06610	08/20/98	08/21/98	09/02/98	09/04/98
Cove 1	98-06611	08/20/98	08/21/98	09/02/98	09/04/98
Cove 2	98-06612	08/20/98	08/21/98	09/02/98	09/04/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98	08/27/98	08/28/98
Cove 1	98-06614	08/20/98	08/21/98	08/27/98	08/28/98
Cove 2	98-06615	08/20/98	08/21/98	08/27/98	08/28/98
CDM 2	98-06616	08/20/98	08/21/98	08/27/98	08/28/98
CDM 2A	98-06617	08/20/98	08/21/98	08/27/98	08/28/98

HOLDTIME SUMMARY

Analysis: 6010A_SOIL
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	09/01/98	09/02/98
Swale 1	98-06610	08/20/98	08/21/98	09/01/98	09/02/98
Cove 1	98-06611	08/20/98	08/21/98	09/01/98	09/02/98
Cove 2	98-06612	08/20/98	08/21/98	09/01/98	09/02/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98	08/26/98	08/26/98
Cove 1	98-06614	08/20/98	08/21/98	08/26/98	08/26/98
Cove 2	98-06615	08/20/98	08/21/98	08/26/98	08/26/98
CDM 2	98-06616	08/20/98	08/21/98	08/26/98	08/26/98
CDM 2A	98-06617	08/20/98	08/21/98	08/26/98	08/26/98

Analysis: 7471A_SOIL
Analysis Desc: Mercury in Soil/Sediment/Sludge
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	08/28/98	08/28/98
Swale 1	98-06610	08/20/98	08/21/98	08/28/98	08/28/98
Cove 1	98-06611	08/20/98	08/21/98	08/28/98	08/28/98
Cove 2	98-06612	08/20/98	08/21/98	08/28/98	08/28/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		08/25/98
Cove 1	98-06614	08/20/98	08/21/98		08/25/98
Cove 2	98-06615	08/20/98	08/21/98		08/25/98
CDM 2	98-06616	08/20/98	08/21/98		08/25/98
CDM 2A	98-06617	08/20/98	08/21/98		08/25/98

Analysis: 8081_SOIL
Analysis Desc: Pesticides/PCBs
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 40 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	09/03/98	09/04/98
Swale 1	98-06610	08/20/98	08/21/98	09/03/98	09/04/98
Cove 1	98-06611	08/20/98	08/21/98	09/03/98	09/04/98
Cove 2	98-06612	08/20/98	08/21/98	09/03/98	09/05/98

HOLDTIME SUMMARY

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98	09/02/98	09/02/98
Cove 1	98-06614	08/20/98	08/21/98	08/31/98	08/31/98
Cove 2	98-06615	08/20/98	08/21/98	08/31/98	08/31/98
CDM 2	98-06616	08/20/98	08/21/98	08/31/98	08/31/98
CDM 2A	98-06617	08/20/98	08/21/98	08/31/98	08/31/98

Analysis: 8260A_SOIL
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	09/03/98	09/03/98
Swale 1	98-06610	08/20/98	08/21/98	09/02/98	09/02/98
Cove 1	98-06611	08/20/98	08/21/98	09/02/98	09/02/98
Cove 2	98-06612	08/20/98	08/21/98	09/02/98	09/02/98

Analysis: 8270B_SOIL
Analysis Desc: Semivolatile analysis in soils
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 40 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	09/03/98	09/04/98
Swale 1	98-06610	08/20/98	08/21/98	09/03/98	09/04/98
Cove 1	98-06611	08/20/98	08/21/98	09/03/98	09/04/98
Cove 2	98-06612	08/20/98	08/21/98	09/03/98	09/05/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98	08/26/98	08/26/98
Cove 1	98-06614	08/20/98	08/21/98	08/26/98	08/26/98
Cove 2	98-06615	08/20/98	08/21/98	08/26/98	08/26/98
CDM 2	98-06616	08/20/98	08/21/98	08/26/98	08/26/98
CDM 2A	98-06617	08/20/98	08/21/98	08/26/98	08/26/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		09/01/98
Cove 1	98-06614	08/20/98	08/21/98		09/01/98
Cove 2	98-06615	08/20/98	08/21/98		09/01/98
CDM 2	98-06616	08/20/98	08/21/98		09/01/98
CDM 2A	98-06617	08/20/98	08/21/98		09/01/98

HOLDTIME SUMMARY

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride

Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		08/31/98
Cove 1	98-06614	08/20/98	08/21/98		08/31/98
Cove 2	98-06615	08/20/98	08/21/98		08/31/98
CDM 2	98-06616	08/20/98	08/21/98		08/31/98
CDM 2A	98-06617	08/20/98	08/21/98		08/31/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05304	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05306	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

8000_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05319	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05326	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/38
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980826/7470A_PRE/93
Lab Sample ID:	B98-05349	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	Analytical Batch ID:	I980826/7470A_AQU/76
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05390	Prep Analyst:	
EPA Number:	SM 2540C		
Units:	mg/L	Analytical Batch ID:	I980828/2540C_AQU/48
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05406	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05408	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980831/3015/171
Lab Sample ID:	B98-05436	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	**Analytical Batch ID:**	I980831/6010A_AQU/139
Matrix:	AQUEOUS	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	<5.0	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/1/98

7471A_SOIL BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/7471A_PRE/68
Lab Sample ID:	B98-05449	**Prep Analyst:**	LESHINSKYA
EPA Number:	EPA 7471A		
Units:	mg/Kg dry	**Analytical Batch ID:**	I980901/7471A_SOI/67
Matrix:	SOIL	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.25	<0.25	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/1/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	B98-05451	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	B98-05451	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	B98-05451	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	B98-05452	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	5.0	<5.0	
1,1,1-Trichloroethane	5.0	<5.0	
1,1,2,2-Tetrachloroethane	5.0	<5.0	
1,1,2-Trichloroethane	5.0	<5.0	
1,1-Dichloroethane	5.0	<5.0	
1,1-Dichloroethene	5.0	<5.0	
1,2,3-Trichloropropane	15	<15	
1,2-Dibromo-3-chloropropane	25	<25	
1,2-Dibromoethane	5.0	<5.0	
1,2-Dichlorobenzene	5.0	<5.0	
1,2-Dichloroethane	5.0	<5.0	
1,2-Dichloropropane	5.0	<5.0	
1,4-Dichlorobenzene	5.0	<5.0	
2-Butanone	100	<100	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	B98-05452	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
2-Hexanone	50	<50	
4-Methyl-2-pentanone	100	<100	
Acetone	100	<100	
Acrylonitrile	200	<200	
Benzene	5.0	<5.0	
Bromochloromethane	5.0	<5.0	
Bromodichloromethane	5.0	<5.0	
Bromoform	5.0	<5.0	
Bromomethane	10	<10	
Carbon disulfide	100	<100	
Carbon tetrachloride	10	<10	
Chlorobenzene	5.0	<5.0	
Chloroethane	10	<10	
Chloroform	5.0	<5.0	
Chloromethane	10	<10	
Dibromochloromethane	5.0	<5.0	
Dibromomethane	10	<10	
Dichlorodifluoromethane	5.0	<5.0	
Ethylbenzene	5.0	<5.0	
Iodomethane	10	<10	
Methylene chloride	10	<10	
Styrene	10	<10	
Tetrachloroethene	5.0	<5.0	
Toluene	5.0	<5.0	
Trichloroethene	5.0	<5.0	
Trichlorofluoromethane	5.0	<5.0	
Vinyl acetate	50	<50	
Vinyl chloride	10	<10	
cis-1,2-Dichloroethene	5.0	<5.0	
cis-1,3-Dichloropropene	10	<10	
m- and p-Xylenes	5.0	<5.0	
o-Xylene	5.0	<5.0	
trans-1,2-Dichloroethene	5.0	<5.0	
trans-1,3-Dichloropropene	10	<10	
trans-1,4-Dichloro-2-butene	100	<100	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/1/98

9251_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05462	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05464	Prep Analyst:	
EPA Number:	EPA 9251		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05473	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05477	Prep Analyst:	
EPA Number:	EPA 9038		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05483	Prep Analyst:	
EPA Number:	SM 2320B		
Units:	mg/L CaCO3	Analytical Batch ID:	I980901/2320B_AQU/46
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

6010A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/3051/133
Lab Sample ID:	B98-05545	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	mg/Kg dry	Analytical Batch ID:	I980903/6010A_SOI/133
Matrix:	SOIL	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	<5.0	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/9/98

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/5035_SOIL/156
Lab Sample ID:	B98-05547	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	Analytical Batch ID:	I980903/8260A_SOI/156
Matrix:	SOIL	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	2.5	<2.5	
1,1,1-Trichloroethane	2.5	<2.5	
1,1,2,2-Tetrachloroethane	2.5	<2.5	
1,1,2-Trichloroethane	2.5	<2.5	
1,1-Dichloroethane	2.5	<2.5	
1,1-Dichloroethene	2.5	<2.5	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/5035_SOIL/156
Lab Sample ID:	B98-05547	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	Analytical Batch ID:	I980903/8260A_SOI/156
Matrix:	SOIL	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1-Dichloropropene	2.5	<2.5	
1,2,3-Trichlorobenzene	2.5	<2.5	
1,2,3-Trichloropropane	2.5	<2.5	
1,2,4-Trichlorobenzene	2.5	<2.5	
1,2,4-Trimethylbenzene	2.5	<2.5	
1,2-Dibromo-3-chloropropane	25	<25	
1,2-Dibromoethane	2.5	<2.5	
1,2-Dichlorobenzene	2.5	<2.5	
1,2-Dichloroethane	2.5	<2.5	
1,2-Dichloropropane	2.5	<2.5	
1,3,5-Trimethylbenzene	2.5	<2.5	
1,3-Dichlorobenzene	2.5	<2.5	
1,3-Dichloropropane	2.5	<2.5	
1,4-Dichlorobenzene	2.5	<2.5	
2,2-Dichloropropane	2.5	<2.5	
2-Butanone	50	<50	
2-Chlorotoluene	2.5	<2.5	
2-Hexanone	50	<50	
4-Chlorotoluene	2.5	<2.5	
4-Methyl-2-pentanone	50	<50	
Acetone	50	<50	
Benzene	2.5	<2.5	
Bromobenzene	2.5	<2.5	
Bromochloromethane	2.5	<2.5	
Bromodichloromethane	2.5	<2.5	
Bromoform	2.5	<2.5	
Bromomethane	12	<12	
Carbon tetrachloride	2.5	<2.5	
Chlorobenzene	2.5	<2.5	
Chloroethane	12	<12	
Chloroform	12	<12	
Chloromethane	12	<12	
Dibromochloromethane	2.5	<2.5	
Dibromomethane	2.5	<2.5	
Dichlorodifluoromethane	2.5	<2.5	
Ethylbenzene	2.5	<2.5	
Hexachlorobutadiene	2.5	<2.5	
Isopropylbenzene	2.5	<2.5	
Isopropylmethylbenzene	2.5	<2.5	
Methyl tert-butyl ether	25	<25	
Methylene chloride	13	<13	
Naphthalene	2.5	<2.5	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/5035_SOIL/156
Lab Sample ID:	B98-05547	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	Analytical Batch ID:	I980903/8260A_SOI/156
Matrix:	SOIL	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
Styrene	2.5	<2.5	
Tetrachloroethene	2.5	<2.5	
Toluene	2.5	<2.5	
Trichloroethene	2.5	<2.5	
Trichlorofluoromethane	2.5	<2.5	
Vinyl chloride	2.5	<2.5	
cis-1,2-Dichloroethene	2.5	<2.5	
cis-1,3-Dichloropropene	2.5	<2.5	
m- and p-Xylenes	2.5	<2.5	
n-Butylbenzene	2.5	<2.5	
n-Propylbenzene	2.5	<2.5	
o-Xylene	2.5	<2.5	
sec-Butylbenzene	2.5	<2.5	
tert-Butylbenzene	2.5	<2.5	
trans-1,2-Dichloroethene	2.5	<2.5	
trans-1,3-Dichloropropene	2.5	<2.5	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5030/495
Lab Sample ID:	B98-05557	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980904/8260A_AQU/342
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980904/5030/495
Lab Sample ID:	B98-05557	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980904/8260A_AQU/342
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5030/495
Lab Sample ID:	B98-05557	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980904/8260A_AQU/342
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5035_SOIL/157
Lab Sample ID:	B98-05572	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	Analytical Batch ID:	I980904/8260A_SOI/157
Matrix:	SOIL	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	2.5	<2.5	
1,1,1-Trichloroethane	2.5	<2.5	
1,1,2,2-Tetrachloroethane	2.5	<2.5	
1,1,2-Trichloroethane	2.5	<2.5	
1,1-Dichloroethane	2.5	<2.5	
1,1-Dichloroethene	2.5	<2.5	
1,1-Dichloropropene	2.5	<2.5	
1,2,3-Trichlorobenzene	2.5	<2.5	
1,2,3-Trichloropropane	2.5	<2.5	
1,2,4-Trichlorobenzene	2.5	<2.5	
1,2,4-Trimethylbenzene	2.5	<2.5	
1,2-Dibromo-3-chloropropane	25	<25	
1,2-Dibromoethane	2.5	<2.5	
1,2-Dichlorobenzene	2.5	<2.5	
1,2-Dichloroethane	2.5	<2.5	
1,2-Dichloropropane	2.5	<2.5	
1,3,5-Trimethylbenzene	2.5	<2.5	
1,3-Dichlorobenzene	2.5	<2.5	
1,3-Dichloropropane	2.5	<2.5	
1,4-Dichlorobenzene	2.5	<2.5	
2,2-Dichloropropane	2.5	<2.5	
2-Butanone	50	<50	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980904/5035_SOIL/157
Lab Sample ID:	B98-05572	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	**Analytical Batch ID:**	I980904/8260A_SOI/157
Matrix:	SOIL	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
2-Chlorotoluene	2.5	<2.5	
2-Hexanone	50	<50	
4-Chlorotoluene	2.5	<2.5	
4-Methyl-2-pentanone	50	<50	
Acetone	50	<50	
Benzene	2.5	<2.5	
Bromobenzene	2.5	<2.5	
Bromochloromethane	2.5	<2.5	
Bromodichloromethane	2.5	<2.5	
Bromoform	2.5	<2.5	
Bromomethane	12	<12	
Carbon tetrachloride	2.5	<2.5	
Chlorobenzene	2.5	<2.5	
Chloroethane	12	<12	
Chloroform	12	<12	
Chloromethane	12	<12	
Dibromochloromethane	2.5	<2.5	
Dibromomethane	2.5	<2.5	
Dichlorodifluoromethane	2.5	<2.5	
Ethylbenzene	2.5	<2.5	
Hexachlorobutadiene	2.5	<2.5	
Isopropylbenzene	2.5	<2.5	
Isopropylmethylbenzene	2.5	<2.5	
Methyl tert-butyl ether	25	<25	
Methylene chloride	13	<13	
Naphthalene	2.5	<2.5	
Styrene	2.5	<2.5	
Tetrachloroethene	2.5	<2.5	
Toluene	2.5	<2.5	
Trichloroethene	2.5	<2.5	
Trichlorofluoromethane	2.5	<2.5	
Vinyl chloride	2.5	<2.5	
cis-1,2-Dichloroethene	2.5	<2.5	
cis-1,3-Dichloropropene	2.5	<2.5	
m- and p-Xylenes	2.5	<2.5	
n-Butylbenzene	2.5	<2.5	
n-Propylbenzene	2.5	<2.5	
o-Xylene	2.5	<2.5	
sec-Butylbenzene	2.5	<2.5	
tert-Butylbenzene	2.5	<2.5	
trans-1,2-Dichloroethene	2.5	<2.5	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5035_SOIL/157
Lab Sample ID:	B98-05572	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	Analytical Batch ID:	I980904/8260A_SOI/157
Matrix:	SOIL	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
trans-1,3-Dichloropropene	2.5	<2.5	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

418.1_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/9071A/52
Lab Sample ID:	B98-05582	Prep Analyst:	BUIT
EPA Number:	EPA 418.1		
Units:	mg/Kg dry	Analytical Batch ID:	I980904/418.1_SOI/50
Matrix:	SOIL	Analysis Analyst:	BUIT

Component Name	MRL	Result	Qualifier
TPH	25	<25	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

8270B_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
Lab Sample ID:	B98-05595	Prep Analyst:	CROWELLSD
EPA Number:	EPA 8270B		
Units:	ug/Kg dry	Analytical Batch ID:	I980908/8270B_SOI/114
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Result	Qualifier
2-Methylnaphthalene	170	<170	
Acenaphthene	170	<170	
Acenaphthylene	170	<170	
Anthracene	170	<170	
Benz(a)anthracene	170	<170	
Benzo(a)pyrene	170	<170	
Benzo(b)fluoranthene	170	<170	
Benzo(g,h,i)perylene	170	<170	
Benzo(k)fluoranthene	170	<170	
Chrysene	170	<170	
Dibenz(a,h)anthracene	170	<170	
Fluoranthene	170	<170	
Fluorene	170	<170	
Indeno(1,2,3-cd)pyrene	170	<170	
Naphthalene	170	<170	
Phenanthrene	170	<170	

8270B_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
Lab Sample ID:	B98-05595	Prep Analyst:	CROWELLSD
EPA Number:	EPA 8270B		
Units:	ug/Kg dry	Analytical Batch ID:	I980908/8270B_SOI/114
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Result	Qualifier
Pyrene	170	<170	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/8/98

8081_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980910/3550_8081/57
Lab Sample ID:	B98-05638	Prep Analyst:	CROWELLSD
EPA Number:	EPA 8081		
Units:	mg/Kg dry	Analytical Batch ID:	I980910/8081_SOIL/56
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Result	Qualifier
4,4`-DDD	0.0033	<0.0033	
4,4`-DDE	0.0033	<0.0033	
4,4`-DDT	0.0033	<0.0033	
Aldrin	0.0033	<0.0033	
Aroclor 1221	0.0333	<0.0333	
Aroclor 1232	0.0333	<0.0333	
Aroclor 1242/1016	0.0333	<0.0333	
Aroclor 1248	0.0333	<0.0333	
Aroclor 1254	0.0333	<0.0333	
Aroclor 1260	0.0333	<0.0333	
Chlordane (Technical)	0.0167	<0.0167	
Dieldrin	0.0033	<0.0033	
Endosulfan I	0.0033	<0.0033	
Endosulfan II	0.0033	<0.0033	
Endosulfan sulfate	0.0033	<0.0033	
Endrin	0.0033	<0.0033	
Endrin aldehyde	0.0033	<0.0033	
Heptachlor	0.0033	<0.0033	
Heptachlor epoxide	0.0033	<0.0033	
Methoxychlor	0.0067	<0.0067	
Toxaphene	0.167	<0.167	
alpha-BHC	0.0033	<0.0033	
beta-BHC	0.0033	<0.0033	
delta-BHC	0.0033	<0.0033	
gamma-BHC	0.0033	<0.0033	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/10/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05305	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980825/353.2_AQU/81
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	1.4	110.3	80 - 120	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05307	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980825/353.2_AQU/81
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	1.3	99.2	80 - 120	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05320	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980826/8000_AQUE/37
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	74	95.2	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05327	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980826/8000_AQUE/38
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	310	100.1	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05391	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980828/2540C_AQU/48
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	730	97.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	QCS98-05407	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/9012_AQUE/29
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.21	103.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	QCS98-05409	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/9012_AQUE/29
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

7471A_SOIL QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/7471A_PRE/68
Lab Sample ID:	QCS98-05450	Prep. Analyst:	LESHINSKYA
Units:	mg/Kg dry		
Matrix:	SOIL	Analytical Batch ID:	I980901/7471A_SOI/67
		Analysis Analyst:	LESHINSKYA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Mercury	0.75	1.1	94.4	66.3 - 131.9	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05463	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/9251_AQUE/20
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.0	11	89.3	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05466
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.0	11	91.8	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05474
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	130	104.0	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05478
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	120	103.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05484	Prep. Analyst:	
Units:	mg/L CaCO3		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/2320B_AQU/46
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	120	101.7	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

6010A_SOIL QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/3051/133
Lab Sample ID:	QCS98-05546	Prep. Analyst:	LESHINSKYA
Units:	mg/Kg dry		
Matrix:	SOIL	Analytical Batch ID:	I980903/6010A_SOI/133
		Analysis Analyst:	LESHINSKYA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Arsenic	12	140	89.7	74.1 - 126	
Barium	12	140	81.1	76.9 - 123	
Cadmium	2.4	100	77.5	77.2 - 122.7	
Chromium	12	48	84.1	77 - 122.9	
Copper	12	52	86.7	79.1 - 121	
Iron	60	8000	91.7	60.8 - 139	
Lead	12	66	77.3	73.4 - 127	
Manganese	12	230	80.9	80.7 - 119	
Selenium	24	120	90.5	71.4 - 128	
Silver	12	40	71.0	73.8 - 126	
Zinc	48	860	87.2	73.9 - 126.4	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/9/98

7470A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980826/7470A_PRE/93
Lab Sample ID:	LFB98-05350	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980826/7470A_AQU/76
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.2	5.00	102.4			80 - 120		

Batch Approved By: OCCHIALINIJF **Batch Approved Date:** 8/28/98

SDG #:	980821-1170	**Preparation Batch ID:**	P980831/3015/171
Lab Sample ID:	LFB98-05437	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980831/6010A_AQU/139
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.0	100.00	93.6			80 - 120		
Barium	5.0	1000.00	93.0			80 - 120		
Cadmium	1.0	50.00	98.3			80 - 120		
Chromium	5.0	100.00	99.2			80 - 120		
Copper	5.0	100.00	90.6			80 - 120		
Iron	25	200.00	91.6			80 - 120		
Lead	5.0	100.00	95.4			80 - 120		
Manganese	5.0	100.00	94.0			80 - 120		
Selenium	10	50.00	111.3			80 - 120		
Silver	5.0	100.00	95.6			80 - 120		
Zinc	20	100.00	100.6			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/1/98

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	LFB98-05453	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980901/8260A_AQU/340
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	104.9	105.3	0.34	61 - 145	0 - 14	
Benzene	1.0	50.00	105.6	104.7	0.86	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	105.3	103.8	1.42	75 - 130	0 - 13	
Toluene	1.0	50.00	106.9	94.3	12.53	76 - 125	0 - 13	

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	LFB98-05453	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/8260A_AQU/340
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Trichloroethene	1.0	50.00	105.1	102.9	2.14	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

SDG #:	980821-1170	Preparation Batch ID:	P980903/5035_SOIL/156
Lab Sample ID:	LFB98-05548	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	SOIL	Analytical Batch ID:	I980903/8260A_SOI/156
Units:	ug/Kg dry	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	2.5	50.00	106.0	105.5	0.47	59 - 172	0 - 22	
Benzene	2.5	50.00	110.3	117.3	6.22	66 - 142	0 - 21	
Chlorobenzene	2.5	50.00	102.9	101.2	1.61	60 - 133	0 - 21	
Toluene	2.5	50.00	105.2	106.6	1.28	59 - 139	0 - 21	
Trichloroethene	2.5	50.00	104.3	104.6	0.27	62 - 137	0 - 24	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

SDG #:	980821-1170	Preparation Batch ID:	P980904/5030/495
Lab Sample ID:	LFB98-05558	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980904/8260A_AQU/342
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	106.0	105.5	0.47	61 - 145	0 - 14	
Benzene	1.0	50.00	110.3	117.3	6.22	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	102.9	101.2	1.61	75 - 130	0 - 13	
Toluene	1.0	50.00	105.2	106.6	1.28	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	104.3	104.6	0.27	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

8260A_SOIL LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5035_SOIL/157
Lab Sample ID:	LFB98-05573	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	SOIL	Analytical Batch ID:	I980904/8260A_SOI/157
Units:	ug/Kg dry	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	2.5	50.00	110.5	105.7	4.39	59 - 172	0 - 22	
Benzene	2.5	50.00	107.3	107.1	0.15	66 - 142	0 - 21	
Chlorobenzene	2.5	50.00	102.8	102.1	0.74	60 - 133	0 - 21	
Toluene	2.5	50.00	102.8	95.1	7.82	59 - 139	0 - 21	
Trichloroethene	2.5	50.00	101.2	101.4	0.22	62 - 137	0 - 24	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

SDG #:	980821-1170	Preparation Batch ID:	P980904/9071A/52
Lab Sample ID:	LFB98-05583	Prep. Analyst:	BUIT
EPA Method #:	EPA 418.1		
Matrix:	SOIL	Analytical Batch ID:	I980904/418.1_SOI/50
Units:	mg/Kg dry	Analyst:	BUIT

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
TPH		80.23	118.2			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
Lab Sample ID:	LFB98-05596	Prep. Analyst:	CROWELLSD
EPA Method #:	EPA 8270B		
Matrix:	SOIL	Analytical Batch ID:	I980908/8270B_SOI/114
Units:	ug/Kg dry	Analyst:	CROWELLSD

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Acenaphthene		100.00	72.8			31 - 137		
Pyrene		100.00	66.7			35 - 142		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/8/98

8081_SOIL LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980910/3550_8081/57
Lab Sample ID:	LFB98-05639	**Prep. Analyst:**	CROWELLSD
EPA Method #:	EPA 8081		
Matrix:	SOIL	**Analytical Batch ID:**	I980910/8081_SOIL/56
Units:	mg/Kg dry	**Analyst:**	CROWELLSD

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
4,4'-DDT	0.003	100.00	108.7			25 - 160		
Aldrin	0.003	25.00	88.6			42 - 122		
Dieldrin	0.003	100.00	95.7			36 - 146		
Endrin	0.003	100.00	113.9			30 - 147		
Heptachlor	0.003	25.00	90.7			34 - 111		
gamma-BHC	0.003	25.00	91.8			32 - 127		
Aroclor 1260	0.033	5000.00	83.5			8 - 127		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/10/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	100	110	7.339	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	SM 2540C	Prep. Analyst:	
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980828/2540C_AQU/48
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	140	130	8	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	10	<10	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	9.9	9.9	0.202	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-06555		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	14	13	7.407	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-06559		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	2.5	32	32	0	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980831/3015/171
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06579		
Units:	ug/L	Analytical Batch ID:	I980831/6010A_AQU/139
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.0	9.8	8.4	15.358	0 - 20	
Barium	5.0	160	160	0.755	0 - 20	
Cadmium	1.0	<1.0	<1.0	N/A	0 - 20	
Chromium	5.0	<5.0	<5.0	N/A	0 - 20	
Copper	5.0	<5.0	<5.0	N/A	0 - 20	
Iron	25	<25	<25	N/A	0 - 20	
Lead	5.0	<5.0	<5.0	N/A	0 - 20	
Manganese	5.0	390	380	0.919	0 - 20	
Selenium	10	<10	<10	N/A	0 - 20	
Silver	5.0	<5.0	<5.0	N/A	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-06579		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	<0.050	<0.050	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	SM 2320B	Prep. Analyst:	
Lab Sample ID:	98-06579		
Units:	mg/L CaCO3	Analytical Batch ID:	I980901/2320B_AQU/46
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	180	180	0.271	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

7471A_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/7471A_PRE/68
EPA Method #:	EPA 7471A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06605		
Units:	mg/Kg dry	Analytical Batch ID:	I980901/7471A_SOI/67
Matrix:	SOIL	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.32	<0.28	<0.32	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8081_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980910/3550_8081/57
EPA Method #:	EPA 8081	Prep. Analyst:	CROWELLSD
Lab Sample ID:	98-06609		
Units:	mg/Kg dry	Analytical Batch ID:	I980910/8081_SOIL/56
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
4,4`-DDD	0.0074	0.0526	0.0567	7.487	0 - 20	
4,4`-DDE	0.0074	0.0229	0.0178	25.124	0 - 20	

8081_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980910/3550_8081/57
EPA Method #:	EPA 8081	**Prep. Analyst:**	CROWELLSD
Lab Sample ID:	98-06609		
Units:	mg/Kg dry	**Analytical Batch ID:**	I980910/8081_SOIL/56
Matrix:	SOIL	**Analysis Analyst:**	CROWELLSD

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
4,4`-DDT	0.0074	0.0298	0.0087	109.424	0 - 20	
Aldrin	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Aroclor 1221	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1232	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1242/1016	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1248	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1254	0.0739	0.299	0.258	14.645	0 - 20	
Aroclor 1260	0.0739	0.114	0.187	48.836	0 - 20	
Chlordane (Technical)	0.0371	0.264	0.246	7.326	0 - 20	
Dieldrin	0.0074	0.0275	0.0225	19.658	0 - 20	
Endosulfan I	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endosulfan II	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endosulfan sulfate	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endrin	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endrin aldehyde	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Heptachlor	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Heptachlor epoxide	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Methoxychlor	0.0148	<0.0146	<0.0148	N/A	0 - 20	
Toxaphene	0.370	<0.366	<0.370	N/A	0 - 20	
alpha-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	
beta-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	
delta-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	
gamma-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/10/98

6010A_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980903/3051/133
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-06610		
Units:	mg/Kg dry	**Analytical Batch ID:**	I980903/6010A_SOI/133
Matrix:	SOIL	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	6.5	11	7.1	45.911	0 - 20	
Barium	6.5	150	150	0.233	0 - 20	
Cadmium	1.3	11	10	7.829	0 - 20	
Chromium	6.5	73	70	3.948	0 - 20	
Copper	6.5	80	95	17.19	0 - 20	
Iron	32	18000	15000	14.365	0 - 20	
Lead	6.5	570	530	7.446	0 - 20	
Manganese	6.5	230	230	1.141	0 - 20	

6010A_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/3051/133
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06610		
Units:	mg/Kg dry	Analytical Batch ID:	I980903/6010A_SOI/133
Matrix:	SOIL	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Selenium	13	<12	<13	N/A	0 - 20	
Silver	6.5	<6.2	<6.5	N/A	0 - 20	
Zinc	26	450	440	3.238	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/9/98

8270B_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
EPA Method #:	EPA 8270B	Prep. Analyst:	CROWELLSD
Lab Sample ID:	98-06611		
Units:	ug/Kg dry	Analytical Batch ID:	I980908/8270B_SOI/114
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
2-Methylnaphthalene	1800	<1800	<1800	N/A	0 - 35	
Acenaphthene	1800	3000	<1800	N/A	0 - 35	
Acenaphthylene	1800	<1800	<1800	N/A	0 - 35	
Anthracene	1800	9400	<1800	N/A	0 - 35	
Benz(a)anthracene	1800	10000	<1800	N/A	0 - 35	
Benzo(a)pyrene	1800	8100	<1800	N/A	0 - 35	
Benzo(b)fluoranthene	1800	5300	<1800	N/A	0 - 35	
Benzo(g,h,i)perylene	1800	3400	<1800	N/A	0 - 35	
Benzo(k)fluoranthene	1800	6400	<1800	N/A	0 - 35	
Chrysene	1800	10000	<1800	N/A	0 - 35	
Dibenz(a,h)anthracene	1800	<1800	<1800	N/A	0 - 35	
Fluoranthene	1800	23000	<1800	N/A	0 - 35	
Fluorene	1800	3800	<1800	N/A	0 - 35	
Indeno(1,2,3-cd)pyrene	1800	3100	<1800	N/A	0 - 35	
Naphthalene	1800	2000	<1800	N/A	0 - 35	
Phenanthrene	1800	30000	<1800	N/A	0 - 35	
Pyrene	1800	19000	<1800	N/A	0 - 35	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/8/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980826/7470A_PRE/93
EPA Method #:	EPA 7470A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06616		
Units:	ug/L	Analytical Batch ID:	I980826/7470A_AQU/76
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	<0.20	<0.20	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 9038	Prep. Analyst:	
Lab Sample ID:	98-06678		
Units:	mg/L	Analytical Batch ID:	I980901/9038_AQUE/19
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	12	12	0.206	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 9251	Prep. Analyst:	
Lab Sample ID:	98-06678		
Units:	mg/L	Analytical Batch ID:	I980901/9251_AQUE/20
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	13	14	4.726	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

7470A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06616
Matrix: AQUEOUS

Preparation Batch ID: P980826/7470A_PRE/93
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980826/7470A_AQU/76
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Mercury	98			80 - 120		

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06615
Matrix: AQUEOUS

Preparation Batch ID: P980901/5030/489
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980901/8260A_AQU/340
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	108			61 - 145		
Benzene	105			76 - 127		
Chlorobenzene	104			75 - 130		
Toluene	106			76 - 125		
Trichloroethene	106			71 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

6010A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980903/3051/133
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980903/6010A_SOI/133
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Arsenic	85			75 - 125		
Barium	86			75 - 125		
Cadmium	87			75 - 125		
Chromium	83			75 - 125		
Copper	88			75 - 125		
Iron	975			75 - 125		N
Lead	68			75 - 125		N
Manganese	83			75 - 125		

6010A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980903/3051/133
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980903/6010A_SOI/133
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Selenium	92			75 - 125		
Silver	85			75 - 125		
Zinc	90			75 - 125		

8260A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980903/5035_SOIL/156
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980903/8260A_SOI/156
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	115			59 - 172		
Benzene	113			66 - 142		
Chlorobenzene	105			60 - 133		
Toluene	110			59 - 139		
Trichloroethene	109			62 - 137		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/4/98

8260A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06609
Matrix: SOIL

Preparation Batch ID: P980904/5035_SOIL/157
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980904/8260A_SOI/157
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	116			59 - 172		
Benzene	111			66 - 142		
Chlorobenzene	106			60 - 133		
Toluene	104			59 - 139		
Trichloroethene	102			62 - 137		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/4/98

8081_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980910/3550_8081/57
Prep. Analyst: CROWELLSD

Analytical Batch ID: I980910/8081_SOIL/56
Analyst: CROWELLSD

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
4,4`-DDT	125			25 - 160		
Aldrin	98			42 - 122		
Dieldrin	127			36 - 146		
Endrin	141			30 - 147		
Heptachlor	129			34 - 111		
gamma-BHC	90			32 - 127		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/10/98

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Chain of Custody

CDM Analytical Laboratory
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Field Log # Q# 2034 Page 1 of 1

Client: Town of Waltham Address: Woerd Ave SDG#: 980821-1170
Project Name: Woerd Ave Landfill TAT: STD
Project #: Phone: 978-371-1170 / 617-252-8000 TAT Approved by: DM
Contact: CRB Laurie Webster / Elissa Brown Fax #: Lab Acct. #:
Report to: Paul Tamasi CDM Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX S - Soil W - Water D - Drinking	# OF CONT.	CDM SAMPLE ID See Attached SDG DR for Aliquot #'s & CDM Bottle Id's	VOA 524.2	VOA 624/8240	VOA 8260A	VOA Other	SEMI VOA 525	SEMI VOA 625/8270 A, B/N, AB/N	SEMI VOA PAH	SEMI VOA Other	MISC PEST / PCB	MISC TPH 418.1	MISC PET ID	METALS PP13	METALS RCRA 8	METALS EPA 6010 A Other (Specify)	METALS Filtered (Y/N)	OTHER See below	OTHER EPA 6010 RCRA + Pb	OTHER EPA 8260 VOC	OTHER EPA 8270 PAHs	OTHER EPA 418.1 TPH			
Stream 1	8/24/98	1:30	S	2	98-06609														X			✓	✓	✓	✓			
Stream 1		1:30	W	6	98-06613			✓											✓	N	✓							
Swale 1		1:45	S	2	98-06610														X			✓	✓	✓	✓			
Cove 1		2:05	S	2	98-06611														X			✓	✓	✓	✓			
Cove 1		2:05	W	6	98-06614			✓											✓	N	✓							
Cove 2		2:30	S	2	98-06612														X			✓	✓	✓	✓			
Cove 2		2:30	W	6	98-06615			✓											✓	N	✓							
CDM 2		3:45	W	6	98-06616			✓											✓	N	✓							
CDM 2A	✓	4:30	W	6	98-06617			✓											✓	N	✓							

A - HCl D - NaOH P - Plastic
B - HNO_3 E - NaThio G - Glass
C - H_2SO_4 F - Other V - Vial

Container Type:
Preservative:
Volume:

Samples Received:
- Cooler Temperature: ____ °C
- Chilled/properly preserved? ☑ yes ☐ no
- In good condition? ☑ yes ☐ no
- Evidence of tampering? ☐ yes ☑ no

Instructions:
Fax Results ☐
State Forms ☐
SMART Report ☐
Disk Deliverable ☐
(____) TICS ☐

Sampled & Relinquished by: [signature] Date 8/24/98 Time 12:15
Relinquished by: Date Time
Relinquished by: Date Time

Received by: [signature] CDM Date 8/24/98 Time 1015
Received by: Date Time
Received by: Date Time

Shipper/Airbill#: Custody Seal#: Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☒ Land ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Please filter metals
HACH 8000 COD
Sm 2540C TDS
Sm 2320B Total Alkalinity
EPA 353.2 Nitrate
EPA 9012 Cyanide
EPA 9251 Chloride
EPA 9038 Sulfate
EPA 7470A Mercury
METALS ADDED FOR ALL SOILS PER LAURIE WEBSTER (CRB) 8/24/98

Appendix H

Water Quality Analytical Data, Round 3

Client: Town of Waltham
Project: Waltham Landfill
SDG: 981209-1664
Date: December 23, 1998

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617)-354-4448 - fax (617)-354-0764

Laboratory Report

Client: Town of Waltham

Client Contact: Paul Taurasi

Project: Waltham Landfill

Address: Camp Dresser & McKee
Ten Cambridge Center

Project Narrative

The following report contains the analytical results for samples submitted to CDM Laboratory Services *on December 9, 1998.* The samples were received into the laboratory in accordance with documented sample acceptance procedures. All sample identification agreed with accompanying Chain of Custody documentation. Please refer to the Sample Description Information sheet for the list of samples included within this report.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples.

Note: Analytical testing was conducted by Alpha Analytical Laboratories under subcontract to CDM. The report is attached.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge,complete and accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH # AZ0553, CO DPHE (RECIPROCITY), CT DPH # 0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES#2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48, VA DGS/DCLS #00046, EPA ICR MA001

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.

Address: 840 Memorial Drive
Riverside Technology Center
Cambridge, MA 02139

Attn: Paul Taurasi

Project Number: 0519-22913-RT.SHMP

Site: TOWN OF WALTHAM

Laboratory Job Number: L9809864

Invoice Number: 21745

Date Received: 10-DEC-98

Date Reported: 23-DEC-98

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9809864-01	CDM 1	WALTHAM LANDFILL
L9809864-02	CDM 1A	WALTHAM LANDFILL
L9809864-03	CDM DUP	WALTHAM LANDFILL
L9809864-04	CDM 2	WALTHAM LANDFILL
L9809864-05	CDM 2A	WALTHAM LANDFILL

Authorized by:

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-01
CDM 1
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	J
Alkalinity, Total	120	mg CaCO3/L	2.0	30	2320B		14-Dec	F
Solids, Total Dissolved	190	mg/l	5.0	30	2540C		18-Dec	I
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	4.3	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	2.7	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	26.	mg/l	10.	1	9038		15-Dec	
Chemical Oxygen Demand	130	mg/l	20.	30	5220D		18-Dec	
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	
Barium, Dissolved	0.04	mg/l	0.01	1	6010B		22-Dec	
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Iron, Dissolved	0.26	mg/l	0.05	1	6010B		22-Dec	
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Manganese, Dissolved	1.2	mg/l	0.01	1	6010B		22-Dec	
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-02
CDM 1A
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Alkalinity, Total	120	mg CaCO3/L	2.0	30	2320B		14-Dec	KF
Solids, Total Dissolved	190	mg/l	5.0	30	2540C		18-Dec	DK
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AU
Chloride	8.4	mg/l	1.0	1	9251		11-Dec	ED
Nitrogen, Nitrate	0.80	mg/l	0.10	30	4500NO3-F		11-Dec	ED
Sulfate	20.	mg/l	10.	1	9038		15-Dec	KF
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	DK
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Barium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Iron, Dissolved	0.10	mg/l	0.05	1	6010B		22-Dec	MG
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Manganese, Dissolved	0.46	mg/l	0.01	1	6010B		22-Dec	MG
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	DM
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	MG

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-03
CDM DUP
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	120	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	200	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	4.2	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	2.7	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	26.	mg/l	10.	1	9038		15-Dec	
Chemical Oxygen Demand	120	mg/l	20.	30	5220D		18-Dec	
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	
Barium, Dissolved	0.04	mg/l	0.01	1	6010B		22-Dec	
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Iron, Dissolved	0.18	mg/l	0.05	1	6010B		22-Dec	
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Manganese, Dissolved	1.2	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	V
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-04
CDM 2
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Alkalinity, Total	650	mg CaCO3/L	2.0	30	2320B		14-Dec	KF
Solids, Total Dissolved	690	mg/l	5.0	30	2540C		18-Dec	DK
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AU
Chloride	66.	mg/l	1.0	1	9251		11-Dec	ED
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	ED
Sulfate	ND	mg/l	10.	1	9038		15-Dec	KF
Chemical Oxygen Demand	620	mg/l	20.	30	5220D		18-Dec	DK
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	MG
Barium, Dissolved	1.4	mg/l	0.01	1	6010B		22-Dec	MG
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Iron, Dissolved	9.8	mg/l	0.05	1	6010B		22-Dec	MG
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Manganese, Dissolved	0.13	mg/l	0.01	1	6010B		22-Dec	MG
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	DM
Selenium, Dissolved	0.025	mg/l	0.005	1	6010B		22-Dec	MG
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	MG

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809864-05
CDM 2A
Sample Matrix: WATER

Date Collected: 09-DEC-1998
Date Received : 10-DEC-98
Date Reported : 23-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	69.	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	120	mg/l	5.0	30	2540C		18-Dec	I
Cyanide, Total	ND	mg/l	0.005	1	9010B		17-Dec	A
Chloride	4.0	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.18	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L9809864

Parameter	Value 1	Value 2	RPD	Units
Alkalinity, Total for sample(s) 01-05				
Alkalinity, Total	69.	69.	0	mg CaCO3/L
Chloride for sample(s) 01-05				
Chloride	6.5	6.1	6	mg/l
Nitrogen, Nitrate for sample(s) 01-05				
Nitrogen, Nitrate	0.76	0.76	0	mg/l
Sulfate for sample(s) 01-05				
Sulfate	20.	20.	0	mg/l
Dissolved Metals for sample(s) 01-05				
Arsenic, Dissolved	ND	ND	NC	mg/l
Barium, Dissolved	0.04	0.04	0	mg/l
Cadmium, Dissolved	ND	ND	NC	mg/l
Chromium, Dissolved	ND	ND	NC	mg/l
Copper, Dissolved	ND	ND	NC	mg/l
Iron, Dissolved	0.26	0.27	4	mg/l
Lead, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	1.2	1.2	0	mg/l
Selenium, Dissolved	ND	0.005	NC	mg/l
Silver, Dissolved	ND	ND	NC	mg/l
Zinc, Dissolved	ND	ND	NC	mg/l
Dissolved Metals for sample(s) 01-05				
Mercury, Dissolved	ND	ND	NC	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809864

Parameter	% Recovery
Alkalinity, Total LCS for sample(s) 01-05	
Alkalinity, Total	100
Cyanide, Total LCS for sample(s) 05	
Cyanide, Total	76
Cyanide, Total LCS for sample(s) 01-04	
Cyanide, Total	103
Chloride LCS for sample(s) 01-05	
Chloride	98
Nitrogen, Nitrate LCS for sample(s) 01-05	
Nitrogen, Nitrate	94
Sulfate LCS for sample(s) 01-05	
Sulfate	95
Chemical Oxygen Demand LCS for sample(s) 01-05	
Chemical Oxygen Demand	96
Chemical Oxygen Demand LCS for sample(s) 01-05	
Chemical Oxygen Demand	100
Dissolved Metals LCS for sample(s) 01-05	
Mercury, Dissolved	108
Alkalinity, Total SPIKE for sample(s) 01-05	
Alkalinity, Total	100
Cyanide, Total SPIKE for sample(s) 05	
Cyanide, Total	87
Chloride SPIKE for sample(s) 01-05	
Chloride	100
Nitrogen, Nitrate SPIKE for sample(s) 01-05	
Nitrogen, Nitrate	78
Sulfate SPIKE for sample(s) 01-05	
Sulfate	93
Chemical Oxygen Demand SPIKE for sample(s) 01-05	
Chemical Oxygen Demand	120
Dissolved Metals SPIKE for sample(s) 01-05	
Arsenic, Dissolved	104
Barium, Dissolved	100
Cadmium, Dissolved	105

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809864

Continued

Parameter	% Recovery
Dissolved Metals SPIKE for sample(s) 01-05	
Chromium, Dissolved	100
Copper, Dissolved	100
Iron, Dissolved	100
Lead, Dissolved	100
Manganese, Dissolved	98
Selenium, Dissolved	127
Silver, Dissolved	84
Zinc, Dissolved	100

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809864

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 01-05								
Alkalinity, Total	ND	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Blank Analysis for sample(s) 01-05								
Solids, Total Dissolved	ND	mg/l	5.0	30	2540C		18-Dec	D
Blank Analysis for sample(s) 05								
Cyanide, Total	ND	mg/l	0.005	1	9010B		17-Dec	A
Blank Analysis for sample(s) 01-04								
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Blank Analysis for sample(s) 01-05								
Chloride	ND	mg/l	1.0	1	9251		11-Dec	E
Blank Analysis for sample(s) 01-05								
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Blank Analysis for sample(s) 01-05								
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Blank Analysis for sample(s) 01-05								
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	D

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617)-354-4448 - fax (617)-354-0764

Laboratory Report

Client: Town of Waltham

Client Contact: Paul Taurasi

Project: Waltham Landfill

Address: Camp Dresser & McKee
Ten Cambridge Center

Project Narrative

The following report contains the analytical results for samples submitted to CDM Laboratory Services *on December 10, 1998.* The samples were received into the laboratory in accordance with documented sample acceptance procedures. All sample identification agreed with accompanying Chain of Custody documentation. Please refer to the Sample Description Information sheet for the list of samples included within this report.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples.

Note: Analytical testing was conducted by Alpha Analytical Laboratories under subcontract to CDM. The report is attached.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge,complete and accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH # AZ0553, CO DPHE (RECIPROCITY), CT DPH # 0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES#2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48, VA DGS/DCLS #00046, EPA ICR MA001

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.

Address: 840 Memorial Drive
Riverside Technology Center
Cambridge, MA 02139

Attn: Paul Taurasi

Project Number:

Site: TOWN OF WALTHAM

Laboratory Job Number: L9809865

Invoice Number: 21787

Date Received: 10-DEC-98

Date Reported: 24-DEC-98

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9809865-01	CDM 4	WALTHAM LANDFILL
L9809865-02	CDM 4A	WALTHAM LANDFILL
L9809865-03	STREAM 1	WALTHAM LANDFILL
L9809865-04	CDM 3A	WALTHAM LANDFILL
L9809865-05	COVE 1	WALTHAM LANDFILL
L9809865-06	COVE 2	WALTHAM LANDFILL
L9809865-07	COMPOSITE OF SED 1 - SED 3	WALTHAM LANDFILL

Authorized by:

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-01
CDM 4
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	900	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	940	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.025	1	9010B		22-Dec	A
Chloride	58.	mg/l	1.0	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	710	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	M
Barium, Dissolved	0.87	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	1.7	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.17	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.025	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-02
CDM 4A
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Alkalinity, Total	310	mg CaCO3/L	2.0	30	2320B		14-Dec	KF
Solids, Total Dissolved	710	mg/l	5.0	30	2540C		18-Dec	DK
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AU
Chloride	240	mg/l	10.	1	9251		11-Dec	ED
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	ED
Sulfate	ND	mg/l	10.	1	9038		15-Dec	KF
Chemical Oxygen Demand	51.	mg/l	20.	30	5220D		18-Dec	DK
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Barium, Dissolved	0.12	mg/l	0.01	1	6010B		22-Dec	MG
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Iron, Dissolved	0.35	mg/l	0.05	1	6010B		22-Dec	MG
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Manganese, Dissolved	3.2	mg/l	0.01	1	6010B		22-Dec	MG
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	DM
Selenium, Dissolved	0.007	mg/l	0.005	1	6010B		22-Dec	MG
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	MG

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-03
STREAM 1
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	510	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	820	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	220	mg/l	10.	1	9251		11-Dec	E
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	53.	mg/l	50.	1	9038		15-Dec	K
Chemical Oxygen Demand	150	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Barium, Dissolved	0.20	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	0.01	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	1.1	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.37	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.010	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-04
CDM 3A
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Alkalinity, Total	230	mg CaCO3/L	2.0	30	2320B		14-Dec	KF
Solids, Total Dissolved	320	mg/l	5.0	30	2540C		18-Dec	DK
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AU
Chloride	32.	mg/l	1.0	1	9251		11-Dec	ED
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	ED
Sulfate	13.	mg/l	10.	1	9038		15-Dec	KF
Chemical Oxygen Demand	41.	mg/l	20.	30	5220D		18-Dec	DK
Dissolved Metals								
Arsenic, Dissolved	0.008	mg/l	0.005	1	6010B		22-Dec	MG
Barium, Dissolved	0.16	mg/l	0.01	1	6010B		22-Dec	MG
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Iron, Dissolved	0.05	mg/l	0.05	1	6010B		22-Dec	MG
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Manganese, Dissolved	0.56	mg/l	0.01	1	6010B		22-Dec	MG
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	DM
Selenium, Dissolved	0.006	mg/l	0.005	1	6010B		22-Dec	MG
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	MG

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-05
COVE 1
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Alkalinity, Total	500	mg CaCO3/L	2.0	30	2320B		14-Dec	K
Solids, Total Dissolved	780	mg/l	5.0	30	2540C		18-Dec	D
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	A
Chloride	150	mg/l	10.	1	9251		11-Dec	E
Nitrogen, Nitrate	0.46	mg/l	0.10	30	4500NO3-F		11-Dec	E
Sulfate	ND	mg/l	10.	1	9038		15-Dec	K
Chemical Oxygen Demand	46.	mg/l	20.	30	5220D		18-Dec	D
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	M
Barium, Dissolved	0.96	mg/l	0.01	1	6010B		22-Dec	M
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	M
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Iron, Dissolved	19.	mg/l	0.05	1	6010B		22-Dec	M
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Manganese, Dissolved	0.50	mg/l	0.01	1	6010B		22-Dec	M
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	D
Selenium, Dissolved	0.016	mg/l	0.005	1	6010B		22-Dec	M
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	M
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	M

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-06
COVE 2
Sample Matrix: WATER

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: Field Filtered

Number & Type of Containers: 4-Plastic

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Alkalinity, Total	400	mg CaCO3/L	2.0	30	2320B		14-Dec	KF
Solids, Total Dissolved	470	mg/l	5.0	30	2540C		18-Dec	DK
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AU
Chloride	40.	mg/l	1.0	1	9251		11-Dec	ED
Nitrogen, Nitrate	0.16	mg/l	0.10	30	4500NO3-F		11-Dec	ED
Sulfate	ND	mg/l	10.	1	9038		15-Dec	KF
Chemical Oxygen Demand	110	mg/l	20.	30	5220D		18-Dec	DK
Dissolved Metals								
Arsenic, Dissolved	ND	mg/l	0.050	1	6010B		22-Dec	MG
Barium, Dissolved	0.34	mg/l	0.01	1	6010B		22-Dec	MG
Cadmium, Dissolved	ND	mg/l	0.005	1	6010B		22-Dec	MG
Chromium, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Copper, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Iron, Dissolved	0.49	mg/l	0.05	1	6010B		22-Dec	MG
Lead, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Manganese, Dissolved	0.19	mg/l	0.01	1	6010B		22-Dec	MG
Mercury, Dissolved	ND	mg/l	0.0005	1	7470A	22-Dec	23-Dec	DM
Selenium, Dissolved	0.009	mg/l	0.005	1	6010B		22-Dec	MG
Silver, Dissolved	ND	mg/l	0.01	1	6010B		22-Dec	MG
Zinc, Dissolved	ND	mg/l	0.05	1	6010B		22-Dec	MG

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L9809865

Parameter	Value 1	Value 2	RPD	Units
Alkalinity, Total for sample(s) 01-06				
Alkalinity, Total	69.	69.	0	mg CaCO3/L
Chloride for sample(s) 01-06				
Chloride	6.5	6.1	6	mg/l
Nitrogen, Nitrate for sample(s) 01-06				
Nitrogen, Nitrate	0.76	0.76	0	mg/l
Sulfate for sample(s) 01-06				
Sulfate	20.	20.	0	mg/l
Total Metals for sample(s) 07				
Arsenic, Total	17.	21.	21	mg/kg
Barium, Total	530	610	14	mg/kg
Cadmium, Total	6.4	6.6	3	mg/kg
Chromium, Total	63.	70.	11	mg/kg
Copper, Total	210	220	5	mg/kg
Iron, Total	34000	43000	23	mg/kg
Lead, Total	490	510	4	mg/kg
Manganese, Total	270	320	17	mg/kg
Selenium, Total	ND	ND	NC	mg/kg
Silver, Total	ND	ND	NC	mg/kg
Zinc, Total	840	880	5	mg/kg
Dissolved Metals for sample(s) 01-06				
Arsenic, Dissolved	ND	ND	NC	mg/l
Barium, Dissolved	0.04	0.04	0	mg/l
Cadmium, Dissolved	ND	ND	NC	mg/l
Chromium, Dissolved	ND	ND	NC	mg/l
Copper, Dissolved	ND	ND	NC	mg/l
Iron, Dissolved	0.26	0.27	4	mg/l
Lead, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	1.2	1.2	0	mg/l
Selenium, Dissolved	ND	0.005	NC	mg/l
Silver, Dissolved	ND	ND	NC	mg/l
Zinc, Dissolved	ND	ND	NC	mg/l
Dissolved Metals for sample(s) 01-06				
Mercury, Dissolved	ND	ND	NC	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Parameter	% Recovery
Alkalinity, Total LCS for sample(s) 01-06	
Alkalinity, Total	100
Cyanide, Total LCS for sample(s) 01	
Cyanide, Total	100
Cyanide, Total LCS for sample(s) 02-06	
Cyanide, Total	103
Chloride LCS for sample(s) 01-06	
Chloride	98
Nitrogen, Nitrate LCS for sample(s) 01-06	
Nitrogen, Nitrate	94
Sulfate LCS for sample(s) 01-06	
Sulfate	95
Chemical Oxygen Demand LCS for sample(s) 01-06	
Chemical Oxygen Demand	96
Chemical Oxygen Demand LCS for sample(s) 01-06	
Chemical Oxygen Demand	100
Hydrocarbons, Total(IR) LCS for sample(s) 07	
Hydrocarbons, Total(IR)	115
Total Metals LCS for sample(s) 07	
Arsenic, Total	89
Barium, Total	95
Cadmium, Total	92
Chromium, Total	93
Copper, Total	97
Lead, Total	95
Manganese, Total	110
Selenium, Total	84
Silver, Total	91
Zinc, Total	95
Total Metals LCS for sample(s) 07	
Mercury, Total	103
Dissolved Metals LCS for sample(s) 01-06	
Mercury, Dissolved	108
SVOC's by GC/MS 8270 LCS for sample(s) 07	
Acenaphthene	120
1,2,4-Trichlorobenzene	110
1,4-Dichlorobenzene	80

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Continued

Parameter	% Recovery
SVOC's by GC/MS 8270 LCS for sample(s) 07	
2,4-Dinitrotoluene	120
n-Nitrosodi-n-propylamine	89
Pyrene	110
p-Chloro-m-cresol	95
2-Chlorophenol	67
4-Nitrophenol	84
Pentachlorophenol	110
Phenol	44
PCB/Pesticides LCS for sample(s) 07	
Lindane	79
Heptachlor	73
Aldrin	105
Endrin	84
Dieldrin	56
4,4'-DDT	76
Alkalinity, Total SPIKE for sample(s) 01-06	
Alkalinity, Total	100
Cyanide, Total SPIKE for sample(s) 01	
Cyanide, Total	61
Chloride SPIKE for sample(s) 01-06	
Chloride	100
Nitrogen, Nitrate SPIKE for sample(s) 01-06	
Nitrogen, Nitrate	78
Sulfate SPIKE for sample(s) 01-06	
Sulfate	93
Chemical Oxygen Demand SPIKE for sample(s) 01-06	
Chemical Oxygen Demand	120
Total Metals SPIKE for sample(s) 07	
Arsenic, Total	100
Barium, Total	98
Cadmium, Total	86
Chromium, Total	85
Copper, Total	110
Lead, Total	90
Manganese, Total	120
Selenium, Total	100
Silver, Total	100
Zinc, Total	64

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Continued

Parameter	% Recovery
Total Metals SPIKE for sample(s) 07	
Mercury, Total	146
Dissolved Metals SPIKE for sample(s) 01-06	
Arsenic, Dissolved	104
Barium, Dissolved	100
Cadmium, Dissolved	105
Chromium, Dissolved	100
Copper, Dissolved	100
Iron, Dissolved	100
Lead, Dissolved	100
Manganese, Dissolved	98
Selenium, Dissolved	127
Silver, Dissolved	84
Zinc, Dissolved	100

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L9809865

Parameter	MS %	MSD %	RPD
Volatile Organics by GC/MS 8260 for sample(s) 07			
Chlorobenzene	83	81	2
Benzene	83	88	6
Toluene	83	88	6
1,1-Dichloroethene	97	95	2
Trichloroethene	83	81	2
SVOC's by GC/MS 8270 for sample(s) 07			
Acenaphthene	130	140	7
1,2,4-Trichlorobenzene	130	130	0
1,4-Dichlorobenzene	100	100	0
2,4-Dinitrotoluene	160	180	12
n-Nitrosodi-n-propylamine	110	110	0
Pyrene	120	130	8
p-Chloro-m-cresol	110	110	0
2-Chlorophenol	84	84	0
4-Nitrophenol	60	92	42
Pentachlorophenol	100	130	26
Phenol	72	60	18
PCB/Pesticides for sample(s) 07			
Lindane	71	72	1
Heptachlor	65	66	1
Aldrin	67	70	4
Endrin	76	78	3
Dieldrin	52	54	4
4,4'-DDT	68	70	3

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 01-06								
Alkalinity, Total	ND	mg CaCO3/L	2.0	30	2320B		14-Dec	KF
Blank Analysis for sample(s) 01-06								
Solids, Total Dissolved	ND	mg/l	5.0	30	2540C		18-Dec	DK
Blank Analysis for sample(s) 01								
Cyanide, Total	ND	mg/l	0.005	1	9010B		22-Dec	AU
Blank Analysis for sample(s) 02-06								
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AU
Blank Analysis for sample(s) 01-06								
Chloride	ND	mg/l	1.0	1	9251		11-Dec	ED
Blank Analysis for sample(s) 01-06								
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	ED
Blank Analysis for sample(s) 01-06								
Sulfate	ND	mg/l	10.	1	9038		15-Dec	KF
Blank Analysis for sample(s) 01-06								
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	DK
Blank Analysis for sample(s) 07								
Hydrocarbons, Total(IR)	ND	mg/kg	40.	4	418.1	21-Dec	23-Dec	SN
Blank Analysis for sample(s) 07								
Total Metals				1	3051			
Arsenic, Total	ND	mg/kg	0.20	1	6010B	15-Dec	16-Dec	MG
Barium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Cadmium, Total	ND	mg/kg	0.20	1	6010B	15-Dec	16-Dec	MG
Chromium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Copper, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Iron, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	MG
Lead, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	MG
Manganese, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Selenium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Silver, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 07								
Total Metals				1	3051			
Zinc, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	M
Blank Analysis for sample(s) 07								
Volatile Organics by GC/MS 8260				1	8260B		24-Dec	B
Methylene chloride	ND	ug/kg	25.					
1,1-Dichloroethane	ND	ug/kg	7.5					
Chloroform	ND	ug/kg	7.5					
Carbon tetrachloride	ND	ug/kg	5.0					
1,2-Dichloropropane	ND	ug/kg	18.					
Dibromochloromethane	ND	ug/kg	5.0					
1,1,2-Trichloroethane	ND	ug/kg	7.5					
2-Chloroethylvinyl ether	ND	ug/kg	50.					
Tetrachloroethene	ND	ug/kg	7.5					
Chlorobenzene	ND	ug/kg	18.					
Trichlorofluoromethane	ND	ug/kg	25.					
1,2-Dichloroethane	ND	ug/kg	7.5					
1,1,1-Trichloroethane	ND	ug/kg	5.0					
Bromodichloromethane	ND	ug/kg	5.0					
trans-1,3-Dichloropropene	ND	ug/kg	5.0					
cis-1,3-Dichloropropene	ND	ug/kg	5.0					
1,1-Dichloropropene	ND	ug/kg	120					
Bromoform	ND	ug/kg	5.0					
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0					
Benzene	ND	ug/kg	5.0					
Toluene	ND	ug/kg	7.5					
Ethylbenzene	ND	ug/kg	5.0					
Chloromethane	ND	ug/kg	50.					
Bromomethane	ND	ug/kg	10.					
Vinyl chloride	ND	ug/kg	10.					
Chloroethane	ND	ug/kg	10.					
1,1-Dichloroethene	ND	ug/kg	7.5					
trans-1,2-Dichloroethene	ND	ug/kg	7.5					
Trichloroethene	ND	ug/kg	5.0					
1,2-Dichlorobenzene	ND	ug/kg	50.					
1,3-Dichlorobenzene	ND	ug/kg	50.					
1,4-Dichlorobenzene	ND	ug/kg	50.					
Methyl tert butyl ether	ND	ug/kg	50.					
p/m-Xylene	ND	ug/kg	5.0					
o-Xylene	ND	ug/kg	5.0					
cis-1,2-Dichloroethene	ND	ug/kg	5.0					
Dibromomethane	ND	ug/kg	50.					
1,4-Dichlorobutane	ND	ug/kg	50.					
Iodomethane	ND	ug/kg	50.					
1,2,3-Trichloropropane	ND	ug/kg	50.					
Styrene	ND	ug/kg	5.0					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 07								
Volatile Organics by GC/MS 8260 continued				1	8260B		24-Dec	BT
Dichlorodifluoromethane	ND	ug/kg	50.					
Acetone	ND	ug/kg	50.					
Carbon disulfide	ND	ug/kg	50.					
2-Butanone	ND	ug/kg	50.					
Vinyl acetate	ND	ug/kg	50.					
4-Methyl-2-pentanone	ND	ug/kg	50.					
2-Hexanone	ND	ug/kg	50.					
Ethyl methacrylate	ND	ug/kg	50.					
Acrolein	ND	ug/kg	120					
Acrylonitrile	ND	ug/kg	50.					
Bromochloromethane	ND	ug/kg	25.					
Tetrahydrofuran	ND	ug/kg	250					
2,2-Dichloropropane	ND	ug/kg	25.					
1,2-Dibromoethane	ND	ug/kg	25.					
1,3-Dichloropropane	ND	ug/kg	25.					
1,1,1,2-Tetrachloroethane	ND	ug/kg	25.					
Bromobenzene	ND	ug/kg	25.					
n-Butylbenzene	ND	ug/kg	25.					
sec-Butylbenzene	ND	ug/kg	25.					
tert-Butylbenzene	ND	ug/kg	25.					
o-Chlorotoluene	ND	ug/kg	25.					
p-Chlorotoluene	ND	ug/kg	25.					
1,2-Dibromo-3-chloropropane	ND	ug/kg	25.					
Hexachlorobutadiene	ND	ug/kg	25.					
Isopropylbenzene	ND	ug/kg	25.					
p-Isopropyltoluene	ND	ug/kg	25.					
Naphthalene	ND	ug/kg	25.					
n-Propylbenzene	ND	ug/kg	25.					
1,2,3-Trichlorobenzene	ND	ug/kg	25.					
1,2,4-Trichlorobenzene	ND	ug/kg	25.					
1,3,5-Trimethylbenzene	ND	ug/kg	25.					
1,2,4-Trimethylbenzene	ND	ug/kg	25.					
trans-1,4-Dichloro-2-butene	ND	ug/kg	25.					
Ethyl ether	ND	ug/kg	120					
Surrogate Recovery								
1,2-Dichloroethane-d4	98.0	%						
Toluene-d8	98.0	%						
4-Bromofluorobenzene	95.0	%						
Dibromofluoromethane	94.0	%						
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270				1	8270C	11-Dec	14-Dec	MK
Acenaphthene	ND	ug/kg	500					
Benzidine	ND	ug/kg	5000					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	I
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	M
1,2,4-Trichlorobenzene	ND	ug/kg	500					
Hexachlorobenzene	ND	ug/kg	500					
Bis(2-chloroethyl)ether	ND	ug/kg	500					
1-Chloronaphthalene	ND	ug/kg	500					
2-Chloronaphthalene	ND	ug/kg	500					
1,2-Dichlorobenzene	ND	ug/kg	500					
1,3-Dichlorobenzene	ND	ug/kg	500					
1,4-Dichlorobenzene	ND	ug/kg	500					
3,3'-Dichlorobenzidine	ND	ug/kg	5000					
2,4-Dinitrotoluene	ND	ug/kg	500					
2,6-Dinitrotoluene	ND	ug/kg	500					
Azobenzene	ND	ug/kg	500					
Fluoranthene	ND	ug/kg	500					
4-Chlorophenyl phenyl ether	ND	ug/kg	500					
4-Bromophenyl phenyl ether	ND	ug/kg	500					
Bis(2-chloroisopropyl)ether	ND	ug/kg	500					
Bis(2-chloroethoxy)methane	ND	ug/kg	500					
Hexachlorobutadiene	ND	ug/kg	1000					
Hexachlorocyclopentadiene	ND	ug/kg	1000					
Hexachloroethane	ND	ug/kg	500					
Isophorone	ND	ug/kg	500					
Naphthalene	ND	ug/kg	500					
Nitrobenzene	ND	ug/kg	500					
NDPA/DPA	ND	ug/kg	500					
n-Nitrosodi-n-propylamine	ND	ug/kg	500					
Bis(2-ethylhexyl)phthalate	ND	ug/kg	1000					
Butyl benzyl phthalate	ND	ug/kg	500					
Di-n-butylphthalate	ND	ug/kg	500					
Di-n-octylphthalate	ND	ug/kg	500					
Diethyl phthalate	ND	ug/kg	500					
Dimethyl phthalate	ND	ug/kg	500					
Benzo(a)anthracene	ND	ug/kg	500					
Benzo(a)pyrene	ND	ug/kg	500					
Benzo(b)fluoranthene	ND	ug/kg	500					
Benzo(k)fluoranthene	ND	ug/kg	500					
Chrysene	ND	ug/kg	500					
Acenaphthylene	ND	ug/kg	500					
Anthracene	ND	ug/kg	500					
Benzo(ghi)perylene	ND	ug/kg	500					
Fluorene	ND	ug/kg	500					
Phenanthrene	ND	ug/kg	500					
Dibenzo(a,h)anthracene	ND	ug/kg	500					
Indeno(1,2,3-cd)pyrene	ND	ug/kg	500					
Pyrene	ND	ug/kg	500					
Aniline	ND	ug/kg	1000					
4-Chloroaniline	ND	ug/kg	500					
1-Methylnaphthalene	ND	ug/kg	500					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	MK
2-Nitroaniline	ND	ug/kg	500					
3-Nitroaniline	ND	ug/kg	500					
4-Nitroaniline	ND	ug/kg	500					
Dibenzofuran	ND	ug/kg	500					
a,a-Dimethylphenethylamine	ND	ug/kg	5000					
Hexachloropropene	ND	ug/kg	5000					
Nitrosodi-n-butylamine	ND	ug/kg	1000					
2-Methylnaphthalene	ND	ug/kg	500					
1,2,4,5-Tetrachlorobenzene	ND	ug/kg	2000					
Pentachlorobenzene	ND	ug/kg	2000					
a-Naphthylamine	ND	ug/kg	2000					
b-Naphthylamine	ND	ug/kg	2000					
Phenacetin	ND	ug/kg	1000					
Dimethoate	ND	ug/kg	2000					
4-Aminobiphenyl	ND	ug/kg	1000					
Pentachloronitrobenzene	ND	ug/kg	1000					
Isodrin	ND	ug/kg	1000					
p-Dimethylaminoazobenzene	ND	ug/kg	1000					
Chlorobenzilate	ND	ug/kg	2000					
3-Methylcholanthrene	ND	ug/kg	2000					
Ethyl Methanesulfonate	ND	ug/kg	1500					
Acetophenone	ND	ug/kg	2000					
Nitrosodipiperidine	ND	ug/kg	2000					
7,12-Dimethylbenz(a)anthracene	ND	ug/kg	1000					
n-Nitrosodimethylamine	ND	ug/kg	5000					
2,4,6-Trichlorophenol	ND	ug/kg	500					
p-Chloro-m-cresol	ND	ug/kg	500					
2-Chlorophenol	ND	ug/kg	500					
2,4-Dichlorophenol	ND	ug/kg	1000					
2,4-Dimethylphenol	ND	ug/kg	1000					
2-Nitrophenol	ND	ug/kg	1000					
4-Nitrophenol	ND	ug/kg	1000					
2,4-Dinitrophenol	ND	ug/kg	2000					
4,6-Dinitro-o-cresol	ND	ug/kg	2000					
Pentachlorophenol	ND	ug/kg	2000					
Phenol	ND	ug/kg	500					
2-Methylphenol	ND	ug/kg	500					
3-Methylphenol/4-Methylphenol	ND	ug/kg	500					
2,4,5-Trichlorophenol	ND	ug/kg	500					
2,6-Dichlorophenol	ND	ug/kg	1000					
Benzoic Acid	ND	ug/kg	5000					
Benzyl Alcohol	ND	ug/kg	1000					
Carbazole	ND	ug/kg	500					
Pyridine	ND	ug/kg	5000					
2-Picoline	ND	ug/kg	2000					
Pronamide	ND	ug/kg	2000					
Methyl methanesulfonate	ND	ug/kg	2000					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS
Blank Analysis for sample(s) 07							
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec
Surrogate Recovery							
2-Fluorophenol	48.0	%					
Phenol-d6	59.0	%					
Nitrobenzene-d5	92.0	%					
2-Fluorobiphenyl	98.0	%					
2,4,6-Tribromophenol	83.0	%					
4-Terphenyl-d14	126.	%					
Blank Analysis for sample(s) 07							
PCB/Pesticides				1	8082/8081	11-Dec	16-Dec
Delta-BHC	ND	ug/kg	5.00				
Lindane	ND	ug/kg	5.00				
Alpha-BHC	ND	ug/kg	5.00				
Beta-BHC	ND	ug/kg	5.00				
Heptachlor	ND	ug/kg	5.00				
Aldrin	ND	ug/kg	5.00				
Heptachlor epoxide	ND	ug/kg	5.00				
Endrin	ND	ug/kg	5.00				
Endrin aldehyde	ND	ug/kg	5.00				
Endrin ketone	ND	ug/kg	5.00				
Dieldrin	ND	ug/kg	5.00				
4,4'-DDE	ND	ug/kg	5.00				
4,4'-DDD	ND	ug/kg	5.00				
4,4'-DDT	ND	ug/kg	5.00				
Endosulfan I	ND	ug/kg	5.00				
Endosulfan II	ND	ug/kg	5.00				
Endosulfan sulfate	ND	ug/kg	5.00				
Methoxychlor	ND	ug/kg	5.00				
Toxaphene	ND	ug/kg	20.0				
Chlordane	ND	ug/kg	20.0				
cis-Chlordane	ND	ug/kg	5.00				
trans-Chlordane	ND	ug/kg	5.00				
Aroclor 1221	ND	ug/kg	25.0				
Aroclor 1232	ND	ug/kg	25.0				
Aroclor 1242/1016	ND	ug/kg	25.0				
Aroclor 1248	ND	ug/kg	25.0				
Aroclor 1254	ND	ug/kg	25.0				
Aroclor 1260	ND	ug/kg	25.0				
Surrogate Recovery							
2,4,5,6-Tetrachloro-m-xylene	48.0	%					
Decachlorobiphenyl	57.0	%					

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

4. Methods for Chemical Analysis of Water and Wastes. EPA 600/4-82-055. 1982.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

Appendix I
Sediment Quality Analytical Data

Client: Woerd Avenue Landfill

Project: Monitoring

SDG: 980821-1170

Date: 9/15/98

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617) 354-4448 - fax (617) 354-0764

Laboratory Report

SDG #:	980821-1170	**Print Date:**	9/15/98
Client:	Woerd Avenue Landfill	**Client Contact:**	
Project:	Monitoring	**Address:**	Camp Dresser & McKee Inc. 10 Cambridge Center Cambridge, MA 02142

Project Narrative

Attached please find the analytical results for this sample delivery group. Please refer to the Sample List Report for sample identification. All associated quality control information is summarized following the analytical results for all samples.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples unless as noted below.

BATCH NOTES

I980904/8260A_SOI/157

Sample and its spike were analyzed at lesser volumes due to matrix problems when analyzed undiluted.

I980910/8081_SOIL/56

Recovery of one of the two surrogates for samples
98-06610, MS98-06610, 98-06609, 98-06610, and 98-06611 were outside the recommended quality control criteria. Matrix interference is suspected.

RESULT NOTES

98-06610 (Arsenic)

RPD is not determinable for this sample due to low original concentration (less than 10x MDL).

98-06610 (Iron, Lead)

N Footnote. High native concentration interfered with spike recovery.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge, complete & accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH #AZ0553, CO DPHE (RECIPROCITY), CT DPH #0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES #2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48,VA DGS/DCLS #00046, EPA ICR MA001

SAMPLE LIST REPORT

Client Sample ID	Date Collected	Received Date	Lab Sample ID	Matrix Type
Cove 1	08/20/98	08/21/98	98-06614	AQUEOUS
Stream 1	08/20/98	08/21/98	98-06609	SOIL
Stream 1	08/20/98	08/21/98	98-06613	AQUEOUS
Swale 1	08/20/98	08/21/98	98-06610	SOIL
Cove 1	08/20/98	08/21/98	98-06611	SOIL
Cove 2	08/20/98	08/21/98	98-06612	SOIL
Cove 2	08/20/98	08/21/98	98-06615	AQUEOUS
CDM 2	08/20/98	08/21/98	98-06616	AQUEOUS
CDM 2A	08/20/98	08/21/98	98-06617	AQUEOUS

8081_SOIL ANALYSIS REPORT

Method #:	EPA 8081	**Preparation Batch ID:**	P980910/3550_8081/57
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06609	**Analytical Batch ID:**	I980910/8081_SOIL/56
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Aldrin	0.0073	<0.0073	
Aroclor 1221	0.0732	<0.0732	
Aroclor 1232	0.0732	<0.0732	
Aroclor 1248	0.0732	<0.0732	
Aroclor 1254	0.0732	0.299	
Aroclor 1260	0.0732	0.114	
alpha-BHC	0.0073	<0.0073	
beta-BHC	0.0073	<0.0073	
gamma-BHC	0.0073	<0.0073	
Chlordane (Technical)	0.0367	0.264	
4,4`-DDD	0.0073	0.0526	
4,4`-DDE	0.0073	0.0229	
4,4`-DDT	0.0073	0.0298	
Dieldrin	0.0073	0.0275	
Endosulfan I	0.0073	<0.0073	
Endosulfan II	0.0073	<0.0073	
Endosulfan sulfate	0.0073	<0.0073	
Endrin	0.0073	<0.0073	
Endrin aldehyde	0.0073	<0.0073	
Heptachlor	0.0073	<0.0073	
Heptachlor epoxide	0.0073	<0.0073	
Methoxychlor	0.0146	<0.0146	
Toxaphene	0.366	<0.366	
delta-BHC	0.0073	<0.0073	
Aroclor 1242/1016	0.0732	<0.0732	

Surrogate	% Recovery	Accep. Range
Decachlorobiphenyl	98.84	60 - 150
Tetrachloro-m-xylene	84.12	60 - 150

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/10/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980904/5035_SOIL/157
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06609	**Analytical Batch ID:**	I980904/8260A_SOI/157
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	11	<11	
Bromobenzene	11	<11	
Bromochloromethane	11	<11	
Bromodichloromethane	11	<11	
Bromoform	11	<11	
Bromomethane	56	<56	
2-Butanone	220	<220	
n-Butylbenzene	11	<11	
sec-Butylbenzene	11	<11	
tert-Butylbenzene	11	<11	
Carbon tetrachloride	11	<11	
Chlorobenzene	11	<11	
Chloroethane	56	<56	
Chloroform	56	<56	
Chloromethane	56	<56	
2-Chlorotoluene	11	<11	
4-Chlorotoluene	11	<11	
1,2-Dibromo-3-chloropropane	110	<110	
1,2-Dibromoethane	11	<11	
Dibromochloromethane	11	<11	
Dibromomethane	11	<11	
1,2-Dichlorobenzene	11	<11	
1,3-Dichlorobenzene	11	<11	
1,4-Dichlorobenzene	11	<11	
Dichlorodifluoromethane	11	<11	
1,1-Dichloroethane	11	<11	
1,2-Dichloroethane	11	<11	
cis-1,2-Dichloroethene	11	<11	
trans-1,2-Dichloroethene	11	<11	
1,2-Dichloropropane	11	<11	
1,3-Dichloropropane	11	<11	
2,2-Dichloropropane	11	<11	
1,1-Dichloropropene	11	<11	
cis-1,3-Dichloropropene	11	<11	
trans-1,3-Dichloropropene	11	<11	
Ethylbenzene	11	<11	
Hexachlorobutadiene	11	<11	
2-Hexanone	220	<220	
Isopropylbenzene	11	<11	
4-Methyl-2-pentanone	220	<220	
Methylene chloride	58	<58	
Naphthalene	11	<11	
n-Propylbenzene	11	<11	
Styrene	11	<11	
1,1,1,2-Tetrachloroethane	11	<11	
1,1,2,2-Tetrachloroethane	11	<11	
Tetrachloroethene	11	<11	
Toluene	11	<11	
1,2,3-Trichlorobenzene	11	<11	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980904/5035_SOIL/157
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06609	**Analytical Batch ID:**	I980904/8260A_SOI/157
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,4-Trichlorobenzene	11	<11	
1,1,1-Trichloroethane	11	<11	
1,1,2-Trichloroethane	11	<11	
Trichloroethene	11	<11	
Trichlorofluoromethane	11	<11	
1,2,4-Trimethylbenzene	11	<11	
1,3,5-Trimethylbenzene	11	<11	
1,2,3-Trichloropropane	11	<11	
Vinyl chloride	11	<11	
m- and p-Xylenes	11	<11	
o-Xylene	11	<11	
1,1-Dichloroethene	11	<11	
Acetone	220	<220	
Isopropylmethylbenzene	11	<11	
Methyl tert-butyl ether	110	<110	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	83.78	74 - 121
Dibromofluoromethane	113.80	80 - 120
Toluene-d8	95.88	81 - 117

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8270B_SOIL ANALYSIS REPORT

Method #:	EPA 8270B	**Preparation Batch ID:**	P980908/3550_8270/82
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06609	**Analytical Batch ID:**	I980908/8270B_SOI/114
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Acenaphthene	1900	<1900	
Acenaphthylene	1900	<1900	
Anthracene	1900	<1900	
Benz(a)anthracene	1900	2400	
Benzo(b)fluoranthene	1900	2000	
Benzo(k)fluoranthene	1900	2400	
Benzo(g,h,i)perylene	1900	1900	
Benzo(a)pyrene	1900	2600	
Chrysene	1900	2800	
Dibenz(a,h)anthracene	1900	<1900	
Fluoranthene	1900	5400	
Fluorene	1900	<1900	
Indeno(1,2,3-cd)pyrene	1900	<1900	
2-Methylnaphthalene	1900	<1900	
Naphthalene	1900	<1900	
Phenanthrene	1900	2500	
Pyrene	1900	4600	

Surrogate	% Recovery	Accep. Range
2-Fluorobiphenyl	54.00	30 - 115
4-Terphenyl-d14	77.15	18 - 137
Nitrobenzene-d5	49.25	23 - 120

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/08/98

6010A_SOIL ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980903/3051/133
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Stream 1		
Lab Sample ID:	98-06609	**Analytical Batch ID:**	I980903/6010A_SOI/133
Matrix:	SOIL	**Analyst:**	LESHINSKYA
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	12	20	
Barium	12	430	
Cadmium	2.4	20	
Chromium	12	64	
Copper	12	160	
Iron	59	28000	
Lead	12	490	
Manganese	12	400	
Selenium	24	<24	
Silver	12	<12	
Zinc	47	1800	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/09/98

8081_SOIL ANALYSIS REPORT

Method #:	EPA 8081	**Preparation Batch ID:**	P980910/3550_8081/57
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Swale 1		
Lab Sample ID:	98-06610	**Analytical Batch ID:**	I980910/8081_SOIL/56
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Aldrin	0.0043	<0.0043	
Aroclor 1221	0.0430	<0.0430	
Aroclor 1232	0.0430	<0.0430	
Aroclor 1248	0.0430	<0.0430	
Aroclor 1254	0.0430	0.0774	
Aroclor 1260	0.0430	0.0691	
alpha-BHC	0.0043	<0.0043	
beta-BHC	0.0043	<0.0043	
gamma-BHC	0.0043	<0.0043	
Chlordane (Technical)	0.0215	0.0948	
4,4`-DDD	0.0043	<0.0043	
4,4`-DDE	0.0043	<0.0043	
4,4`-DDT	0.0043	0.0406	
Dieldrin	0.0043	<0.0043	
Endosulfan I	0.0043	<0.0043	
Endosulfan II	0.0043	<0.0043	
Endosulfan sulfate	0.0043	<0.0043	
Endrin	0.0043	<0.0043	
Endrin aldehyde	0.0043	<0.0043	
Heptachlor	0.0043	<0.0043	
Heptachlor epoxide	0.0043	<0.0043	
Methoxychlor	0.0086	<0.0086	
Toxaphene	0.215	<0.215	
delta-BHC	0.0043	<0.0043	
Aroclor 1242/1016	0.0430	<0.0430	

Surrogate	% Recovery	Accep. Range
Decachlorobiphenyl	167.62	60 - 150
Tetrachloro-m-xylene	89.68	60 - 150

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/10/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980903/5035_SOIL/156
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Swale 1		
Lab Sample ID:	98-06610	**Analytical Batch ID:**	I980903/8260A_SOI/156
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	3.2	<3.2	
Bromobenzene	3.2	<3.2	
Bromochloromethane	3.2	<3.2	
Bromodichloromethane	3.2	<3.2	
Bromoform	3.2	<3.2	
Bromomethane	16	<16	
2-Butanone	65	<65	
n-Butylbenzene	3.2	<3.2	
sec-Butylbenzene	3.2	<3.2	
tert-Butylbenzene	3.2	<3.2	
Carbon tetrachloride	3.2	<3.2	
Chlorobenzene	3.2	<3.2	
Chloroethane	16	<16	
Chloroform	16	<16	
Chloromethane	16	<16	
2-Chlorotoluene	3.2	<3.2	
4-Chlorotoluene	3.2	<3.2	
1,2-Dibromo-3-chloropropane	32	<32	
1,2-Dibromoethane	3.2	<3.2	
Dibromochloromethane	3.2	<3.2	
Dibromomethane	3.2	<3.2	
1,2-Dichlorobenzene	3.2	<3.2	
1,3-Dichlorobenzene	3.2	<3.2	
1,4-Dichlorobenzene	3.2	<3.2	
Dichlorodifluoromethane	3.2	<3.2	
1,1-Dichloroethane	3.2	<3.2	
1,2-Dichloroethane	3.2	<3.2	
cis-1,2-Dichloroethene	3.2	<3.2	
trans-1,2-Dichloroethene	3.2	<3.2	
1,2-Dichloropropane	3.2	<3.2	
1,3-Dichloropropane	3.2	<3.2	
2,2-Dichloropropane	3.2	<3.2	
1,1-Dichloropropene	3.2	<3.2	
cis-1,3-Dichloropropene	3.2	<3.2	
trans-1,3-Dichloropropene	3.2	<3.2	
Ethylbenzene	3.2	<3.2	
Hexachlorobutadiene	3.2	<3.2	
2-Hexanone	65	<65	
Isopropylbenzene	3.2	<3.2	
4-Methyl-2-pentanone	65	<65	
Methylene chloride	17	<17	
Naphthalene	3.2	<3.2	
n-Propylbenzene	3.2	<3.2	
Styrene	3.2	<3.2	
1,1,1,2-Tetrachloroethane	3.2	<3.2	
1,1,2,2-Tetrachloroethane	3.2	<3.2	
Tetrachloroethene	3.2	<3.2	
Toluene	3.2	<3.2	
1,2,3-Trichlorobenzene	3.2	<3.2	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980903/5035_SOIL/156
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Swale 1		
Lab Sample ID:	98-06610	**Analytical Batch ID:**	I980903/8260A_SOI/156
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,4-Trichlorobenzene	3.2	<3.2	
1,1,1-Trichloroethane	3.2	<3.2	
1,1,2-Trichloroethane	3.2	<3.2	
Trichloroethene	3.2	<3.2	
Trichlorofluoromethane	3.2	<3.2	
1,2,4-Trimethylbenzene	3.2	<3.2	
1,3,5-Trimethylbenzene	3.2	<3.2	
1,2,3-Trichloropropane	3.2	<3.2	
Vinyl chloride	3.2	<3.2	
m- and p-Xylenes	3.2	<3.2	
o-Xylene	3.2	<3.2	
1,1-Dichloroethene	3.2	<3.2	
Acetone	65	<65	
Isopropylmethylbenzene	3.2	<3.2	
Methyl tert-butyl ether	32	<32	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	88.70	74 - 121
Dibromofluoromethane	113.76	80 - 120
Toluene-d8	88.08	81 - 117

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8270B_SOIL ANALYSIS REPORT

Method #:	EPA 8270B	**Preparation Batch ID:**	P980908/3550_8270/82
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Swale 1		
Lab Sample ID:	98-06610	**Analytical Batch ID:**	I980908/8270B_SOI/114
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Acenaphthene	1100	<1100	
Acenaphthylene	1100	<1100	
Anthracene	1100	<1100	
Benz(a)anthracene	1100	<1100	
Benzo(b)fluoranthene	1100	<1100	
Benzo(k)fluoranthene	1100	<1100	
Benzo(g,h,i)perylene	1100	<1100	
Benzo(a)pyrene	1100	<1100	
Chrysene	1100	<1100	
Dibenz(a,h)anthracene	1100	<1100	
Fluoranthene	1100	1300	
Fluorene	1100	<1100	
Indeno(1,2,3-cd)pyrene	1100	<1100	
2-Methylnaphthalene	1100	<1100	
Naphthalene	1100	<1100	
Phenanthrene	1100	<1100	
Pyrene	1100	1300	

Surrogate	% Recovery	Accep. Range
2-Fluorobiphenyl	74.65	30 - 115
4-Terphenyl-d14	86.15	18 - 137
Nitrobenzene-d5	66.20	23 - 120

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/08/98

6010A_SOIL ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980903/3051/133
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Swale 1		
Lab Sample ID:	98-06610	**Analytical Batch ID:**	I980903/6010A_SOI/133
Matrix:	SOIL	**Analyst:**	LESHINSKYA
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	6.2	11	
Barium	6.2	150	
Cadmium	1.2	11	
Chromium	6.2	73	
Copper	6.2	80	
Iron	31	18000	
Lead	6.2	570	
Manganese	6.2	230	
Selenium	12	<12	
Silver	6.2	<6.2	
Zinc	25	450	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/09/98

8081_SOIL ANALYSIS REPORT

Method #:	EPA 8081	**Preparation Batch ID:**	P980910/3550_8081/57
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06611	**Analytical Batch ID:**	I980910/8081_SOIL/56
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Aldrin	0.0073	<0.0073	
Aroclor 1221	0.0726	<0.0726	
Aroclor 1232	0.0726	<0.0726	
Aroclor 1248	0.0726	<0.0726	
Aroclor 1254	0.0726	0.727	
Aroclor 1260	0.0726	0.122	
alpha-BHC	0.0073	<0.0073	
beta-BHC	0.0073	<0.0073	
gamma-BHC	0.0073	<0.0073	
Chlordane (Technical)	0.0364	<0.0364	
4,4`-DDD	0.0073	0.132	
4,4`-DDE	0.0073	0.0427	
4,4`-DDT	0.0073	0.0079	
Dieldrin	0.0073	<0.0073	
Endosulfan I	0.0073	<0.0073	
Endosulfan II	0.0073	<0.0073	
Endosulfan sulfate	0.0073	<0.0073	
Endrin	0.0073	<0.0073	
Endrin aldehyde	0.0073	<0.0073	
Heptachlor	0.0073	<0.0073	
Heptachlor epoxide	0.0073	<0.0073	
Methoxychlor	0.0145	<0.0145	
Toxaphene	0.364	<0.364	
delta-BHC	0.0073	<0.0073	
Aroclor 1242/1016	0.0726	<0.0726	

Surrogate	% Recovery	Accep. Range
Decachlorobiphenyl	142.54	60 - 150
Tetrachloro-m-xylene	54.60	60 - 150

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/10/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980903/5035_SOIL/156
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06611	**Analytical Batch ID:**	I980903/8260A_SOI/156
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	5.5	<5.5	
Bromobenzene	5.5	<5.5	
Bromochloromethane	5.5	<5.5	
Bromodichloromethane	5.5	<5.5	
Bromoform	5.5	<5.5	
Bromomethane	27	<27	
2-Butanone	110	<110	
n-Butylbenzene	5.5	<5.5	
sec-Butylbenzene	5.5	<5.5	
tert-Butylbenzene	5.5	<5.5	
Carbon tetrachloride	5.5	<5.5	
Chlorobenzene	5.5	<5.5	
Chloroethane	27	<27	
Chloroform	27	<27	
Chloromethane	27	<27	
2-Chlorotoluene	5.5	<5.5	
4-Chlorotoluene	5.5	<5.5	
1,2-Dibromo-3-chloropropane	55	<55	
1,2-Dibromoethane	5.5	<5.5	
Dibromochloromethane	5.5	<5.5	
Dibromomethane	5.5	<5.5	
1,2-Dichlorobenzene	5.5	<5.5	
1,3-Dichlorobenzene	5.5	<5.5	
1,4-Dichlorobenzene	5.5	<5.5	
Dichlorodifluoromethane	5.5	<5.5	
1,1-Dichloroethane	5.5	<5.5	
1,2-Dichloroethane	5.5	<5.5	
cis-1,2-Dichloroethene	5.5	<5.5	
trans-1,2-Dichloroethene	5.5	<5.5	
1,2-Dichloropropane	5.5	<5.5	
1,3-Dichloropropane	5.5	<5.5	
2,2-Dichloropropane	5.5	<5.5	
1,1-Dichloropropene	5.5	<5.5	
cis-1,3-Dichloropropene	5.5	<5.5	
trans-1,3-Dichloropropene	5.5	<5.5	
Ethylbenzene	5.5	<5.5	
Hexachlorobutadiene	5.5	<5.5	
2-Hexanone	110	<110	
Isopropylbenzene	5.5	<5.5	
4-Methyl-2-pentanone	110	<110	
Methylene chloride	28	<28	
Naphthalene	5.5	<5.5	
n-Propylbenzene	5.5	<5.5	
Styrene	5.5	<5.5	
1,1,1,2-Tetrachloroethane	5.5	<5.5	
1,1,2,2-Tetrachloroethane	5.5	<5.5	
Tetrachloroethene	5.5	<5.5	
Toluene	5.5	<5.5	
1,2,3-Trichlorobenzene	5.5	<5.5	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980903/5035_SOIL/156
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06611	**Analytical Batch ID:**	I980903/8260A_SOI/156
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,4-Trichlorobenzene	5.5	<5.5	
1,1,1-Trichloroethane	5.5	<5.5	
1,1,2-Trichloroethane	5.5	<5.5	
Trichloroethene	5.5	<5.5	
Trichlorofluoromethane	5.5	<5.5	
1,2,4-Trimethylbenzene	5.5	<5.5	
1,3,5-Trimethylbenzene	5.5	<5.5	
1,2,3-Trichloropropane	5.5	<5.5	
Vinyl chloride	5.5	<5.5	
m- and p-Xylenes	5.5	<5.5	
o-Xylene	5.5	<5.5	
1,1-Dichloroethene	5.5	<5.5	
Acetone	110	150	
Isopropylmethylbenzene	5.5	<5.5	
Methyl tert-butyl ether	55	<55	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	107.56	74 - 121
Dibromofluoromethane	119.38	80 - 120
Toluene-d8	96.94	81 - 117

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8270B_SOIL ANALYSIS REPORT

Method #:	EPA 8270B	**Preparation Batch ID:**	P980908/3550_8270/82
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06611	**Analytical Batch ID:**	I980908/8270B_SOI/114
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Acenaphthene	1800	3000	
Acenaphthylene	1800	<1800	
Anthracene	1800	9400	
Benz(a)anthracene	1800	10000	
Benzo(b)fluoranthene	1800	5300	
Benzo(k)fluoranthene	1800	6400	
Benzo(g,h,i)perylene	1800	3400	
Benzo(a)pyrene	1800	8100	
Chrysene	1800	10000	
Dibenz(a,h)anthracene	1800	<1800	
Fluoranthene	1800	23000	
Fluorene	1800	3800	
Indeno(1,2,3-cd)pyrene	1800	3100	
2-Methylnaphthalene	1800	<1800	
Naphthalene	1800	2000	
Phenanthrene	1800	30000	
Pyrene	1800	19000	

Surrogate	% Recovery	Accep. Range
2-Fluorobiphenyl	76.30	30 - 115
4-Terphenyl-d14	73.80	18 - 137
Nitrobenzene-d5	67.70	23 - 120

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/08/98

6010A_SOIL ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980903/3051/133
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 1		
Lab Sample ID:	98-06611	**Analytical Batch ID:**	I980903/6010A_SOI/133
Matrix:	SOIL	**Analyst:**	LESHINSKYA
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	11	<11	
Barium	11	470	
Cadmium	2.2	2.8	
Chromium	11	44	
Copper	11	140	
Iron	55	10000	
Lead	11	1000	
Manganese	11	56	
Selenium	22	<22	
Silver	11	<11	
Zinc	44	450	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/09/98

8081_SOIL ANALYSIS REPORT

Method #:	EPA 8081	**Preparation Batch ID:**	P980910/3550_8081/57
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06612	**Analytical Batch ID:**	I980910/8081_SOIL/56
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Aldrin	0.0052	<0.0052	
Aroclor 1221	0.0524	<0.0524	
Aroclor 1232	0.0524	<0.0524	
Aroclor 1248	0.0524	<0.0524	
Aroclor 1254	0.0524	0.136	
Aroclor 1260	0.0524	0.119	
alpha-BHC	0.0052	<0.0052	
beta-BHC	0.0052	<0.0052	
gamma-BHC	0.0052	<0.0052	
Chlordane (Technical)	0.0263	<0.0263	
4,4`-DDD	0.0052	0.0117	
4,4`-DDE	0.0052	<0.0052	
4,4`-DDT	0.0052	<0.0052	
Dieldrin	0.0052	0.0217	
Endosulfan I	0.0052	<0.0052	
Endosulfan II	0.0052	<0.0052	
Endosulfan sulfate	0.0052	<0.0052	
Endrin	0.0052	<0.0052	
Endrin aldehyde	0.0052	<0.0052	
Heptachlor	0.0052	<0.0052	
Heptachlor epoxide	0.0052	<0.0052	
Methoxychlor	0.0105	<0.0105	
Toxaphene	0.262	<0.262	
delta-BHC	0.0052	<0.0052	
Aroclor 1242/1016	0.0524	<0.0524	

Surrogate	% Recovery	Accep. Range
Decachlorobiphenyl	91.08	60 - 150
Tetrachloro-m-xylene	72.60	60 - 150

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/10/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980903/5035_SOIL/156
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06612	**Analytical Batch ID:**	I980903/8260A_SOI/156
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Benzene	3.9	<3.9	
Bromobenzene	3.9	<3.9	
Bromochloromethane	3.9	<3.9	
Bromodichloromethane	3.9	<3.9	
Bromoform	3.9	<3.9	
Bromomethane	20	<20	
2-Butanone	79	<79	
n-Butylbenzene	3.9	<3.9	
sec-Butylbenzene	3.9	<3.9	
tert-Butylbenzene	3.9	<3.9	
Carbon tetrachloride	3.9	<3.9	
Chlorobenzene	3.9	<3.9	
Chloroethane	20	<20	
Chloroform	20	<20	
Chloromethane	20	<20	
2-Chlorotoluene	3.9	<3.9	
4-Chlorotoluene	3.9	<3.9	
1,2-Dibromo-3-chloropropane	39	<39	
1,2-Dibromoethane	3.9	<3.9	
Dibromochloromethane	3.9	<3.9	
Dibromomethane	3.9	<3.9	
1,2-Dichlorobenzene	3.9	<3.9	
1,3-Dichlorobenzene	3.9	<3.9	
1,4-Dichlorobenzene	3.9	<3.9	
Dichlorodifluoromethane	3.9	<3.9	
1,1-Dichloroethane	3.9	<3.9	
1,2-Dichloroethane	3.9	<3.9	
cis-1,2-Dichloroethene	3.9	<3.9	
trans-1,2-Dichloroethene	3.9	<3.9	
1,2-Dichloropropane	3.9	<3.9	
1,3-Dichloropropane	3.9	<3.9	
2,2-Dichloropropane	3.9	<3.9	
1,1-Dichloropropene	3.9	<3.9	
cis-1,3-Dichloropropene	3.9	<3.9	
trans-1,3-Dichloropropene	3.9	<3.9	
Ethylbenzene	3.9	<3.9	
Hexachlorobutadiene	3.9	<3.9	
2-Hexanone	79	<79	
Isopropylbenzene	3.9	<3.9	
4-Methyl-2-pentanone	79	<79	
Methylene chloride	20	<20	
Naphthalene	3.9	<3.9	
n-Propylbenzene	3.9	<3.9	
Styrene	3.9	<3.9	
1,1,1,2-Tetrachloroethane	3.9	<3.9	
1,1,2,2-Tetrachloroethane	3.9	<3.9	
Tetrachloroethene	3.9	<3.9	
Toluene	3.9	<3.9	
1,2,3-Trichlorobenzene	3.9	<3.9	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8260A_SOIL ANALYSIS REPORT

Method #:	EPA 8260A	**Preparation Batch ID:**	P980903/5035_SOIL/156
SDG #:	980821-1170	**Prep. Analyst:**	MITCHELLMR
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06612	**Analytical Batch ID:**	I980903/8260A_SOI/156
Matrix:	SOIL	**Analyst:**	MITCHELLMR
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
1,2,4-Trichlorobenzene	3.9	<3.9	
1,1,1-Trichloroethane	3.9	<3.9	
1,1,2-Trichloroethane	3.9	<3.9	
Trichloroethene	3.9	<3.9	
Trichlorofluoromethane	3.9	<3.9	
1,2,4-Trimethylbenzene	3.9	<3.9	
1,3,5-Trimethylbenzene	3.9	<3.9	
1,2,3-Trichloropropane	3.9	<3.9	
Vinyl chloride	3.9	<3.9	
m- and p-Xylenes	3.9	<3.9	
o-Xylene	3.9	<3.9	
1,1-Dichloroethene	3.9	<3.9	
Acetone	79	<79	
Isopropylmethylbenzene	3.9	<3.9	
Methyl tert-butyl ether	39	<39	

Surrogate	% Recovery	Accep. Range
4-Bromofluorobenzene	92.24	74 - 121
Dibromofluoromethane	116.06	80 - 120
Toluene-d8	88.76	81 - 117

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/04/98

8270B_SOIL ANALYSIS REPORT

Method #:	EPA 8270B	**Preparation Batch ID:**	P980908/3550_8270/82
SDG #:	980821-1170	**Prep. Analyst:**	CROWELLSD
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06612	**Analytical Batch ID:**	I980908/8270B_SOI/114
Matrix:	SOIL	**Analyst:**	CROWELLSD
Units:	ug/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Acenaphthene	1300	<1300	
Acenaphthylene	1300	<1300	
Anthracene	1300	<1300	
Benz(a)anthracene	1300	1400	
Benzo(b)fluoranthene	1300	<1300	
Benzo(k)fluoranthene	1300	<1300	
Benzo(g,h,i)perylene	1300	<1300	
Benzo(a)pyrene	1300	1300	
Chrysene	1300	1500	
Dibenz(a,h)anthracene	1300	<1300	
Fluoranthene	1300	3000	
Fluorene	1300	<1300	
Indeno(1,2,3-cd)pyrene	1300	<1300	
2-Methylnaphthalene	1300	<1300	
Naphthalene	1300	<1300	
Phenanthrene	1300	2300	
Pyrene	1300	2300	

Surrogate	% Recovery	Accep. Range
2-Fluorobiphenyl	49.95	30 - 115
4-Terphenyl-d14	77.85	18 - 137
Nitrobenzene-d5	42.25	23 - 120

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/08/98

6010A_SOIL ANALYSIS REPORT

Method #:	EPA 6010A	**Preparation Batch ID:**	P980903/3051/133
SDG #:	980821-1170	**Prep. Analyst:**	LESHINSKYA
Client Sample ID:	Cove 2		
Lab Sample ID:	98-06612	**Analytical Batch ID:**	I980903/6010A_SOI/133
Matrix:	SOIL	**Analyst:**	LESHINSKYA
Units:	mg/Kg dry		
Dilution Factor:	1		

Component Name	MRL	Result	Qualifiers
Arsenic	6.1	14	
Barium	6.1	170	
Cadmium	1.2	14	
Chromium	6.1	74	
Copper	6.1	120	
Iron	30	64000	
Lead	6.1	110000	
Manganese	6.1	190	
Selenium	12	<12	
Silver	6.1	<6.1	
Zinc	24	600	

Batch Approved By: GOTTSHALLDL **Batch Approval Date:** 09/09/98

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1170

Preparation Batch: P980826/7470A_PRE/93 Prep. Analyst: LESHINSKYA

Component Name: Mercury EPA Method #: EPA 7470A Matrix: AQUEOUS

Analytical Batch: I980826/7470A_AQU/76 Analyst: LESHINSKYA Units: ug/L

Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	0.20	<0.20	1	
Cove 1	98-06614	0.20	<0.20	1	
Cove 2	98-06615	0.20	<0.20	1	
CDM 2	98-06616	0.20	<0.20	1	
CDM 2A	98-06617	0.20	<0.20	1	

Preparation Batch: P980828/9012_AQ_P/29 Prep. Analyst: NGUYENMH

Component Name: Cyanide, Total EPA Method #: EPA 9012 Matrix: AQUEOUS

Analytical Batch: I980831/9012_AQUE/29 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: GOTTSHALLDL - 8/31/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	0.015	0.029	1	
Cove 1	98-06614	0.015	<0.015	1	
Cove 2	98-06615	0.015	<0.015	1	
CDM 2	98-06616	0.015	<0.015	1	
CDM 2A	98-06617	0.015	<0.015	1	

Preparation Batch: P980901/7471A_PRE/68 Prep. Analyst: LESHINSKYA

Component Name: Mercury EPA Method #: EPA 7471A Matrix: SOIL

Analytical Batch: I980901/7471A_SOI/67 Analyst: LESHINSKYA Units: mg/Kg dry

Reviewed By - Date: GOTTSHALLDL - 9/1/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06609	0.65	1.0	1	
Swale 1	98-06610	0.38	<0.38	1	
Cove 1	98-06611	0.55	<0.55	1	
Cove 2	98-06612	0.48	<0.48	1	

Preparation Batch: P980904/9071A/52 Prep. Analyst: BUIT

Component Name: TPH EPA Method #: EPA 418.1 Matrix: SOIL

Analytical Batch: I980904/418.1_SOI/50 Analyst: BUIT Units: mg/Kg dry

Reviewed By - Date: GOTTSHALLDL - 9/4/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06609	55	2800	1	
Swale 1	98-06610	32	490	1	
Cove 1	98-06611	540	5100	10	
Cove 2	98-06612	39	670	1	

Component Name: Nitrate EPA Method #: EPA 353.2 Matrix: AQUEOUS

Analytical Batch: I980825/353.2_AQU/81 Analyst: NGUYENMH Units: mg/L

Reviewed By - Date: OCCHIALINIJF - 8/28/98

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	0.050	<0.050	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1170

Component Name:	Nitrate	EPA Method #:	EPA 353.2	Matrix:	AQUEOUS
Analytical Batch:	I980825/353.2_AQU/81	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	OCCHIALINIJF - 8/28/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-06614	0.050	0.46	1	
Cove 2	98-06615	0.050	0.055	1	
CDM 2	98-06616	0.050	<0.050	1	
CDM 2A	98-06617	0.050	<0.050	1	

Component Name:	COD	EPA Method #:	HACH 8000	Matrix:	AQUEOUS
Analytical Batch:	I980826/8000_AQUE/37	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Cove 1	98-06614	5.0	48	1	
Cove 2	98-06615	5.0	54	1	
CDM 2	98-06616	5.0	120	1	
CDM 2A	98-06617	5.0	33	1	

Component Name:	COD	EPA Method #:	HACH 8000	Matrix:	AQUEOUS
Analytical Batch:	I980826/8000_AQUE/38	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	5.0	230	1	

Component Name:	Total Dissolved Solids	EPA Method #:	SM 2540C	Matrix:	AQUEOUS
Analytical Batch:	I980828/2540C_AQU/48	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 8/31/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	5.0	1000	1	
Cove 1	98-06614	5.0	550	1	
Cove 2	98-06615	5.0	500	1	
CDM 2	98-06616	5.0	700	1	
CDM 2A	98-06617	5.0	700	1	

Component Name:	Alkalinity	EPA Method #:	SM 2320B	Matrix:	AQUEOUS
Analytical Batch:	I980901/2320B_AQU/46	Analyst:	NGUYENMH	Units:	mg/L CaCO3
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	5.0	510	1	
Cove 1	98-06614	5.0	390	1	
Cove 2	98-06615	5.0	380	1	
CDM 2	98-06616	5.0	640	1	
CDM 2A	98-06617	5.0	63	1	

SINGLE COMPONENT ANALYTICAL REPORT

SDG#: 980821-1170

Component Name:	Sulfate	EPA Method #:	EPA 9038	Matrix:	AQUEOUS
Analytical Batch:	I980901/9038_AQUE/19	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	10	140	1	
Cove 1	98-06614	10	<10	1	
Cove 2	98-06615	10	<10	1	
CDM 2	98-06616	10	<10	1	
CDM 2A	98-06617	10	<10	1	

Component Name:	Chloride	EPA Method #:	EPA 9251	Matrix:	AQUEOUS
Analytical Batch:	I980901/9251_AQUE/20	Analyst:	NGUYENMH	Units:	mg/L
Reviewed By - Date:	GOTTSHALLDL - 9/1/98				

Client Sample ID	Lab Sample ID	MRL	Result	Dilution Factor	Qualifier
Stream 1	98-06613	10	230	10	
Cove 1	98-06614	10	110	10	
Cove 2	98-06615	1.0	64	1	
CDM 2	98-06616	1.0	58	1	
CDM 2A	98-06617	1.0	3.8	1	

PREPARATION INFORMATION REPORT

SDG #: 980821-1170

% Solids Results

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609		Percent Solids	44.6	%	
Swale 1	98-06610		Percent Solids	77.0	%	
Cove 1	98-06611		Percent Solids	45.7	%	
Cove 2	98-06612		Percent Solids	63.5	%	

Preparation Batch ID: P980826/7470A_PRE/93
Preparation ID: 7470A_PREP
EPA Method #: EPA 7470A
Batch Approved By: OCCHIALINIJF
Batch Approved On: 8/28/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Cove 1	98-06614	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
Cove 2	98-06615	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 2	98-06616	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		DUPLICATE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
		MATRIX_SPIKE	Final Volume	100	ml	
			Initial Volume	70.0	ml	
CDM 2A	98-06617	SAMPLE	Final Volume	100	ml	
			Initial Volume	70.0	ml	

Preparation Batch ID: P980828/9012_AQ_P/29
Preparation ID: 9012_AQ_Prep
EPA Method #: EPA 9012
Batch Approved By: GOTTSHALLDL
Batch Approved On: 8/31/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 1	98-06614	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
Cove 2	98-06615	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 2	98-06616	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	
CDM 2A	98-06617	SAMPLE	Final Volume	50.0	mL	
			Initial Volume	50.0	mL	

Preparation Batch ID: P980831/3015/171
Preparation ID: 3015
EPA Method #: 3015
Batch Approved By: GOTTSHALLDL
Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 1	98-06614	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
Cove 2	98-06615	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	
CDM 2	98-06616	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

PREPARATION INFORMATION REPORT

SDG #: 980821-1170

Preparation Batch ID: P980831/3015/171
Preparation ID: 3015 EPA Method #: 3015
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
CDM 2A	98-06617	SAMPLE	Final Volume	50	mL	
			Initial Volume	45	mL	

Preparation Batch ID: P980901/5030/489
Preparation ID: 5030 EPA Method #: EPA 5030
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Cove 1	98-06614	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
Cove 2	98-06615	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 2	98-06616	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	
CDM 2A	98-06617	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	25.0	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980901/7471A_PRE/68
Preparation ID: 7471A_PREP EPA Method #:
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/1/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.52	g	
Swale 1	98-06610	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.51	g	
Cove 1	98-06611	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.60	g	
Cove 2	98-06612	SAMPLE	Final Volume	100	ml	
			Initial Weight	0.49	g	

Preparation Batch ID: P980903/3051/133
Preparation ID: 3051 EPA Method #: EPA 3051
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	500	mL	
			Initial Weight	0.477	g	
Swale 1	98-06610	SAMPLE	Final Volume	500	mL	
			Initial Weight	0.519	g	
		DUPLICATE	Final Volume	500	mL	
			Initial Weight	0.500	g	
		MATRIX_SPIKE	Final Volume	500	mL	
			Initial Weight	0.522	g	
Cove 1	98-06611	SAMPLE	Final Volume	500	mL	
			Initial Weight	0.500	g	
Cove 2	98-06612	SAMPLE	Final Volume	500	mL	

PREPARATION INFORMATION REPORT

SDG #: 980821-1170

Preparation Batch ID: P980903/3051/133
Preparation ID: 3051 EPA Method #: EPA 3051
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
			Initial Weight	0.644	g	

Preparation Batch ID: P980903/5035_SOIL/156
Preparation ID: 5035_SOIL_PREP EPA Method #: EPA 5035
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Swale 1	98-06610	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	
Cove 1	98-06611	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	
Cove 2	98-06612	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	10.0	g	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980904/5030/495
Preparation ID: 5030 EPA Method #: EPA 5030
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06613	SAMPLE	Final Volume	25.0	ml	
			Initial Volume	12.5	ml	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980904/5035_SOIL/157
Preparation ID: 5035_SOIL_PREP EPA Method #: EPA 5035
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	25.0	ml	
			Initial Weight	5.00	g	
			Surrogate Volume	0.010	ml	
		MATRIX_SPIKE	Final Volume	25.0	ml	
			Initial Weight	5.00	g	
			Surrogate Volume	0.010	ml	

Preparation Batch ID: P980904/9071A/52
Preparation ID: 9071A EPA Method #: EPA 9071A
Batch Approved By: GOTTSHALLDL Batch Approved On: 9/4/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.5	g	
Swale 1	98-06610	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.7	g	
Cove 1	98-06611	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.5	g	
Cove 2	98-06612	SAMPLE	Final Volume	100	ml	
			Initial Weight	30.4	g	

PREPARATION INFORMATION REPORT

SDG #: 980821-1170

Preparation Batch ID: P980908/3550_8270/82
Preparation ID: 3550_8270B
EPA Method #: EPA 3550
Batch Approved By: GOTTSHALLDL
Batch Approved On: 9/8/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.4	g	
			Surrogate Volume	1.0	mL	
Swale 1	98-06610	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.1	g	
			Surrogate Volume	1.0	mL	
Cove 1	98-06611	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.3	g	
			Surrogate Volume	1.0	mL	
		DUPLICATE	Final Volume	5.00	mL	
			Initial Weight	30.4	g	
			Surrogate Volume	1.0	mL	
Cove 2	98-06612	SAMPLE	Final Volume	5.00	mL	
			Initial Weight	30.8	g	
			Surrogate Volume	1.0	mL	

Preparation Batch ID: P980910/3550_8081/57
Preparation ID: 3550_8081
EPA Method #: EPA 3550
Batch Approved By: GOTTSHALLDL
Batch Approved On: 9/10/98

Client Sample ID	Lab Sample ID	Aliquot Type	Prep. Component	Value	Units	Comments
Stream 1	98-06609	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.6	g	
			Surrogate Volume	1.00	mL	
		DUPLICATE	Final Volume	10.0	mL	
			Initial Weight	30.3	g	
			Surrogate Volume	1.00	mL	
Swale 1	98-06610	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.2	g	
			Surrogate Volume	1.00	mL	
		MATRIX_SPIKE	Final Volume	10.0	mL	
			Initial Weight	30.3	g	
			Surrogate Volume	1.00	mL	
Cove 1	98-06611	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.1	g	
			Surrogate Volume	1.00	mL	
Cove 2	98-06612	SAMPLE	Final Volume	10.0	mL	
			Initial Weight	30.0	g	
			Surrogate Volume	1.00	mL	

HOLDTIME SUMMARY

Analysis: 2320B_AQUEOUS
Analysis Desc: Total Alkalinity
Required Preparation Holdtime: None
Required Analytical Holdtime: 14 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06613	08/20/98	08/21/98		08/28/98
ove 1	98-06614	08/20/98	08/21/98		08/28/98
ove 2	98-06615	08/20/98	08/21/98		08/28/98
DM 2	98-06616	08/20/98	08/21/98		08/28/98
DM 2A	98-06617	08/20/98	08/21/98		08/28/98

Analysis: 2540C_AQUEOUS
Analysis Desc: Total Dissolved Solids (TDS)
Required Preparation Holdtime: None
Required Analytical Holdtime: 7 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06613	08/20/98	08/21/98		08/25/98
ove 1	98-06614	08/20/98	08/21/98		08/25/98
ove 2	98-06615	08/20/98	08/21/98		08/25/98
DM 2	98-06616	08/20/98	08/21/98		08/25/98
DM 2A	98-06617	08/20/98	08/21/98		08/25/98

Analysis: 353.2_AQUEOUS
Analysis Desc: Nitrate or Nitrite as Nitrogen
Required Preparation Holdtime: None
Required Analytical Holdtime: 0 days 48 hrs

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
ream 1	98-06613	08/20/98	08/21/98		08/21/98
ove 1	98-06614	08/20/98	08/21/98		08/21/98
ove 2	98-06615	08/20/98	08/21/98		08/21/98
DM 2	98-06616	08/20/98	08/21/98		08/21/98
DM 2A	98-06617	08/20/98	08/21/98		08/21/98

Analysis: 418.1_SOIL
Analysis Desc: Total Petroleum Hydrocarbons by IR
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06609	08/20/98	08/21/98	09/02/98	09/04/98
wale 1	98-06610	08/20/98	08/21/98	09/02/98	09/04/98
ove 1	98-06611	08/20/98	08/21/98	09/02/98	09/04/98
ove 2	98-06612	08/20/98	08/21/98	09/02/98	09/04/98

Analysis: 6010A_AQUEOUS
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06613	08/20/98	08/21/98	08/27/98	08/28/98
ove 1	98-06614	08/20/98	08/21/98	08/27/98	08/28/98
ove 2	98-06615	08/20/98	08/21/98	08/27/98	08/28/98
DM 2	98-06616	08/20/98	08/21/98	08/27/98.	08/28/98
DM 2A	98-06617	08/20/98	08/21/98	08/27/98	08/28/98

HOLDTIME SUMMARY

Analysis: 6010A_SOIL
Analysis Desc: ICP Metals
Required Preparation Holdtime: 180 days
Required Analytical Holdtime: 180 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	09/01/98	09/02/98
Swale 1	98-06610	08/20/98	08/21/98	09/01/98	09/02/98
Cove 1	98-06611	08/20/98	08/21/98	09/01/98	09/02/98
Cove 2	98-06612	08/20/98	08/21/98	09/01/98	09/02/98

Analysis: 7470A_AQUEOUS
Analysis Desc: Mercury in Water
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98	08/26/98	08/26/98
Cove 1	98-06614	08/20/98	08/21/98	08/26/98	08/26/98
Cove 2	98-06615	08/20/98	08/21/98	08/26/98	08/26/98
CDM 2	98-06616	08/20/98	08/21/98	08/26/98	08/26/98
CDM 2A	98-06617	08/20/98	08/21/98	08/26/98	08/26/98

Analysis: 7471A_SOIL
Analysis Desc: Mercury in Soil/Sediment/Sludge
Required Preparation Holdtime: 28 days
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	08/28/98	08/28/98
Swale 1	98-06610	08/20/98	08/21/98	08/28/98	08/28/98
Cove 1	98-06611	08/20/98	08/21/98	08/28/98	08/28/98
Cove 2	98-06612	08/20/98	08/21/98	08/28/98	08/28/98

Analysis: 8000_AQUEOUS
Analysis Desc: Chemical Oxygen Demand
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		08/25/98
Cove 1	98-06614	08/20/98	08/21/98		08/25/98
Cove 2	98-06615	08/20/98	08/21/98		08/25/98
CDM 2	98-06616	08/20/98	08/21/98		08/25/98
CDM 2A	98-06617	08/20/98	08/21/98		08/25/98

Analysis: 8081_SOIL
Analysis Desc: Pesticides/PCBs
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 40 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06609	08/20/98	08/21/98	09/03/98	09/04/98
Swale 1	98-06610	08/20/98	08/21/98	09/03/98	09/04/98
Cove 1	98-06611	08/20/98	08/21/98	09/03/98	09/04/98
Cove 2	98-06612	08/20/98	08/21/98	09/03/98	09/05/98

HOLDTIME SUMMARY

Analysis: 8260A_AQUEOUS
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06613	08/20/98	08/21/98	09/02/98	09/02/98
ove 1	98-06614	08/20/98	08/21/98	08/31/98	08/31/98
ove 2	98-06615	08/20/98	08/21/98	08/31/98	08/31/98
DM 2	98-06616	08/20/98	08/21/98	08/31/98	08/31/98
DM 2A	98-06617	08/20/98	08/21/98	08/31/98	08/31/98

Analysis: 8260A_SOIL
Analysis Desc: Volatile Organics
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06609	08/20/98	08/21/98	09/03/98	09/03/98
wale 1	98-06610	08/20/98	08/21/98	09/02/98	09/02/98
ove 1	98-06611	08/20/98	08/21/98	09/02/98	09/02/98
ove 2	98-06612	08/20/98	08/21/98	09/02/98	09/02/98

Analysis: 8270B_SOIL
Analysis Desc: Semivolatile analysis in soils
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 40 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06609	08/20/98	08/21/98	09/03/98	09/04/98
wale 1	98-06610	08/20/98	08/21/98	09/03/98	09/04/98
ove 1	98-06611	08/20/98	08/21/98	09/03/98	09/04/98
ove 2	98-06612	08/20/98	08/21/98	09/03/98	09/05/98

Analysis: 9012_AQUEOUS
Analysis Desc: Total Cyanide
Required Preparation Holdtime: 14 days
Required Analytical Holdtime: 14 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06613	08/20/98	08/21/98	08/26/98	08/26/98
ove 1	98-06614	08/20/98	08/21/98	08/26/98	08/26/98
ove 2	98-06615	08/20/98	08/21/98	08/26/98	08/26/98
DM 2	98-06616	08/20/98	08/21/98	08/26/98	08/26/98
DM 2A	98-06617	08/20/98	08/21/98	08/26/98	08/26/98

Analysis: 9038_AQUEOUS
Analysis Desc: Sulfate
Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

lient Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
tream 1	98-06613	08/20/98	08/21/98		09/01/98
ove 1	98-06614	08/20/98	08/21/98		09/01/98
ove 2	98-06615	08/20/98	08/21/98		09/01/98
DM 2	98-06616	08/20/98	08/21/98		09/01/98
DM 2A	98-06617	08/20/98	08/21/98		09/01/98

HOLDTIME SUMMARY

Analysis: 9251_AQUEOUS
Analysis Desc: Chloride

Required Preparation Holdtime: None
Required Analytical Holdtime: 28 days

Client Sample ID	Lab Sample ID	Date Collected	Date Received	Date Prepared	Date Analyzed
Stream 1	98-06613	08/20/98	08/21/98		08/31/98
Cove 1	98-06614	08/20/98	08/21/98		08/31/98
Cove 2	98-06615	08/20/98	08/21/98		08/31/98
CDM 2	98-06616	08/20/98	08/21/98		08/31/98
CDM 2A	98-06617	08/20/98	08/21/98		08/31/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05304	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

353.2_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05306	Prep Analyst:	
EPA Number:	EPA 353.2		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Nitrate	0.050	<0.050	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

8000_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05319	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05326	Prep Analyst:	
EPA Number:	HACH 8000		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/38
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
COD	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

7470A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980826/7470A_PRE/93
Lab Sample ID:	B98-05349	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 7470A		
Units:	ug/L	Analytical Batch ID:	I980826/7470A_AQU/76
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.20	<0.20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

2540C_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05390	Prep Analyst:	
EPA Number:	SM 2540C		
Units:	mg/L	Analytical Batch ID:	I980828/2540C_AQU/48
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Total Dissolved Solids	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05406	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	B98-05408	Prep Analyst:	NGUYENMH
EPA Number:	EPA 9012		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Result	Qualifier
Cyanide, Total	0.015	<0.015	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

6010A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980831/3015/171
Lab Sample ID:	B98-05436	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A		
Units:	ug/L	Analytical Batch ID:	I980831/6010A_AQU/139
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	<5.0	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

7471A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/7471A_PRE/68
Lab Sample ID:	B98-05449	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 7471A		
Units:	mg/Kg dry	Analytical Batch ID:	I980901/7471A_SOI/67
Matrix:	SOIL	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Result	Qualifier
Mercury	0.25	<0.25	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	B98-05451	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980901/8260A_AQU/340
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	B98-05451	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	B98-05451	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/1/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	B98-05452	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	5.0	<5.0	
1,1,1-Trichloroethane	5.0	<5.0	
1,1,2,2-Tetrachloroethane	5.0	<5.0	
1,1,2-Trichloroethane	5.0	<5.0	
1,1-Dichloroethane	5.0	<5.0	
1,1-Dichloroethene	5.0	<5.0	
1,2,3-Trichloropropane	15	<15	
1,2-Dibromo-3-chloropropane	25	<25	
1,2-Dibromoethane	5.0	<5.0	
1,2-Dichlorobenzene	5.0	<5.0	
1,2-Dichloroethane	5.0	<5.0	
1,2-Dichloropropane	5.0	<5.0	
1,4-Dichlorobenzene	5.0	<5.0	
2-Butanone	100	<100	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	B98-05452	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980901/8260A_AQU/340
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
2-Hexanone	50	<50	
4-Methyl-2-pentanone	100	<100	
Acetone	100	<100	
Acrylonitrile	200	<200	
Benzene	5.0	<5.0	
Bromochloromethane	5.0	<5.0	
Bromodichloromethane	5.0	<5.0	
Bromoform	5.0	<5.0	
Bromomethane	10	<10	
Carbon disulfide	100	<100	
Carbon tetrachloride	10	<10	
Chlorobenzene	5.0	<5.0	
Chloroethane	10	<10	
Chloroform	5.0	<5.0	
Chloromethane	10	<10	
Dibromochloromethane	5.0	<5.0	
Dibromomethane	10	<10	
Dichlorodifluoromethane	5.0	<5.0	
Ethylbenzene	5.0	<5.0	
Iodomethane	10	<10	
Methylene chloride	10	<10	
Styrene	10	<10	
Tetrachloroethene	5.0	<5.0	
Toluene	5.0	<5.0	
Trichloroethene	5.0	<5.0	
Trichlorofluoromethane	5.0	<5.0	
Vinyl acetate	50	<50	
Vinyl chloride	10	<10	
cis-1,2-Dichloroethene	5.0	<5.0	
cis-1,3-Dichloropropene	10	<10	
m- and p-Xylenes	5.0	<5.0	
o-Xylene	5.0	<5.0	
trans-1,2-Dichloroethene	5.0	<5.0	
trans-1,3-Dichloropropene	10	<10	
trans-1,4-Dichloro-2-butene	100	<100	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/1/98

9251_AQUEOUS BLANK REPORT

SDG #: 980821-1170
Lab Sample ID: B98-05462
EPA Number: EPA 9251
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS BLANK REPORT

SDG #: 980821-1170
Lab Sample ID: B98-05464
EPA Number: EPA 9251
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Chloride	1.0	<1.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #: 980821-1170
Lab Sample ID: B98-05473
EPA Number: EPA 9038
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9038_AQUEOUS BLANK REPORT

SDG #: 980821-1170
Lab Sample ID: B98-05477
EPA Number: EPA 9038
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Result	Qualifier
Sulfate	10	<10	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

2320B_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	B98-05483	Prep Analyst:	
EPA Number:	SM 2320B	Analytical Batch ID:	I980901/2320B_AQU/46
Units:	mg/L CaCO3	Analysis Analyst:	NGUYENMH
Matrix:	AQUEOUS		

Component Name	MRL	Result	Qualifier
Alkalinity	5.0	<5.0	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

6010A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/3051/133
Lab Sample ID:	B98-05545	Prep Analyst:	LESHINSKYA
EPA Number:	EPA 6010A	Analytical Batch ID:	I980903/6010A_SOI/133
Units:	mg/Kg dry	Analysis Analyst:	LESHINSKYA
Matrix:	SOIL		

Component Name	MRL	Result	Qualifier
Arsenic	5.0	<5.0	
Barium	5.0	<5.0	
Cadmium	1.0	<1.0	
Chromium	5.0	<5.0	
Copper	5.0	<5.0	
Iron	25	<25	
Lead	5.0	<5.0	
Manganese	5.0	<5.0	
Selenium	10	<10	
Silver	5.0	<5.0	
Zinc	20	<20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/9/98

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/5035_SOIL/156
Lab Sample ID:	B98-05547	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A	Analytical Batch ID:	I980903/8260A_SOI/156
Units:	ug/Kg dry	Analysis Analyst:	MITCHELLMR
Matrix:	SOIL		

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	2.5	<2.5	
1,1,1-Trichloroethane	2.5	<2.5	
1,1,2,2-Tetrachloroethane	2.5	<2.5	
1,1,2-Trichloroethane	2.5	<2.5	
1,1-Dichloroethane	2.5	<2.5	
1,1-Dichloroethene	2.5	<2.5	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980903/5035_SOIL/156
Lab Sample ID:	B98-05547	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	**Analytical Batch ID:**	I980903/8260A_SOI/156
Matrix:	SOIL	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1-Dichloropropene	2.5	<2.5	
1,2,3-Trichlorobenzene	2.5	<2.5	
1,2,3-Trichloropropane	2.5	<2.5	
1,2,4-Trichlorobenzene	2.5	<2.5	
1,2,4-Trimethylbenzene	2.5	<2.5	
1,2-Dibromo-3-chloropropane	25	<25	
1,2-Dibromoethane	2.5	<2.5	
1,2-Dichlorobenzene	2.5	<2.5	
1,2-Dichloroethane	2.5	<2.5	
1,2-Dichloropropane	2.5	<2.5	
1,3,5-Trimethylbenzene	2.5	<2.5	
1,3-Dichlorobenzene	2.5	<2.5	
1,3-Dichloropropane	2.5	<2.5	
1,4-Dichlorobenzene	2.5	<2.5	
2,2-Dichloropropane	2.5	<2.5	
2-Butanone	50	<50	
2-Chlorotoluene	2.5	<2.5	
2-Hexanone	50	<50	
4-Chlorotoluene	2.5	<2.5	
4-Methyl-2-pentanone	50	<50	
Acetone	50	<50	
Benzene	2.5	<2.5	
Bromobenzene	2.5	<2.5	
Bromochloromethane	2.5	<2.5	
Bromodichloromethane	2.5	<2.5	
Bromoform	2.5	<2.5	
Bromomethane	12	<12	
Carbon tetrachloride	2.5	<2.5	
Chlorobenzene	2.5	<2.5	
Chloroethane	12	<12	
Chloroform	12	<12	
Chloromethane	12	<12	
Dibromochloromethane	2.5	<2.5	
Dibromomethane	2.5	<2.5	
Dichlorodifluoromethane	2.5	<2.5	
Ethylbenzene	2.5	<2.5	
Hexachlorobutadiene	2.5	<2.5	
Isopropylbenzene	2.5	<2.5	
Isopropylmethylbenzene	2.5	<2.5	
Methyl tert-butyl ether	25	<25	
Methylene chloride	13	<13	
Naphthalene	2.5	<2.5	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/5035_SOIL/156
Lab Sample ID:	B98-05547	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	Analytical Batch ID:	I980903/8260A_SOI/156
Matrix:	SOIL	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
Styrene	2.5	<2.5	
Tetrachloroethene	2.5	<2.5	
Toluene	2.5	<2.5	
Trichloroethene	2.5	<2.5	
Trichlorofluoromethane	2.5	<2.5	
Vinyl chloride	2.5	<2.5	
cis-1,2-Dichloroethene	2.5	<2.5	
cis-1,3-Dichloropropene	2.5	<2.5	
m- and p-Xylenes	2.5	<2.5	
n-Butylbenzene	2.5	<2.5	
n-Propylbenzene	2.5	<2.5	
o-Xylene	2.5	<2.5	
sec-Butylbenzene	2.5	<2.5	
tert-Butylbenzene	2.5	<2.5	
trans-1,2-Dichloroethene	2.5	<2.5	
trans-1,3-Dichloropropene	2.5	<2.5	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5030/495
Lab Sample ID:	B98-05557	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	Analytical Batch ID:	I980904/8260A_AQU/342
Matrix:	AQUEOUS	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	1.0	<1.0	
1,1,1-Trichloroethane	1.0	<1.0	
1,1,2,2-Tetrachloroethane	1.0	<1.0	
1,1,2-Trichloroethane	1.0	<1.0	
1,1-Dichloroethane	1.0	<1.0	
1,1-Dichloroethene	1.0	<1.0	
1,1-Dichloropropene	1.0	<1.0	
1,2,3-Trichlorobenzene	1.0	<1.0	
1,2,3-Trichloropropane	1.0	<1.0	
1,2,4-Trichlorobenzene	1.0	<1.0	
1,2,4-Trimethylbenzene	1.0	<1.0	
1,2-Dibromo-3-chloropropane	1.0	<1.0	
1,2-Dibromoethane	1.0	<1.0	
1,2-Dichlorobenzene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980904/5030/495
Lab Sample ID:	B98-05557	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980904/8260A_AQU/342
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,2-Dichloroethane	1.0	<1.0	
1,2-Dichloropropane	1.0	<1.0	
1,3,5-Trimethylbenzene	1.0	<1.0	
1,3-Dichlorobenzene	1.0	<1.0	
1,3-Dichloropropane	1.0	<1.0	
1,4-Dichlorobenzene	1.0	<1.0	
2,2-Dichloropropane	1.0	<1.0	
2-Butanone	20	<20	
2-Chlorotoluene	1.0	<1.0	
2-Hexanone	20	<20	
4-Chlorotoluene	1.0	<1.0	
4-Methyl-2-pentanone	20	<20	
Acetone	20	<20	
Benzene	1.0	<1.0	
Bromobenzene	1.0	<1.0	
Bromochloromethane	1.0	<1.0	
Bromodichloromethane	1.0	<1.0	
Bromoform	1.0	<1.0	
Bromomethane	5.0	<5.0	
Carbon tetrachloride	1.0	<1.0	
Chlorobenzene	1.0	<1.0	
Chloroethane	5.0	<5.0	
Chloroform	5.0	<5.0	
Chloromethane	5.0	<5.0	
Dibromochloromethane	1.0	<1.0	
Dibromomethane	1.0	<1.0	
Dichlorodifluoromethane	1.0	<1.0	
Ethylbenzene	1.0	<1.0	
Hexachlorobutadiene	1.0	<1.0	
Isopropylbenzene	1.0	<1.0	
Isopropylmethylbenzene	1.0	<1.0	
Methyl tert-butyl ether	1.0	<1.0	
Methylene chloride	5.0	<5.0	
Naphthalene	1.0	<1.0	
Styrene	1.0	<1.0	
Tetrachloroethene	1.0	<1.0	
Toluene	1.0	<1.0	
Trichloroethene	1.0	<1.0	
Trichlorofluoromethane	1.0	<1.0	
Vinyl chloride	1.0	<1.0	
cis-1,2-Dichloroethene	1.0	<1.0	
cis-1,3-Dichloropropene	1.0	<1.0	

8260A_AQUEOUS BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980904/5030/495
Lab Sample ID:	B98-05557	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/L	**Analytical Batch ID:**	I980904/8260A_AQU/342
Matrix:	AQUEOUS	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
m- and p-Xylenes	1.0	<1.0	
n-Butylbenzene	1.0	<1.0	
n-Propylbenzene	1.0	<1.0	
o-Xylene	1.0	<1.0	
sec-Butylbenzene	1.0	<1.0	
tert-Butylbenzene	1.0	<1.0	
trans-1,2-Dichloroethene	1.0	<1.0	
trans-1,3-Dichloropropene	1.0	<1.0	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/4/98

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980904/5035_SOIL/157
Lab Sample ID:	B98-05572	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	**Analytical Batch ID:**	I980904/8260A_SOI/157
Matrix:	SOIL	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
1,1,1,2-Tetrachloroethane	2.5	<2.5	
1,1,1-Trichloroethane	2.5	<2.5	
1,1,2,2-Tetrachloroethane	2.5	<2.5	
1,1,2-Trichloroethane	2.5	<2.5	
1,1-Dichloroethane	2.5	<2.5	
1,1-Dichloroethene	2.5	<2.5	
1,1-Dichloropropene	2.5	<2.5	
1,2,3-Trichlorobenzene	2.5	<2.5	
1,2,3-Trichloropropane	2.5	<2.5	
1,2,4-Trichlorobenzene	2.5	<2.5	
1,2,4-Trimethylbenzene	2.5	<2.5	
1,2-Dibromo-3-chloropropane	25	<25	
1,2-Dibromoethane	2.5	<2.5	
1,2-Dichlorobenzene	2.5	<2.5	
1,2-Dichloroethane	2.5	<2.5	
1,2-Dichloropropane	2.5	<2.5	
1,3,5-Trimethylbenzene	2.5	<2.5	
1,3-Dichlorobenzene	2.5	<2.5	
1,3-Dichloropropane	2.5	<2.5	
1,4-Dichlorobenzene	2.5	<2.5	
2,2-Dichloropropane	2.5	<2.5	
2-Butanone	50	<50	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980904/5035_SOIL/157
Lab Sample ID:	B98-05572	**Prep Analyst:**	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	**Analytical Batch ID:**	I980904/8260A_SOI/157
Matrix:	SOIL	**Analysis Analyst:**	MITCHELLMR

Component Name	MRL	Result	Qualifier
2-Chlorotoluene	2.5	<2.5	
2-Hexanone	50	<50	
4-Chlorotoluene	2.5	<2.5	
4-Methyl-2-pentanone	50	<50	
Acetone	50	<50	
Benzene	2.5	<2.5	
Bromobenzene	2.5	<2.5	
Bromochloromethane	2.5	<2.5	
Bromodichloromethane	2.5	<2.5	
Bromoform	2.5	<2.5	
Bromomethane	12	<12	
Carbon tetrachloride	2.5	<2.5	
Chlorobenzene	2.5	<2.5	
Chloroethane	12	<12	
Chloroform	12	<12	
Chloromethane	12	<12	
Dibromochloromethane	2.5	<2.5	
Dibromomethane	2.5	<2.5	
Dichlorodifluoromethane	2.5	<2.5	
Ethylbenzene	2.5	<2.5	
Hexachlorobutadiene	2.5	<2.5	
Isopropylbenzene	2.5	<2.5	
Isopropylmethylbenzene	2.5	<2.5	
Methyl tert-butyl ether	25	<25	
Methylene chloride	13	<13	
Naphthalene	2.5	<2.5	
Styrene	2.5	<2.5	
Tetrachloroethene	2.5	<2.5	
Toluene	2.5	<2.5	
Trichloroethene	2.5	<2.5	
Trichlorofluoromethane	2.5	<2.5	
Vinyl chloride	2.5	<2.5	
cis-1,2-Dichloroethene	2.5	<2.5	
cis-1,3-Dichloropropene	2.5	<2.5	
m- and p-Xylenes	2.5	<2.5	
n-Butylbenzene	2.5	<2.5	
n-Propylbenzene	2.5	<2.5	
o-Xylene	2.5	<2.5	
sec-Butylbenzene	2.5	<2.5	
tert-Butylbenzene	2.5	<2.5	
trans-1,2-Dichloroethene	2.5	<2.5	

8260A_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5035_SOIL/157
Lab Sample ID:	B98-05572	Prep Analyst:	MITCHELLMR
EPA Number:	EPA 8260A		
Units:	ug/Kg dry	Analytical Batch ID:	I980904/8260A_SOI/157
Matrix:	SOIL	Analysis Analyst:	MITCHELLMR

Component Name	MRL	Result	Qualifier
trans-1,3-Dichloropropene	2.5	<2.5	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

418.1_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/9071A/52
Lab Sample ID:	B98-05582	Prep Analyst:	BUIT
EPA Number:	EPA 418.1		
Units:	mg/Kg dry	Analytical Batch ID:	I980904/418.1_SOI/50
Matrix:	SOIL	Analysis Analyst:	BUIT

Component Name	MRL	Result	Qualifier
TPH	25	<25	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

8270B_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
Lab Sample ID:	B98-05595	Prep Analyst:	CROWELLSD
EPA Number:	EPA 8270B		
Units:	ug/Kg dry	Analytical Batch ID:	I980908/8270B_SOI/114
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Result	Qualifier
2-Methylnaphthalene	170	<170	
Acenaphthene	170	<170	
Acenaphthylene	170	<170	
Anthracene	170	<170	
Benz(a)anthracene	170	<170	
Benzo(a)pyrene	170	<170	
Benzo(b)fluoranthene	170	<170	
Benzo(g,h,i)perylene	170	<170	
Benzo(k)fluoranthene	170	<170	
Chrysene	170	<170	
Dibenz(a,h)anthracene	170	<170	
Fluoranthene	170	<170	
Fluorene	170	<170	
Indeno(1,2,3-cd)pyrene	170	<170	
Naphthalene	170	<170	
Phenanthrene	170	<170	

8270B_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
Lab Sample ID:	B98-05595	Prep Analyst:	CROWELLSD
EPA Number:	EPA 8270B		
Units:	ug/Kg dry	Analytical Batch ID:	I980908/8270B_SOI/114
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Result	Qualifier
Pyrene	170	<170	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/8/98

8081_SOIL BLANK REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980910/3550_8081/57
Lab Sample ID:	B98-05638	Prep Analyst:	CROWELLSD
EPA Number:	EPA 8081		
Units:	mg/Kg dry	Analytical Batch ID:	I980910/8081_SOIL/56
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Result	Qualifier
4,4`-DDD	0.0033	<0.0033	
4,4`-DDE	0.0033	<0.0033	
4,4`-DDT	0.0033	<0.0033	
Aldrin	0.0033	<0.0033	
Aroclor 1221	0.0333	<0.0333	
Aroclor 1232	0.0333	<0.0333	
Aroclor 1242/1016	0.0333	<0.0333	
Aroclor 1248	0.0333	<0.0333	
Aroclor 1254	0.0333	<0.0333	
Aroclor 1260	0.0333	<0.0333	
Chlordane (Technical)	0.0167	<0.0167	
Dieldrin	0.0033	<0.0033	
Endosulfan I	0.0033	<0.0033	
Endosulfan II	0.0033	<0.0033	
Endosulfan sulfate	0.0033	<0.0033	
Endrin	0.0033	<0.0033	
Endrin aldehyde	0.0033	<0.0033	
Heptachlor	0.0033	<0.0033	
Heptachlor epoxide	0.0033	<0.0033	
Methoxychlor	0.0067	<0.0067	
Toxaphene	0.167	<0.167	
alpha-BHC	0.0033	<0.0033	
beta-BHC	0.0033	<0.0033	
delta-BHC	0.0033	<0.0033	
gamma-BHC	0.0033	<0.0033	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/10/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05305	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980825/353.2_AQU/81
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	1.4	110.3	80 - 120	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

353.2_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05307	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980825/353.2_AQU/81
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Nitrate	0.050	1.3	99.2	80 - 120	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05320	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980826/8000_AQUE/37
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	74	95.2	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05327	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980826/8000_AQUE/38
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
COD	5.0	310	100.1	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05391	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980828/2540C_AQU/48
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	730	97.6	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	QCS98-05407	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/9012_AQUE/29
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.21	103.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
Lab Sample ID:	QCS98-05409	Prep. Analyst:	NGUYENMH
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980831/9012_AQUE/29
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Cyanide, Total	0.015	0.19	95.5	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

7471A_SOIL QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/7471A_PRE/68
Lab Sample ID:	QCS98-05450	Prep. Analyst:	LESHINSKYA
Units:	mg/Kg dry		
Matrix:	SOIL	Analytical Batch ID:	I980901/7471A_SOI/67
		Analysis Analyst:	LESHINSKYA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Mercury	0.75	1.1	94.4	66.3 - 131.9	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
Lab Sample ID:	QCS98-05463	Prep. Analyst:	
Units:	mg/L		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/9251_AQUE/20
		Analysis Analyst:	NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.0	11	89.3	80 - 120	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

9251_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05466
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Chloride	1.0	11	91.8	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05474
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	130	104.0	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9038_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05478
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Sulfate	10	120	103.3	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

2320B_AQUEOUS QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05484
Units: mg/L CaCO3
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/2320B_AQU/46
Analysis Analyst: NGUYENMH

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Alkalinity	5.0	120	101.7	80 - 120	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

6010A_SOIL QUALITY CONTROL SAMPLE REPORT

SDG #: 980821-1170
Lab Sample ID: QCS98-05546
Units: mg/Kg dry
Matrix: SOIL

Preparation Batch ID: P980903/3051/133
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980903/6010A_SOI/133
Analysis Analyst: LESHINSKYA

Component Name	MRL	QCS Result	% Analyte Recovery	Acceptable Range	Qualifier
Arsenic	12	140	89.7	74.1 - 126	
Barium	12	140	81.1	76.9 - 123	
Cadmium	2.4	100	77.5	77.2 - 122.7	
Chromium	12	48	84.1	77 - 122.9	
Copper	12	52	86.7	79.1 - 121	
Iron	60	8000	91.7	60.8 - 139	
Lead	12	66	77.3	73.4 - 127	
Manganese	12	230	80.9	80.7 - 119	
Selenium	24	120	90.5	71.4 - 128	
Silver	12	40	71.0	73.8 - 126	
Zinc	48	860	87.2	73.9 - 126.4	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/9/98

7470A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980826/7470A_PRE/93
Lab Sample ID:	LFB98-05350	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 7470A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980826/7470A_AQU/76
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Mercury	0.2	5.00	102.4			80 - 120		

Batch Approved By: OCCHIALINIJF **Batch Approved Date:** 8/28/98

SDG #:	980821-1170	**Preparation Batch ID:**	P980831/3015/171
Lab Sample ID:	LFB98-05437	**Prep. Analyst:**	LESHINSKYA
EPA Method #:	EPA 6010A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980831/6010A_AQU/139
Units:	ug/L	**Analyst:**	LESHINSKYA

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Arsenic	5.0	100.00	93.6			80 - 120		
Barium	5.0	1000.00	93.0			80 - 120		
Cadmium	1.0	50.00	98.3			80 - 120		
Chromium	5.0	100.00	99.2			80 - 120		
Copper	5.0	100.00	90.6			80 - 120		
Iron	25	200.00	91.6			80 - 120		
Lead	5.0	100.00	95.4			80 - 120		
Manganese	5.0	100.00	94.0			80 - 120		
Selenium	10	50.00	111.3			80 - 120		
Silver	5.0	100.00	95.6			80 - 120		
Zinc	20	100.00	100.6			80 - 120		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/1/98

SDG #:	980821-1170	**Preparation Batch ID:**	P980901/5030/489
Lab Sample ID:	LFB98-05453	**Prep. Analyst:**	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	**Analytical Batch ID:**	I980901/8260A_AQU/340
Units:	ug/L	**Analyst:**	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	104.9	105.3	0.34	61 - 145	0 - 14	
Benzene	1.0	50.00	105.6	104.7	0.86	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	105.3	103.8	1.42	75 - 130	0 - 13	
Toluene	1.0	50.00	106.9	94.3	12.53	76 - 125	0 - 13	

8260A_AQUEOUS LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/5030/489
Lab Sample ID:	LFB98-05453	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980901/8260A_AQU/340
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Trichloroethene	1.0	50.00	105.1	102.9	2.14	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

SDG #:	980821-1170	Preparation Batch ID:	P980903/5035_SOIL/156
Lab Sample ID:	LFB98-05548	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	SOIL	Analytical Batch ID:	I980903/8260A_SOI/156
Units:	ug/Kg dry	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	2.5	50.00	106.0	105.5	0.47	59 - 172	0 - 22	
Benzene	2.5	50.00	110.3	117.3	6.22	66 - 142	0 - 21	
Chlorobenzene	2.5	50.00	102.9	101.2	1.61	60 - 133	0 - 21	
Toluene	2.5	50.00	105.2	106.6	1.28	59 - 139	0 - 21	
Trichloroethene	2.5	50.00	104.3	104.6	0.27	62 - 137	0 - 24	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

SDG #:	980821-1170	Preparation Batch ID:	P980904/5030/495
Lab Sample ID:	LFB98-05558	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	AQUEOUS	Analytical Batch ID:	I980904/8260A_AQU/342
Units:	ug/L	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	1.0	50.00	106.0	105.5	0.47	61 - 145	0 - 14	
Benzene	1.0	50.00	110.3	117.3	6.22	76 - 127	0 - 11	
Chlorobenzene	1.0	50.00	102.9	101.2	1.61	75 - 130	0 - 13	
Toluene	1.0	50.00	105.2	106.6	1.28	76 - 125	0 - 13	
Trichloroethene	1.0	50.00	104.3	104.6	0.27	71 - 120	0 - 14	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

8260A_SOIL LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980904/5035_SOIL/157
Lab Sample ID:	LFB98-05573	Prep. Analyst:	MITCHELLMR
EPA Method #:	EPA 8260A		
Matrix:	SOIL	Analytical Batch ID:	I980904/8260A_SOI/157
Units:	ug/Kg dry	Analyst:	MITCHELLMR

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
1,1-Dichloroethene	2.5	50.00	110.5	105.7	4.39	59 - 172	0 - 22	
Benzene	2.5	50.00	107.3	107.1	0.15	66 - 142	0 - 21	
Chlorobenzene	2.5	50.00	102.8	102.1	0.74	60 - 133	0 - 21	
Toluene	2.5	50.00	102.8	95.1	7.82	59 - 139	0 - 21	
Trichloroethene	2.5	50.00	101.2	101.4	0.22	62 - 137	0 - 24	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

SDG #:	980821-1170	Preparation Batch ID:	P980904/9071A/52
Lab Sample ID:	LFB98-05583	Prep. Analyst:	BUIT
EPA Method #:	EPA 418.1		
Matrix:	SOIL	Analytical Batch ID:	I980904/418.1_SOI/50
Units:	mg/Kg dry	Analyst:	BUIT

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
TPH		80.23	118.2			80 - 120		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/4/98

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
Lab Sample ID:	LFB98-05596	Prep. Analyst:	CROWELLSD
EPA Method #:	EPA 8270B		
Matrix:	SOIL	Analytical Batch ID:	I980908/8270B_SOI/114
Units:	ug/Kg dry	Analyst:	CROWELLSD

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
Acenaphthene		100.00	72.8			31 - 137		
Pyrene		100.00	66.7			35 - 142		

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/8/98

8081_SOIL LFB/LFB DUPLICATE RPD REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980910/3550_8081/57
Lab Sample ID:	LFB98-05639	**Prep. Analyst:**	CROWELLSD
EPA Method #:	EPA 8081		
Matrix:	SOIL	**Analytical Batch ID:**	I980910/8081_SOIL/56
Units:	mg/Kg dry	**Analyst:**	CROWELLSD

Component Name	MRL	Spike Amount	% Analyte Recovery LFB	% Analyte Recovery LFBD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifiers
4,4`-DDT	0.003	100.00	108.7			25 - 160		
Aldrin	0.003	25.00	88.6			42 - 122		
Dieldrin	0.003	100.00	95.7			36 - 146		
Endrin	0.003	100.00	113.9			30 - 147		
Heptachlor	0.003	25.00	90.7			34 - 111		
gamma-BHC	0.003	25.00	91.8			32 - 127		
Aroclor 1260	0.033	5000.00	83.5			8 - 127		

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/10/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-06357		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	100	110	7.339	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

9012_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980828/9012_AQ_P/29
EPA Method #:	EPA 9012	Prep. Analyst:	NGUYENMH
Lab Sample ID:	98-06553		
Units:	mg/L	Analytical Batch ID:	I980831/9012_AQUE/29
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Cyanide, Total	0.015	<0.015	<0.015	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

2540C_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980821-1170
EPA Method #: SM 2540C
Lab Sample ID: 98-06553
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980828/2540C_AQU/48
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Total Dissolved Solids	5.0	140	130	8	0 - 20	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 8/31/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980821-1170
EPA Method #: EPA 9038
Lab Sample ID: 98-06553
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	10	<10	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980821-1170
EPA Method #: EPA 9251
Lab Sample ID: 98-06553
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:
Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	9.9	9.9	0.202	0 - 20	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

8000_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	HACH 8000	Prep. Analyst:	
Lab Sample ID:	98-06555		
Units:	mg/L	Analytical Batch ID:	I980826/8000_AQUE/37
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
COD	5.0	14	13	7.407	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 8/31/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-06559		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	2.5	32	32	0	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

6010A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980831/3015/171
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06579		
Units:	ug/L	Analytical Batch ID:	I980831/6010A_AQU/139
Matrix:	AQUEOUS	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	5.0	9.8	8.4	15.358	0 - 20	
Barium	5.0	160	160	0.755	0 - 20	
Cadmium	1.0	<1.0	<1.0	N/A	0 - 20	
Chromium	5.0	<5.0	<5.0	N/A	0 - 20	
Copper	5.0	<5.0	<5.0	N/A	0 - 20	
Iron	25	<25	<25	N/A	0 - 20	
Lead	5.0	<5.0	<5.0	N/A	0 - 20	
Manganese	5.0	390	380	0.919	0 - 20	
Selenium	10	<10	<10	N/A	0 - 20	
Silver	5.0	<5.0	<5.0	N/A	0 - 20	
Zinc	20	<20	<20	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

353.2_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	EPA 353.2	Prep. Analyst:	
Lab Sample ID:	98-06579		
Units:	mg/L	Analytical Batch ID:	I980825/353.2_AQU/81
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Nitrate	0.050	<0.050	<0.050	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF Batch Approved Date: 8/28/98

2320B_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	
EPA Method #:	SM 2320B	Prep. Analyst:	
Lab Sample ID:	98-06579		
Units:	mg/L CaCO3	Analytical Batch ID:	I980901/2320B_AQU/46
Matrix:	AQUEOUS	Analysis Analyst:	NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Alkalinity	5.0	180	180	0.271	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

7471A_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980901/7471A_PRE/68
EPA Method #:	EPA 7471A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06605		
Units:	mg/Kg dry	Analytical Batch ID:	I980901/7471A_SOI/67
Matrix:	SOIL	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.32	<0.28	<0.32	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/1/98

8081_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980910/3550_8081/57
EPA Method #:	EPA 8081	Prep. Analyst:	CROWELLSD
Lab Sample ID:	98-06609		
Units:	mg/Kg dry	Analytical Batch ID:	I980910/8081_SOIL/56
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
4,4`-DDD	0.0074	0.0526	0.0567	7.487	0 - 20	
4,4`-DDE	0.0074	0.0229	0.0178	25.124	0 - 20	

8081_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980910/3550_8081/57
EPA Method #:	EPA 8081	**Prep. Analyst:**	CROWELLSD
Lab Sample ID:	98-06609		
Units:	mg/Kg dry	**Analytical Batch ID:**	I980910/8081_SOIL/56
Matrix:	SOIL	**Analysis Analyst:**	CROWELLSD

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
4,4`-DDT	0.0074	0.0298	0.0087	109.424	0 - 20	
Aldrin	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Aroclor 1221	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1232	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1242/1016	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1248	0.0739	<0.0732	<0.0739	N/A	0 - 20	
Aroclor 1254	0.0739	0.299	0.258	14.645	0 - 20	
Aroclor 1260	0.0739	0.114	0.187	48.836	0 - 20	
Chlordane (Technical)	0.0371	0.264	0.246	7.326	0 - 20	
Dieldrin	0.0074	0.0275	0.0225	19.658	0 - 20	
Endosulfan I	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endosulfan II	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endosulfan sulfate	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endrin	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Endrin aldehyde	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Heptachlor	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Heptachlor epoxide	0.0074	<0.0073	<0.0074	N/A	0 - 20	
Methoxychlor	0.0148	<0.0146	<0.0148	N/A	0 - 20	
Toxaphene	0.370	<0.366	<0.370	N/A	0 - 20	
alpha-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	
beta-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	
delta-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	
gamma-BHC	0.0074	<0.0073	<0.0074	N/A	0 - 20	

Batch Approved By: GOTTSHALLDL **Batch Approved Date:** 9/10/98

6010A_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	**Preparation Batch ID:**	P980903/3051/133
EPA Method #:	EPA 6010A	**Prep. Analyst:**	LESHINSKYA
Lab Sample ID:	98-06610		
Units:	mg/Kg dry	**Analytical Batch ID:**	I980903/6010A_SOI/133
Matrix:	SOIL	**Analysis Analyst:**	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Arsenic	6.5	11	7.1	45.911	0 - 20	
Barium	6.5	150	150	0.233	0 - 20	
Cadmium	1.3	11	10	7.829	0 - 20	
Chromium	6.5	73	70	3.948	0 - 20	
Copper	6.5	80	95	17.19	0 - 20	
Iron	32	18000	15000	14.365	0 - 20	
Lead	6.5	570	530	7.446	0 - 20	
Manganese	6.5	230	230	1.141	0 - 20	

6010A_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980903/3051/133
EPA Method #:	EPA 6010A	Prep. Analyst:	LESHINSKYA
Lab Sample ID:	98-06610		
Units:	mg/Kg dry	Analytical Batch ID:	I980903/6010A_SOI/133
Matrix:	SOIL	Analysis Analyst:	LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Selenium	13	<12	<13	N/A	0 - 20	
Silver	6.5	<6.2	<6.5	N/A	0 - 20	
Zinc	26	450	440	3.238	0 - 20	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/9/98

8270B_SOIL DUPLICATE SAMPLE REPORT

SDG #:	980821-1170	Preparation Batch ID:	P980908/3550_8270/82
EPA Method #:	EPA 8270B	Prep. Analyst:	CROWELLSD
Lab Sample ID:	98-06611		
Units:	ug/Kg dry	Analytical Batch ID:	I980908/8270B_SOI/114
Matrix:	SOIL	Analysis Analyst:	CROWELLSD

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
2-Methylnaphthalene	1800	<1800	<1800	N/A	0 - 35	
Acenaphthene	1800	3000	<1800	N/A	0 - 35	
Acenaphthylene	1800	<1800	<1800	N/A	0 - 35	
Anthracene	1800	9400	<1800	N/A	0 - 35	
Benz(a)anthracene	1800	10000	<1800	N/A	0 - 35	
Benzo(a)pyrene	1800	8100	<1800	N/A	0 - 35	
Benzo(b)fluoranthene	1800	5300	<1800	N/A	0 - 35	
Benzo(g,h,i)perylene	1800	3400	<1800	N/A	0 - 35	
Benzo(k)fluoranthene	1800	6400	<1800	N/A	0 - 35	
Chrysene	1800	10000	<1800	N/A	0 - 35	
Dibenz(a,h)anthracene	1800	<1800	<1800	N/A	0 - 35	
Fluoranthene	1800	23000	<1800	N/A	0 - 35	
Fluorene	1800	3800	<1800	N/A	0 - 35	
Indeno(1,2,3-cd)pyrene	1800	3100	<1800	N/A	0 - 35	
Naphthalene	1800	2000	<1800	N/A	0 - 35	
Phenanthrene	1800	30000	<1800	N/A	0 - 35	
Pyrene	1800	19000	<1800	N/A	0 - 35	

Batch Approved By: GOTTSHALLDL Batch Approved Date: 9/8/98

7470A_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980821-1170
EPA Method #: EPA 7470A
Lab Sample ID: 98-06616
Units: ug/L
Matrix: AQUEOUS

Preparation Batch ID: P980826/7470A_PRE/93
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980826/7470A_AQU/76
Analysis Analyst: LESHINSKYA

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Mercury	0.20	<0.20	<0.20	N/A	0 - 20	

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

9038_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980821-1170
EPA Method #: EPA 9038
Lab Sample ID: 98-06678
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9038_AQUE/19
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Sulfate	10	12	12	0.206	0 - 20	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

9251_AQUEOUS DUPLICATE SAMPLE REPORT

SDG #: 980821-1170
EPA Method #: EPA 9251
Lab Sample ID: 98-06678
Units: mg/L
Matrix: AQUEOUS

Preparation Batch ID:
Prep. Analyst:

Analytical Batch ID: I980901/9251_AQUE/20
Analysis Analyst: NGUYENMH

Component Name	MRL	Sample Result	Duplicate Result	RPD	Acceptable Range	Qualifier
Chloride	1.0	13	14	4.726	0 - 20	

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

7470A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06616
Matrix: AQUEOUS

Preparation Batch ID: P980826/7470A_PRE/93
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980826/7470A_AQU/76
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Mercury	98			80 - 120		

Batch Approved By: OCCHIALINIJF
Batch Approved Date: 8/28/98

8260A_AQUEOUS MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06615
Matrix: AQUEOUS

Preparation Batch ID: P980901/5030/489
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980901/8260A_AQU/340
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	108			61 - 145		
Benzene	105			76 - 127		
Chlorobenzene	104			75 - 130		
Toluene	106			76 - 125		
Trichloroethene	106			71 - 120		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/1/98

6010A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980903/3051/133
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980903/6010A_SOI/133
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Arsenic	85			75 - 125		
Barium	86			75 - 125		
Cadmium	87			75 - 125		
Chromium	83			75 - 125		
Copper	88			75 - 125		
Iron	975			75 - 125		N
Lead	68			75 - 125		N
Manganese	83			75 - 125		

6010A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980903/3051/133
Prep. Analyst: LESHINSKYA

Analytical Batch ID: I980903/6010A_SOI/133
Analyst: LESHINSKYA

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
Selenium	92			75 - 125		
Silver	85			75 - 125		
Zinc	90			75 - 125		

8260A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980903/5035_SOIL/156
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980903/8260A_SOI/156
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	115			59 - 172		
Benzene	113			66 - 142		
Chlorobenzene	105			60 - 133		
Toluene	110			59 - 139		
Trichloroethene	109			62 - 137		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/4/98

8260A_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06609
Matrix: SOIL

Preparation Batch ID: P980904/5035_SOIL/157
Prep. Analyst: MITCHELLMR

Analytical Batch ID: I980904/8260A_SOI/157
Analyst: MITCHELLMR

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
1,1-Dichloroethene	116			59 - 172		
Benzene	111			66 - 142		
Chlorobenzene	106			60 - 133		
Toluene	104			59 - 139		
Trichloroethene	102			62 - 137		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/4/98

8081_SOIL MS/MSD RPD REPORT

SDG #: 980821-1170
Lab Sample ID: 98-06610
Matrix: SOIL

Preparation Batch ID: P980910/3550_8081/57
Prep. Analyst: CROWELLSD

Analytical Batch ID: I980910/8081_SOIL/56
Analyst: CROWELLSD

Component Name	% Analyte Recovery MS	MSD	RPD	% Rec. Accep. Range	RPD Accep. Range	Qualifier
4,4`-DDT	125			25 - 160		
Aldrin	98			42 - 122		
Dieldrin	127			36 - 146		
Endrin	141			30 - 147		
Heptachlor	129			34 - 111		
gamma-BHC	90			32 - 127		

Batch Approved By: GOTTSHALLDL
Batch Approved Date: 9/10/98

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Chain of Custody

CDM Analytical Laboratory | 840 Memorial Drive, Cambridge, MA 02139 | Phone: (617) 354-4448 | Fax: (617) 354-0764 | Field Log # Q#2034 | Page 1 of 1

Client: Town of Waltham | Address: Woerd Ave | SDG#: 980821-1170

Project Name: Woerd Ave Landfill | TAT: STD

Project #: | Phone: 978-371-1170 / 617-252-8000 | TAT Approved by: DM

Contact: CRB Laurie Webster / Elissa Brown | Fax: | Lab Acct. #:

Report to: Paul Tamasi CDM | Bill to:

CLIENT SAMPLE ID	DATE	TIME	MATRIX (S - Soil, W - Water, D - Drinking)	# OF CONT.	CDM SAMPLE ID (See Attached SDG DR for Aliquot #'s & CDM Bottle Id's)	VOA: 524.2	VOA: 624/8240	VOA: 8260A	VOA: Other	SEMI VOA: 525	SEMI VOA: 625/8270 A, B/N, AB/N	SEMI VOA: PAH	SEMI VOA: Other	MISC: PEST / PCB	MISC: TPH 418.1	MISC: PET ID	METALS: PP13	METALS: RCRA 8	METALS: EPA 6010 A Other (PP13 + RCRA 8)	METALS: Filtered (Y/N)	OTHER: See below	OTHER: EPA 300.0 Nitrate, Nitrite, Sulfate, Chloride, PO4	OTHER: EPA 8260 VOC	OTHER: EPA 8270 PAHs	OTHER: EPA 418.1 TPH	OTHER	OTHER
Stream 1	8/4/98	1:30	S	2	98-06609														X			✓	✓	✓	✓		
Stream 1		1:30	W	6	98-06613			✓											✓	N	✓						
Swale 1		1:45	S	2	98-06610														X			✓	✓	✓	✓		
Cove 1		2:05	S	2	98-06611														X			✓	✓	✓	✓		
Cove 1		2:05	W	6	98-06614			✓											✓	N	✓						
Cove 2		2:30	S	2	98-06612														X			✓	✓	✓	✓		
Cove 2		2:30	W	6	98-06615			✓											✓	N	✓						
CDM 2		3:45	W	6	98-06616			✓											✓	N	✓						
CDM 2A	✓	4:30	W	6	98-06617			✓											✓	N	✓						

A - HCl | D - NaOH | P - Plastic

B - HNO_3 | E - NaThio | G - Glass

C - H_2SO_4 | F - Other | V - Vial

Container Type:

Preservative:

Volume:

Samples Received:
- Cooler Temperature: ____ °C
- Chilled/properly preserved? ☑ yes ☐ no
- In good condition? ☑ yes ☐ no
- Evidence of tampering? ☐ yes ☑ no

Instructions:
- Fax Results ☐
- State Forms ☐
- SMART Report ☐
- Disk Deliverable ☐
- (____) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
	8/4/98	12:15	CDM	8/4/98	10:[illegible]
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Shipper/Airbill#: | Custody Seal#: | Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☒ Land ☐ Other | NOTE: All samples submitted subject to Standard Terms & Conditions

Comments: Please filter metals

HACH 8000 COD
SM 2540C TDS
SM 2320B Total Alkalinity

EPA 353.2 Nitrate
EPA 9012 Cyanide
EPA 9251 Chloride

EPA 9038 Sulfate
EPA 7470A Mercury

METALS ADDED FOR ALL SOILS PER LAURIE WEBSTER (CRB) 8/24/98

Client: Town of Waltham
Project: Waltham Landfill
SDG: 981209-1664
Date: December 23, 1998

CDM Laboratory
Riverside Technology Center
840 Memorial Drive
Cambridge, MA 02139
phone (617)-354-4448 - fax (617)-354-0764

Laboratory Report

Client: Town of Waltham

Client Contact: Paul Taurasi

Project: Waltham Landfill

Address: Camp Dresser & McKee
Ten Cambridge Center

Project Narrative

The following report contains the analytical results for samples submitted to CDM Laboratory Services *on December 10, 1998.* The samples were received into the laboratory in accordance with documented sample acceptance procedures. All sample identification agreed with accompanying Chain of Custody documentation. Please refer to the Sample Description Information sheet for the list of samples included within this report.

No significant deviations or anomalies were encountered during the preparation or analysis of these samples.

Note: Analytical testing was conducted by Alpha Analytical Laboratories under subcontract to CDM. The report is attached.

The undersigned hereby attest to the fact that the information contained in this report is, to the best of their knowledge,complete and accurate.

LABORATORY MANAGEMENT REVIEW: _____

LABORATORY QA/QC REVIEW: _____

AZ DOH # AZ0553, CO DPHE (RECIPROCITY), CT DPH # 0682, LA DOHH, MA DEP M-MA012, ME DHS (RECIPROCITY), NH DES#2509, NY ELAP #11330, NC DEHNR #553, PA DEP #68-469, RI DOH #48, VA DGS/DCLS #00046, EPA ICR MA001

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

CERTIFICATE OF ANALYSIS

Client: Camp Dresser & McKee, Inc.

Address: 840 Memorial Drive
Riverside Technology Center
Cambridge, MA 02139

Attn: Paul Taurasi

Project Number:

Site: TOWN OF WALTHAM

Laboratory Job Number: L9809865

Invoice Number: 21787

Date Received: 10-DEC-98

Date Reported: 24-DEC-98

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L9809865-01	CDM 4	WALTHAM LANDFILL
L9809865-02	CDM 4A	WALTHAM LANDFILL
L9809865-03	STREAM 1	WALTHAM LANDFILL
L9809865-04	CDM 3A	WALTHAM LANDFILL
L9809865-05	COVE 1	WALTHAM LANDFILL
L9809865-06	COVE 2	WALTHAM LANDFILL
L9809865-07	COMPOSITE OF SED 1 - SED 3	WALTHAM LANDFILL

Authorized by:

Scott McLean - Laboratory Director

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA:M-MA-086 NH:200395-B/C CT:PH-0574 ME:MA086 RI:65

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3
Sample Matrix: SOIL

Date Collected: 10-DEC-1998
Date Received : 10-DEC-98
Date Reported : 24-DEC-98

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 6-Glass

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Solids, Total	18.	%	0.10	30	2540G		21-Dec	SN
Hydrocarbons, Total(IR)	5800	mg/kg	220	4	418.1	21-Dec	23-Dec	SN
Total Metals				1	3051			
Arsenic, Total	17.	mg/kg	1.1	1	6010B	15-Dec	16-Dec	MG
Barium, Total	530	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MG
Cadmium, Total	6.4	mg/kg	1.1	1	6010B	15-Dec	16-Dec	MG
Chromium, Total	63.	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MG
Copper, Total	210	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MG
Iron, Total	34000	mg/kg	11.	1	6010B	15-Dec	16-Dec	MG
Lead, Total	490	mg/kg	11.	1	6010B	15-Dec	16-Dec	MG
Manganese, Total	270	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MG
Mercury, Total	ND	mg/kg	1.4	1	7471A	21-Dec	22-Dec	GF
Selenium, Total	ND	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MG
Silver, Total	ND	mg/kg	2.2	1	6010B	15-Dec	16-Dec	MG
Zinc, Total	840	mg/kg	11.	1	6010B	15-Dec	16-Dec	MG
Volatile Organics by GC/MS 8260				1	8260B		24-Dec	BT
Methylene chloride	660	ug/kg	560					
1,1-Dichloroethane	ND	ug/kg	170					
Chloroform	ND	ug/kg	170					
Carbon tetrachloride	ND	ug/kg	110					
1,2-Dichloropropane	ND	ug/kg	390					
Dibromochloromethane	ND	ug/kg	110					
1,1,2-Trichloroethane	ND	ug/kg	170					
Tetrachloroethene	ND	ug/kg	170					
Chlorobenzene	ND	ug/kg	390					
Trichlorofluoromethane	ND	ug/kg	560					
1,2-Dichloroethane	ND	ug/kg	170					
1,1,1-Trichloroethane	ND	ug/kg	110					
Bromodichloromethane	ND	ug/kg	110					
trans-1,3-Dichloropropene	ND	ug/kg	110					
cis-1,3-Dichloropropene	ND	ug/kg	110					
1,1-Dichloropropene	ND	ug/kg	2800					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Volatile Organics by GC/MS 8260 continued				1	8260B		24-Dec	BT
Bromoform	ND	ug/kg	110					
1,1,2,2-Tetrachloroethane	ND	ug/kg	110					
Benzene	ND	ug/kg	110					
Toluene	ND	ug/kg	170					
Ethylbenzene	ND	ug/kg	110					
Chloromethane	ND	ug/kg	1100					
Bromomethane	ND	ug/kg	220					
Vinyl chloride	ND	ug/kg	220					
Chloroethane	ND	ug/kg	220					
1,1-Dichloroethene	ND	ug/kg	170					
trans-1,2-Dichloroethene	ND	ug/kg	170					
Trichloroethene	ND	ug/kg	110					
1,2-Dichlorobenzene	ND	ug/kg	1100					
1,3-Dichlorobenzene	ND	ug/kg	1100					
1,4-Dichlorobenzene	ND	ug/kg	1100					
Methyl tert butyl ether	ND	ug/kg	1100					
p/m-Xylene	ND	ug/kg	110					
o-Xylene	ND	ug/kg	110					
cis-1,2-Dichloroethene	ND	ug/kg	110					
Dibromomethane	ND	ug/kg	1100					
1,2,3-Trichloropropane	ND	ug/kg	1100					
Styrene	ND	ug/kg	110					
Dichlorodifluoromethane	ND	ug/kg	1100					
Acetone	2100	ug/kg	1100					
2-Butanone	ND	ug/kg	1100					
4-Methyl-2-pentanone	ND	ug/kg	1100					
2-Hexanone	ND	ug/kg	1100					
Bromochloromethane	ND	ug/kg	560					
2,2-Dichloropropane	ND	ug/kg	560					
1,2-Dibromoethane	ND	ug/kg	560					
1,3-Dichloropropane	ND	ug/kg	560					
1,1,1,2-Tetrachloroethane	ND	ug/kg	560					
Bromobenzene	ND	ug/kg	560					
n-Butylbenzene	ND	ug/kg	560					
sec-Butylbenzene	ND	ug/kg	560					
tert-Butylbenzene	ND	ug/kg	560					
o-Chlorotoluene	ND	ug/kg	560					
p-Chlorotoluene	ND	ug/kg	560					
1,2-Dibromo-3-chloropropane	ND	ug/kg	560					
Hexachlorobutadiene	ND	ug/kg	560					
Isopropylbenzene	ND	ug/kg	560					
p-Isopropyltoluene	ND	ug/kg	560					
Naphthalene	ND	ug/kg	560					
n-Propylbenzene	ND	ug/kg	560					
1,2,3-Trichlorobenzene	ND	ug/kg	560					
1,2,4-Trichlorobenzene	ND	ug/kg	560					
1,3,5-Trimethylbenzene	ND	ug/kg	560					
1,2,4-Trimethylbenzene	ND	ug/kg	560					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Volatile Organics by GC/MS 8260 continued				1	8260B		24-Dec	BT
Surrogate Recovery								
1,2-Dichloroethane-d4	94.0	%						
Toluene-d8	96.0	%						
4-Bromofluorobenzene	87.0	%						
Dibromofluoromethane	92.0	%						
SVOC's by GC/MS 8270				1	8270C	11-Dec	14-Dec	MK
Acenaphthene	ND	ug/kg	14000					
Benzidine	ND	ug/kg	140000					
1,2,4-Trichlorobenzene	ND	ug/kg	14000					
Hexachlorobenzene	ND	ug/kg	14000					
Bis(2-chloroethyl)ether	ND	ug/kg	14000					
1-Chloronaphthalene	ND	ug/kg	14000					
2-Chloronaphthalene	ND	ug/kg	14000					
1,2-Dichlorobenzene	ND	ug/kg	14000					
1,3-Dichlorobenzene	ND	ug/kg	14000					
1,4-Dichlorobenzene	ND	ug/kg	14000					
3,3'-Dichlorobenzidine	ND	ug/kg	140000					
2,4-Dinitrotoluene	ND	ug/kg	14000					
2,6-Dinitrotoluene	ND	ug/kg	14000					
Azobenzene	ND	ug/kg	14000					
Fluoranthene	ND	ug/kg	14000					
4-Chlorophenyl phenyl ether	ND	ug/kg	14000					
4-Bromophenyl phenyl ether	ND	ug/kg	14000					
Bis(2-chloroisopropyl)ether	ND	ug/kg	14000					
Bis(2-chloroethoxy)methane	ND	ug/kg	14000					
Hexachlorobutadiene	ND	ug/kg	28000					
Hexachlorocyclopentadiene	ND	ug/kg	28000					
Hexachloroethane	ND	ug/kg	14000					
Isophorone	ND	ug/kg	14000					
Naphthalene	ND	ug/kg	14000					
Nitrobenzene	ND	ug/kg	14000					
NDPA/DPA	ND	ug/kg	14000					
n-Nitrosodi-n-propylamine	ND	ug/kg	14000					
Bis(2-ethylhexyl)phthalate	ND	ug/kg	28000					
Butyl benzyl phthalate	ND	ug/kg	14000					
Di-n-butylphthalate	ND	ug/kg	14000					
Di-n-octylphthalate	ND	ug/kg	14000					
Diethyl phthalate	ND	ug/kg	14000					
Dimethyl phthalate	ND	ug/kg	14000					
Benzo(a)anthracene	ND	ug/kg	14000					
Benzo(a)pyrene	ND	ug/kg	14000					
Benzo(b)fluoranthene	ND	ug/kg	14000					
Benzo(k)fluoranthene	ND	ug/kg	14000					
Chrysene	ND	ug/kg	14000					
Acenaphthylene	ND	ug/kg	14000					
Anthracene	ND	ug/kg	14000					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	MK
Benzo(ghi)perylene	ND	ug/kg	14000					
Fluorene	ND	ug/kg	14000					
Phenanthrene	ND	ug/kg	14000					
Dibenzo(a,h)anthracene	ND	ug/kg	14000					
Indeno(1,2,3-cd)pyrene	ND	ug/kg	14000					
Pyrene	ND	ug/kg	14000					
Aniline	ND	ug/kg	28000					
4-Chloroaniline	ND	ug/kg	14000					
1-Methylnaphthalene	ND	ug/kg	14000					
2-Nitroaniline	ND	ug/kg	14000					
3-Nitroaniline	ND	ug/kg	14000					
4-Nitroaniline	ND	ug/kg	14000					
Dibenzofuran	ND	ug/kg	14000					
a,a-Dimethylphenethylamine	ND	ug/kg	140000					
Hexachloropropene	ND	ug/kg	140000					
Nitrosodi-n-butylamine	ND	ug/kg	28000					
2-Methylnaphthalene	ND	ug/kg	14000					
1,2,4,5-Tetrachlorobenzene	ND	ug/kg	56000					
Pentachlorobenzene	ND	ug/kg	56000					
a-Naphthylamine	ND	ug/kg	56000					
b-Naphthylamine	ND	ug/kg	56000					
Phenacetin	ND	ug/kg	28000					
Dimethoate	ND	ug/kg	56000					
4-Aminobiphenyl	ND	ug/kg	28000					
Pentachloronitrobenzene	ND	ug/kg	28000					
Isodrin	ND	ug/kg	28000					
p-Dimethylaminoazobenzene	ND	ug/kg	28000					
Chlorobenzilate	ND	ug/kg	56000					
3-Methylcholanthrene	ND	ug/kg	56000					
Ethyl Methanesulfonate	ND	ug/kg	42000					
Acetophenone	ND	ug/kg	56000					
Nitrosodipiperidine	ND	ug/kg	56000					
7,12-Dimethylbenz(a)anthracene	ND	ug/kg	28000					
n-Nitrosodimethylamine	ND	ug/kg	140000					
2,4,6-Trichlorophenol	ND	ug/kg	14000					
p-Chloro-m-cresol	ND	ug/kg	14000					
2-Chlorophenol	ND	ug/kg	14000					
2,4-Dichlorophenol	ND	ug/kg	28000					
2,4-Dimethylphenol	ND	ug/kg	28000					
2-Nitrophenol	ND	ug/kg	28000					
4-Nitrophenol	ND	ug/kg	28000					
2,4-Dinitrophenol	ND	ug/kg	56000					
4,6-Dinitro-o-cresol	ND	ug/kg	56000					
Pentachlorophenol	ND	ug/kg	56000					
Phenol	ND	ug/kg	14000					
2-Methylphenol	ND	ug/kg	14000					
3-Methylphenol/4-Methylphenol	ND	ug/kg	14000					
2,4,5-Trichlorophenol	ND	ug/kg	14000					
2,6-Dichlorophenol	ND	ug/kg	28000					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	MK
Benzoic Acid	ND	ug/kg	140000					
Benzyl Alcohol	ND	ug/kg	28000					
Carbazole	ND	ug/kg	14000					
Pyridine	ND	ug/kg	140000					
2-Picoline	ND	ug/kg	56000					
Pronamide	ND	ug/kg	56000					
Methyl methanesulfonate	ND	ug/kg	56000					
Surrogate Recovery								
2-Fluorophenol	43.0	%						
Phenol-d6	48.0	%						
Nitrobenzene-d5	75.0	%						
2-Fluorobiphenyl	72.0	%						
2,4,6-Tribromophenol	61.0	%						
4-Terphenyl-d14	83.0	%						
PCB/Pesticides				1	8082/8081	11-Dec	16-Dec	PB
Delta-BHC	ND	ug/kg	278.					
Lindane	ND	ug/kg	278.					
Alpha-BHC	ND	ug/kg	278.					
Beta-BHC	ND	ug/kg	278.					
Heptachlor	ND	ug/kg	278.					
Aldrin	ND	ug/kg	278.					
Heptachlor epoxide	ND	ug/kg	278.					
Endrin	ND	ug/kg	278.					
Endrin aldehyde	ND	ug/kg	278.					
Endrin ketone	ND	ug/kg	278.					
Dieldrin	ND	ug/kg	278.					
4,4'-DDE	ND	ug/kg	278.					
4,4'-DDD	ND	ug/kg	278.					
4,4'-DDT	ND	ug/kg	278.					
Endosulfan I	ND	ug/kg	278.					
Endosulfan II	ND	ug/kg	278.					
Endosulfan sulfate	ND	ug/kg	278.					
Methoxychlor	ND	ug/kg	278.					
Toxaphene	ND	ug/kg	1110					
Chlordane	ND	ug/kg	1110					
cis-Chlordane	ND	ug/kg	278.					
trans-Chlordane	ND	ug/kg	278.					
Aroclor 1221	ND	ug/kg	1390					
Aroclor 1232	ND	ug/kg	1390					
Aroclor 1242/1016	ND	ug/kg	1390					
Aroclor 1248	ND	ug/kg	1390					
Aroclor 1254	ND	ug/kg	1390					
Aroclor 1260	ND	ug/kg	1390					

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L9809865-07
COMPOSITE OF SED 1 - SED 3

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
PCB/Pesticides continued				1	8082/8081	11-Dec	16-Dec	PB
Surrogate Recovery								
2,4,5,6-Tetrachloro-m-xylene	58.0	%						
Decachlorobiphenyl	42.0	%						

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L9809865

Parameter	Value 1	Value 2	RPD	Units
Alkalinity, Total for sample(s) 01-06				
Alkalinity, Total	69.	69.	0	mg CaCO3/L
Chloride for sample(s) 01-06				
Chloride	6.5	6.1	6	mg/l
Nitrogen, Nitrate for sample(s) 01-06				
Nitrogen, Nitrate	0.76	0.76	0	mg/l
Sulfate for sample(s) 01-06				
Sulfate	20.	20.	0	mg/l
Total Metals for sample(s) 07				
Arsenic, Total	17.	21.	21	mg/kg
Barium, Total	530	610	14	mg/kg
Cadmium, Total	6.4	6.6	3	mg/kg
Chromium, Total	63.	70.	11	mg/kg
Copper, Total	210	220	5	mg/kg
Iron, Total	34000	43000	23	mg/kg
Lead, Total	490	510	4	mg/kg
Manganese, Total	270	320	17	mg/kg
Selenium, Total	ND	ND	NC	mg/kg
Silver, Total	ND	ND	NC	mg/kg
Zinc, Total	840	880	5	mg/kg
Dissolved Metals for sample(s) 01-06				
Arsenic, Dissolved	ND	ND	NC	mg/l
Barium, Dissolved	0.04	0.04	0	mg/l
Cadmium, Dissolved	ND	ND	NC	mg/l
Chromium, Dissolved	ND	ND	NC	mg/l
Copper, Dissolved	ND	ND	NC	mg/l
Iron, Dissolved	0.26	0.27	4	mg/l
Lead, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	1.2	1.2	0	mg/l
Selenium, Dissolved	ND	0.005	NC	mg/l
Silver, Dissolved	ND	ND	NC	mg/l
Zinc, Dissolved	ND	ND	NC	mg/l
Dissolved Metals for sample(s) 01-06				
Mercury, Dissolved	ND	ND	NC	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Parameter	% Recovery
Alkalinity, Total LCS for sample(s) 01-06	
Alkalinity, Total	100
Cyanide, Total LCS for sample(s) 01	
Cyanide, Total	100
Cyanide, Total LCS for sample(s) 02-06	
Cyanide, Total	103
Chloride LCS for sample(s) 01-06	
Chloride	98
Nitrogen, Nitrate LCS for sample(s) 01-06	
Nitrogen, Nitrate	94
Sulfate LCS for sample(s) 01-06	
Sulfate	95
Chemical Oxygen Demand LCS for sample(s) 01-06	
Chemical Oxygen Demand	96
Chemical Oxygen Demand LCS for sample(s) 01-06	
Chemical Oxygen Demand	100
Hydrocarbons, Total(IR) LCS for sample(s) 07	
Hydrocarbons, Total(IR)	115
Total Metals LCS for sample(s) 07	
Arsenic, Total	89
Barium, Total	95
Cadmium, Total	92
Chromium, Total	93
Copper, Total	97
Lead, Total	95
Manganese, Total	110
Selenium, Total	84
Silver, Total	91
Zinc, Total	95
Total Metals LCS for sample(s) 07	
Mercury, Total	103
Dissolved Metals LCS for sample(s) 01-06	
Mercury, Dissolved	108
SVOC's by GC/MS 8270 LCS for sample(s) 07	
Acenaphthene	120
1,2,4-Trichlorobenzene	110
1,4-Dichlorobenzene	80

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Continued

Parameter	% Recovery
SVOC's by GC/MS 8270 LCS for sample(s) 07	
2,4-Dinitrotoluene	120
n-Nitrosodi-n-propylamine	89
Pyrene	110
p-Chloro-m-cresol	95
2-Chlorophenol	67
4-Nitrophenol	84
Pentachlorophenol	110
Phenol	44
PCB/Pesticides LCS for sample(s) 07	
Lindane	79
Heptachlor	73
Aldrin	105
Endrin	84
Dieldrin	56
4,4'-DDT	76
Alkalinity, Total SPIKE for sample(s) 01-06	
Alkalinity, Total	100
Cyanide, Total SPIKE for sample(s) 01	
Cyanide, Total	61
Chloride SPIKE for sample(s) 01-06	
Chloride	100
Nitrogen, Nitrate SPIKE for sample(s) 01-06	
Nitrogen, Nitrate	78
Sulfate SPIKE for sample(s) 01-06	
Sulfate	93
Chemical Oxygen Demand SPIKE for sample(s) 01-06	
Chemical Oxygen Demand	120
Total Metals SPIKE for sample(s) 07	
Arsenic, Total	100
Barium, Total	98
Cadmium, Total	86
Chromium, Total	85
Copper, Total	110
Lead, Total	90
Manganese, Total	120
Selenium, Total	100
Silver, Total	100
Zinc, Total	64

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L9809865

Continued

Parameter	% Recovery
Total Metals SPIKE for sample(s) 07	
Mercury, Total	146
Dissolved Metals SPIKE for sample(s) 01-06	
Arsenic, Dissolved	104
Barium, Dissolved	100
Cadmium, Dissolved	105
Chromium, Dissolved	100
Copper, Dissolved	100
Iron, Dissolved	100
Lead, Dissolved	100
Manganese, Dissolved	98
Selenium, Dissolved	127
Silver, Dissolved	84
Zinc, Dissolved	100

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L9809865

Parameter	MS %	MSD %	RPD
Volatile Organics by GC/MS 8260 for sample(s) 07			
Chlorobenzene	83	81	2
Benzene	83	88	6
Toluene	83	88	6
1,1-Dichloroethene	97	95	2
Trichloroethene	83	81	2
SVOC's by GC/MS 8270 for sample(s) 07			
Acenaphthene	130	140	7
1,2,4-Trichlorobenzene	130	130	0
1,4-Dichlorobenzene	100	100	0
2,4-Dinitrotoluene	160	180	12
n-Nitrosodi-n-propylamine	110	110	0
Pyrene	120	130	8
p-Chloro-m-cresol	110	110	0
2-Chlorophenol	84	84	0
4-Nitrophenol	60	92	42
Pentachlorophenol	100	130	26
Phenol	72	60	18
PCB/Pesticides for sample(s) 07			
Lindane	71	72	1
Heptachlor	65	66	1
Aldrin	67	70	4
Endrin	76	78	3
Dieldrin	52	54	4
4,4'-DDT	68	70	3

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 01-06								
Alkalinity, Total	ND	mg CaCO3/L	2.0	30	2320B		14-Dec	KF
Blank Analysis for sample(s) 01-06								
Solids, Total Dissolved	ND	mg/l	5.0	30	2540C		18-Dec	DK
Blank Analysis for sample(s) 01								
Cyanide, Total	ND	mg/l	0.005	1	9010B		22-Dec	AU
Blank Analysis for sample(s) 02-06								
Cyanide, Total	ND	mg/l	0.005	1	9010B		15-Dec	AU
Blank Analysis for sample(s) 01-06								
Chloride	ND	mg/l	1.0	1	9251		11-Dec	ED
Blank Analysis for sample(s) 01-06								
Nitrogen, Nitrate	ND	mg/l	0.10	30	4500NO3-F		11-Dec	ED
Blank Analysis for sample(s) 01-06								
Sulfate	ND	mg/l	10.	1	9038		15-Dec	KF
Blank Analysis for sample(s) 01-06								
Chemical Oxygen Demand	ND	mg/l	20.	30	5220D		18-Dec	DK
Blank Analysis for sample(s) 07								
Hydrocarbons, Total(IR)	ND	mg/kg	40.	4	418.1	21-Dec	23-Dec	SN
Blank Analysis for sample(s) 07								
Total Metals				1	3051			
Arsenic, Total	ND	mg/kg	0.20	1	6010B	15-Dec	16-Dec	MG
Barium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Cadmium, Total	ND	mg/kg	0.20	1	6010B	15-Dec	16-Dec	MG
Chromium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Copper, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Iron, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	MG
Lead, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	MG
Manganese, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Selenium, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG
Silver, Total	ND	mg/kg	0.40	1	6010B	15-Dec	16-Dec	MG

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 07								
Total Metals				1	3051			
Zinc, Total	ND	mg/kg	2.0	1	6010B	15-Dec	16-Dec	MG
Blank Analysis for sample(s) 07								
Volatile Organics by GC/MS 8260				1	8260B		24-Dec	BT
Methylene chloride	ND	ug/kg	25.					
1,1-Dichloroethane	ND	ug/kg	7.5					
Chloroform	ND	ug/kg	7.5					
Carbon tetrachloride	ND	ug/kg	5.0					
1,2-Dichloropropane	ND	ug/kg	18.					
Dibromochloromethane	ND	ug/kg	5.0					
1,1,2-Trichloroethane	ND	ug/kg	7.5					
2-Chloroethylvinyl ether	ND	ug/kg	50.					
Tetrachloroethene	ND	ug/kg	7.5					
Chlorobenzene	ND	ug/kg	18.					
Trichlorofluoromethane	ND	ug/kg	25.					
1,2-Dichloroethane	ND	ug/kg	7.5					
1,1,1-Trichloroethane	ND	ug/kg	5.0					
Bromodichloromethane	ND	ug/kg	5.0					
trans-1,3-Dichloropropene	ND	ug/kg	5.0					
cis-1,3-Dichloropropene	ND	ug/kg	5.0					
1,1-Dichloropropene	ND	ug/kg	120					
Bromoform	ND	ug/kg	5.0					
1,1,2,2-Tetrachloroethane	ND	ug/kg	5.0					
Benzene	ND	ug/kg	5.0					
Toluene	ND	ug/kg	7.5					
Ethylbenzene	ND	ug/kg	5.0					
Chloromethane	ND	ug/kg	50.					
Bromomethane	ND	ug/kg	10.					
Vinyl chloride	ND	ug/kg	10.					
Chloroethane	ND	ug/kg	10.					
1,1-Dichloroethene	ND	ug/kg	7.5					
trans-1,2-Dichloroethene	ND	ug/kg	7.5					
Trichloroethene	ND	ug/kg	5.0					
1,2-Dichlorobenzene	ND	ug/kg	50.					
1,3-Dichlorobenzene	ND	ug/kg	50.					
1,4-Dichlorobenzene	ND	ug/kg	50.					
Methyl tert butyl ether	ND	ug/kg	50.					
p/m-Xylene	ND	ug/kg	5.0					
o-Xylene	ND	ug/kg	5.0					
cis-1,2-Dichloroethene	ND	ug/kg	5.0					
Dibromomethane	ND	ug/kg	50.					
1,4-Dichlorobutane	ND	ug/kg	50.					
Iodomethane	ND	ug/kg	50.					
1,2,3-Trichloropropane	ND	ug/kg	50.					
Styrene	ND	ug/kg	5.0					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 07								
Volatile Organics by GC/MS 8260 continued				1	8260B		24-Dec	BT
Dichlorodifluoromethane	ND	ug/kg	50.					
Acetone	ND	ug/kg	50.					
Carbon disulfide	ND	ug/kg	50.					
2-Butanone	ND	ug/kg	50.					
Vinyl acetate	ND	ug/kg	50.					
4-Methyl-2-pentanone	ND	ug/kg	50.					
2-Hexanone	ND	ug/kg	50.					
Ethyl methacrylate	ND	ug/kg	50.					
Acrolein	ND	ug/kg	120					
Acrylonitrile	ND	ug/kg	50.					
Bromochloromethane	ND	ug/kg	25.					
Tetrahydrofuran	ND	ug/kg	250					
2,2-Dichloropropane	ND	ug/kg	25.					
1,2-Dibromoethane	ND	ug/kg	25.					
1,3-Dichloropropane	ND	ug/kg	25.					
1,1,1,2-Tetrachloroethane	ND	ug/kg	25.					
Bromobenzene	ND	ug/kg	25.					
n-Butylbenzene	ND	ug/kg	25.					
sec-Butylbenzene	ND	ug/kg	25.					
tert-Butylbenzene	ND	ug/kg	25.					
o-Chlorotoluene	ND	ug/kg	25.					
p-Chlorotoluene	ND	ug/kg	25.					
1,2-Dibromo-3-chloropropane	ND	ug/kg	25.					
Hexachlorobutadiene	ND	ug/kg	25.					
Isopropylbenzene	ND	ug/kg	25.					
p-Isopropyltoluene	ND	ug/kg	25.					
Naphthalene	ND	ug/kg	25.					
n-Propylbenzene	ND	ug/kg	25.					
1,2,3-Trichlorobenzene	ND	ug/kg	25.					
1,2,4-Trichlorobenzene	ND	ug/kg	25.					
1,3,5-Trimethylbenzene	ND	ug/kg	25.					
1,2,4-Trimethylbenzene	ND	ug/kg	25.					
trans-1,4-Dichloro-2-butene	ND	ug/kg	25.					
Ethyl ether	ND	ug/kg	120					
Surrogate Recovery								
1,2-Dichloroethane-d4	98.0	%						
Toluene-d8	98.0	%						
4-Bromofluorobenzene	95.0	%						
Dibromofluoromethane	94.0	%						
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270				1	8270C	11-Dec	14-Dec	MK
Acenaphthene	ND	ug/kg	500					
Benzidine	ND	ug/kg	5000					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	MK
1,2,4-Trichlorobenzene	ND	ug/kg	500					
Hexachlorobenzene	ND	ug/kg	500					
Bis(2-chloroethyl)ether	ND	ug/kg	500					
1-Chloronaphthalene	ND	ug/kg	500					
2-Chloronaphthalene	ND	ug/kg	500					
1,2-Dichlorobenzene	ND	ug/kg	500					
1,3-Dichlorobenzene	ND	ug/kg	500					
1,4-Dichlorobenzene	ND	ug/kg	500					
3,3'-Dichlorobenzidine	ND	ug/kg	5000					
2,4-Dinitrotoluene	ND	ug/kg	500					
2,6-Dinitrotoluene	ND	ug/kg	500					
Azobenzene	ND	ug/kg	500					
Fluoranthene	ND	ug/kg	500					
4-Chlorophenyl phenyl ether	ND	ug/kg	500					
4-Bromophenyl phenyl ether	ND	ug/kg	500					
Bis(2-chloroisopropyl)ether	ND	ug/kg	500					
Bis(2-chloroethoxy)methane	ND	ug/kg	500					
Hexachlorobutadiene	ND	ug/kg	1000					
Hexachlorocyclopentadiene	ND	ug/kg	1000					
Hexachloroethane	ND	ug/kg	500					
Isophorone	ND	ug/kg	500					
Naphthalene	ND	ug/kg	500					
Nitrobenzene	ND	ug/kg	500					
NDPA/DPA	ND	ug/kg	500					
n-Nitrosodi-n-propylamine	ND	ug/kg	500					
Bis(2-ethylhexyl)phthalate	ND	ug/kg	1000					
Butyl benzyl phthalate	ND	ug/kg	500					
Di-n-butylphthalate	ND	ug/kg	500					
Di-n-octylphthalate	ND	ug/kg	500					
Diethyl phthalate	ND	ug/kg	500					
Dimethyl phthalate	ND	ug/kg	500					
Benzo(a)anthracene	ND	ug/kg	500					
Benzo(a)pyrene	ND	ug/kg	500					
Benzo(b)fluoranthene	ND	ug/kg	500					
Benzo(k)fluoranthene	ND	ug/kg	500					
Chrysene	ND	ug/kg	500					
Acenaphthylene	ND	ug/kg	500					
Anthracene	ND	ug/kg	500					
Benzo(ghi)perylene	ND	ug/kg	500					
Fluorene	ND	ug/kg	500					
Phenanthrene	ND	ug/kg	500					
Dibenzo(a,h)anthracene	ND	ug/kg	500					
Indeno(1,2,3-cd)pyrene	ND	ug/kg	500					
Pyrene	ND	ug/kg	500					
Aniline	ND	ug/kg	1000					
4-Chloroaniline	ND	ug/kg	500					
1-Methylnaphthalene	ND	ug/kg	500					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	MK
2-Nitroaniline	ND	ug/kg	500					
3-Nitroaniline	ND	ug/kg	500					
4-Nitroaniline	ND	ug/kg	500					
Dibenzofuran	ND	ug/kg	500					
a,a-Dimethylphenethylamine	ND	ug/kg	5000					
Hexachloropropene	ND	ug/kg	5000					
Nitrosodi-n-butylamine	ND	ug/kg	1000					
2-Methylnaphthalene	ND	ug/kg	500					
1,2,4,5-Tetrachlorobenzene	ND	ug/kg	2000					
Pentachlorobenzene	ND	ug/kg	2000					
a-Naphthylamine	ND	ug/kg	2000					
b-Naphthylamine	ND	ug/kg	2000					
Phenacetin	ND	ug/kg	1000					
Dimethoate	ND	ug/kg	2000					
4-Aminobiphenyl	ND	ug/kg	1000					
Pentachloronitrobenzene	ND	ug/kg	1000					
Isodrin	ND	ug/kg	1000					
p-Dimethylaminoazobenzene	ND	ug/kg	1000					
Chlorobenzilate	ND	ug/kg	2000					
3-Methylcholanthrene	ND	ug/kg	2000					
Ethyl Methanesulfonate	ND	ug/kg	1500					
Acetophenone	ND	ug/kg	2000					
Nitrosodipiperidine	ND	ug/kg	2000					
7,12-Dimethylbenz(a)anthracene	ND	ug/kg	1000					
n-Nitrosodimethylamine	ND	ug/kg	5000					
2,4,6-Trichlorophenol	ND	ug/kg	500					
p-Chloro-m-cresol	ND	ug/kg	500					
2-Chlorophenol	ND	ug/kg	500					
2,4-Dichlorophenol	ND	ug/kg	1000					
2,4-Dimethylphenol	ND	ug/kg	1000					
2-Nitrophenol	ND	ug/kg	1000					
4-Nitrophenol	ND	ug/kg	1000					
2,4-Dinitrophenol	ND	ug/kg	2000					
4,6-Dinitro-o-cresol	ND	ug/kg	2000					
Pentachlorophenol	ND	ug/kg	2000					
Phenol	ND	ug/kg	500					
2-Methylphenol	ND	ug/kg	500					
3-Methylphenol/4-Methylphenol	ND	ug/kg	500					
2,4,5-Trichlorophenol	ND	ug/kg	500					
2,6-Dichlorophenol	ND	ug/kg	1000					
Benzoic Acid	ND	ug/kg	5000					
Benzyl Alcohol	ND	ug/kg	1000					
Carbazole	ND	ug/kg	500					
Pyridine	ND	ug/kg	5000					
2-Picoline	ND	ug/kg	2000					
Pronamide	ND	ug/kg	2000					
Methyl methanesulfonate	ND	ug/kg	2000					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L9809865

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATES PREP	DATES ANALYSIS	ID
Blank Analysis for sample(s) 07								
SVOC's by GC/MS 8270 continued				1	8270C	11-Dec	14-Dec	MK
Surrogate Recovery								
2-Fluorophenol	48.0	%						
Phenol-d6	59.0	%						
Nitrobenzene-d5	92.0	%						
2-Fluorobiphenyl	98.0	%						
2,4,6-Tribromophenol	83.0	%						
4-Terphenyl-d14	126.	%						
Blank Analysis for sample(s) 07								
PCB/Pesticides				1	8082/8081	11-Dec	16-Dec	PB
Delta-BHC	ND	ug/kg	5.00					
Lindane	ND	ug/kg	5.00					
Alpha-BHC	ND	ug/kg	5.00					
Beta-BHC	ND	ug/kg	5.00					
Heptachlor	ND	ug/kg	5.00					
Aldrin	ND	ug/kg	5.00					
Heptachlor epoxide	ND	ug/kg	5.00					
Endrin	ND	ug/kg	5.00					
Endrin aldehyde	ND	ug/kg	5.00					
Endrin ketone	ND	ug/kg	5.00					
Dieldrin	ND	ug/kg	5.00					
4,4'-DDE	ND	ug/kg	5.00					
4,4'-DDD	ND	ug/kg	5.00					
4,4'-DDT	ND	ug/kg	5.00					
Endosulfan I	ND	ug/kg	5.00					
Endosulfan II	ND	ug/kg	5.00					
Endosulfan sulfate	ND	ug/kg	5.00					
Methoxychlor	ND	ug/kg	5.00					
Toxaphene	ND	ug/kg	20.0					
Chlordane	ND	ug/kg	20.0					
cis-Chlordane	ND	ug/kg	5.00					
trans-Chlordane	ND	ug/kg	5.00					
Aroclor 1221	ND	ug/kg	25.0					
Aroclor 1232	ND	ug/kg	25.0					
Aroclor 1242/1016	ND	ug/kg	25.0					
Aroclor 1248	ND	ug/kg	25.0					
Aroclor 1254	ND	ug/kg	25.0					
Aroclor 1260	ND	ug/kg	25.0					
Surrogate Recovery								
2,4,5,6-Tetrachloro-m-xylene	48.0	%						
Decachlorobiphenyl	57.0	%						

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

4. Methods for Chemical Analysis of Water and Wastes. EPA 600/4-82-055. 1982.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

GLOSSARY OF TERMS AND SYMBOLS

REF Reference number in which test method may be found.

METHOD Method number by which analysis was performed.

ID Initials of the analyst.

LIMITATION OF LIABILITIES

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

Appendix J

Landfill Gas Screening - Atmospheric Data

WEATHER DATA FOR LOGAN AIRPORT, BOSTON, MASSACHUSETTS

Sampling Round No. 1
LFG-1 data collected May 19, 1998 at 9:00 AM

Date	Time	Temperature (F)	Wind Speed (mph)	Wind Direction	Wind Gusts (mph)	Station Pressure (in. Hg)
19-May-98	4:00	64	11.5	W	---	29.76
	5:00	63	11.5	W	---	29.76
	6:00	63	8.1	NNW	---	29.78
	7:00	66	9.2	NW	---	29.79
	8:00	70	12.7	NNW	---	29.78
	9:00	71	17.3	NW	---	29.78
	10:00	73	19.6	NNW	25.3	29.78
	11:00	63	19.6	E	27.6	29.78
	12:00	62	17.3	E	---	29.79
	13:00	62	11.5	SE	---	29.81
	14:00	62	11.5	SE	---	29.8

Sampling Round No. 1
LFG-2 data collected May 19, 1998 at 10:00 AM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
19-May-98	5:00	63	11.5	W	---	29.76
	6:00	63	8.1	NNW	---	29.78
	7:00	66	9.2	NW	---	29.79
	8:00	70	12.7	NNW	---	29.78
	9:00	71	17.3	NW	---	29.78
	10:00	73	19.6	NNW	25.3	29.78
	11:00	63	19.6	E	27.6	29.78
	12:00	62	17.3	E	---	29.79
	13:00	62	11.5	SE	---	29.81
	14:00	62	11.5	SE	---	29.8
	15:00	64	11.5	E	---	29.8

WEATHER DATA FOR LOGAN AIRPORT, BOSTON, MASSACHUSETTS

Sampling Round No. 1
LFG-3 data collected May 19, 1998 at 11:00 AM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
19-May-98	6:00	63	8.1	NNW	---	29.78
	7:00	66	9.2	NW	---	29.79
	8:00	70	12.7	NNW	---	29.78
	9:00	71	17.3	NW	---	29.78
	10:00	73	19.6	NNW	25.3	29.78
	11:00	63	19.6	E	27.6	29.78
	12:00	62	17.3	E	---	29.79
	13:00	62	11.5	SE	---	29.81
	14:00	62	11.5	SE	---	29.8
	15:00	64	11.5	E	---	29.8
	16:00	62	5.8	ESE	---	29.8

Sampling Round No. 2
LFG-1 data collected August 20, 1998 at 11:00 AM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
20-Aug-98	6:00	59	8.1	NNW	---	30.23
	7:00	63	6.9	NNW	---	30.23
	8:00	66	5.8	NNW	---	30.24
	9:00	69	4.6	NNW	---	30.24
	10:00	68	6.9	SE	---	30.24
	11:00	68	10.4	SE	---	30.23
	12:00	69	10.4	SE	---	30.21
	13:00	70	11.5	ESE	---	30.21
	14:00	71	10.4	ESE	---	30.19
	15:00	70	12.7	ESE	---	30.18
	16:00	70	12.7	ESE	---	30.17

WEATHER DATA FOR LOGAN AIRPORT, BOSTON, MASSACHUSETTS

Sampling Round No. 2
LFG-2 data collected August 20, 1998 at 10:00 AM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
20-Aug-98	5:00	57	6.9	WNW	---	30.22
	6:00	59	8.1	NNW	---	30.23
	7:00	63	6.9	NNW	---	30.23
	8:00	66	5.8	NNW	---	30.24
	9:00	69	4.6	NNW	---	30.24
	10:00	68	6.9	SE	---	30.24
	11:00	68	10.4	SE	---	30.23
	12:00	69	10.4	SE	---	30.21
	13:00	70	11.5	ESE	---	30.21
	14:00	71	10.4	ESE	---	30.19
	15:00	70	12.7	ESE	---	30.18

Sampling Round No. 2
LFG-3 data collected August 20, 1998 at 12:00 PM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
20-Aug-98	7:00	63	6.9	NNW	---	30.23
	8:00	66	5.8	NNW	---	30.24
	9:00	69	4.6	NNW	---	30.24
	10:00	68	6.9	SE	---	30.24
	11:00	68	10.4	SE	---	30.23
	12:00	69	10.4	SE	---	30.21
	13:00	70	11.5	ESE	---	30.21
	14:00	71	10.4	ESE	---	30.19
	15:00	70	12.7	ESE	---	30.18
	16:00	70	12.7	ESE	---	30.17
	17:00	68	10.4	SE	---	30.16

WEATHER DATA FOR LOGAN AIRPORT, BOSTON, MASSACHUSETTS

Sampling Round No. 3
LFG-1 data collected December 11, 1998 at 8:30 AM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
11-Dec-98	3:00	42	13.8	W	---	30.05
	4:00	42	15	WSW	---	30.03
	5:00	41	15	W	24.2	30.03
	6:00	40	12.7	W	19.6	30.04
	7:00	40	16.1	W	23	30.05
	8:00	41	12.7	W	23	30.06
	9:00	42	11.5	W	---	30.08
	10:00	43	16.1	WNW	21.9	30.09
	11:00	43	18.4	NW	25.3	30.08
	12:00	43	17.3	NW	23	30.08
	13:00	43	17.3	NW	27.6	30.08

Sampling Round No. 3
LFG-2 data collected December 9, 1998 at 3:15 PM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
9-Dec-98	10:00	39	18.4	WNW	23	30.17
	11:00	41	13.8	WNW	19.6	30.18
	12:00	43	10.4	WNW	18.4	30.17
	13:00	45	13.8	W	---	30.16
	14:00	45	10.4	W	23	30.16
	15:00	45	12.7	W	---	30.17
	16:00	43	18.4	W	---	30.2
	17:00	42	12.7	W	---	30.22
	18:00	41	11.5	WNW	---	30.23
	19:00	41	9.2	W	---	30.24
	20:00	41	11.5	WNW	---	30.26

WEATHER DATA FOR LOGAN AIRPORT, BOSTON, MASSACHUSETTS

Sampling Round No. 3
LFG-3 data collected December 11, 1998 at 9:00 AM

Date	Time	Temperature	Wind Speed (mph)	Wind Direction	Wind Gusts	Station Pressure
11-Dec-98	4:00	42	15	WSW	---	30.03
	5:00	41	15	W	24.2	30.03
	6:00	40	12.7	W	19.6	30.04
	7:00	40	16.1	W	23	30.05
	8:00	41	12.7	W	23	30.06
	9:00	42	11.5	W	---	30.08
	10:00	43	16.1	WNW	21.9	30.09
	11:00	43	18.4	NW	25.3	30.08
	12:00	43	17.3	NW	23	30.08
	13:00	43	17.3	NW	27.6	30.08
	14:00	43	16.1	WNW	26.5	30.11

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1123 Bradfield Hall
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Date: February 9, 1999

To: Matt Mullarkey
Camp, Dresser & McKee
10 Cambridge Center
Cambridge, MA 02142

From: Janet K. Fisher
Climatologist JKF

The enclosed information is being sent in response to your recent request for climate data. A bill is enclosed to cover the cost of these data. Please return the bottom portion of the bill with your payment. If you have any questions or need additional data, you can contact our office at the address or phone numbers listed above.

Hourly Surface Observations

Station: BOSTON WSFO AP, MA, Year: 1998

mm/dd/yyyy	hh lst	Temperature degF	Dewpoint degF	Wind Direction compass	Wind Speed miles/hour	Wind Gusts miles/hour	Station Pressure inch_Hg	Visibility miles	Weather Conditions text	Total Sky Cover fraction	Hourly Precipitation inch
05/18/1998	00	55	50	SW	10.4	-	29.94	10.00		0.2	0.00
05/18/1998	01	55	50	SW	11.5	-	29.93	10.00		0.0	0.00
05/18/1998	02	55	50	SW	11.5	-	29.92	10.00		0.0	0.00
05/18/1998	03	54	50	SW	11.5	-	29.90	10.00		0.0	0.00
05/18/1998	04	54	50	SW	11.5	-	29.90	10.00		0.0	0.00
05/18/1998	05	55	51	WSW	9.2	-	29.90	9.00		0.0	0.00
05/18/1998	06	60	51	W	11.5	-	29.90	10.00		0.0	0.00
05/18/1998	07	63	52	W	9.2	-	29.90	10.00		0.2	0.00
05/18/1998	08	70	51	NW	11.5	-	29.89	10.00		0.0	0.00
05/18/1998	09	74	52	NW	16.1	-	29.88	10.00		0.0	0.00
05/18/1998	10	79	52	NW	11.5	-	29.87	10.00		0.0	0.00
05/18/1998	11	80	49	WNW	12.7	-	29.85	10.00		0.0	0.00
05/18/1998	12	82	39	NNW	16.1	25.3	29.84	10.00		0.0	0.00
05/18/1998	13	82	41	NW	17.3	24.2	29.83	10.00		0.0	0.00
05/18/1998	14	82	43	WNW	13.8	19.6	29.82	10.00		0.0	0.00
05/18/1998	15	82	42	NW	11.5	25.3	29.81	10.00		0.0	0.00
05/18/1998	16	82	43	N	9.2	-	29.80	10.00		0.0	0.00
05/18/1998	17	81	45	NNW	13.8	20.7	29.79	10.00		0.0	0.00
05/18/1998	18	79	44	N	12.7	-	29.80	10.00		0.0	0.00
05/18/1998	19	77	43	NNW	8.1	-	29.81	10.00		0.0	0.00
05/18/1998	20	75	44	NNW	3.5	-	29.81	10.00		0.0	0.00
05/18/1998	21	72	46	S	4.6	-	29.83	10.00		0.5	0.00
05/18/1998	22	73	49	W	9.2	-	29.82	10.00		0.0	0.00
05/18/1998	23	64	51	N	5.8	-	29.83	10.00		0.2	0.00
05/19/1998	00	68	52	WNW	9.2	-	29.82	10.00		0.8	0.00
05/19/1998	01	66	53	W	9.2	-	29.80	10.00		0.2	0.00
05/19/1998	02	65	53	W	11.5	-	29.79	10.00		0.0	0.00
05/19/1998	03	64	53	W	9.2	-	29.77	10.00		0.0	0.00
05/19/1998	04	64	52	W	11.5	-	29.76	10.00		0.0	0.00
05/19/1998	05	63	53	W	11.5	-	29.76	10.00		0.0	0.00
05/19/1998	06	63	54	NNW	8.1	-	29.78	10.00		0.0	0.00
05/19/1998	07	66	53	NW	9.2	-	29.79	10.00		0.0	0.00
05/19/1998	08	70	53	NNW	12.7	-	29.78	10.00		0.0	0.00
05/19/1998	09	71	49	NW	17.3	-	29.78	10.00		0.0	0.00
05/19/1998	10	73	45	NNW	19.6	25.3	29.78	10.00		0.0	0.00

05/19/1998	11	63	50	E	19.6	27.6	29.78	10.00	0.0	0.00
05/19/1998	12	62	50	E	17.3	-	29.79	10.00	0.2	0.00
05/19/1998	13	62	51	SE	11.5	-	29.81	10.00	0.2	0.00
05/19/1998	14	62	49	SE	11.5	-	29.80	10.00	0.0	0.00
05/19/1998	15	64	47	E	11.5	-	29.80	10.00	0.0	0.00
05/19/1998	16	62	48	ESE	5.8	-	29.80	10.00	0.0	0.00
05/19/1998	17	63	46	SE	6.9	-	29.80	10.00	0.0	0.00
05/19/1998	18	65	46	ESE	9.2	-	29.79	10.00	0.2	0.00
05/19/1998	19	62	46	SSE	4.6	-	29.80	10.00	0.5	0.00
05/19/1998	20	63	46	S	5.8	-	29.81	10.00	0.8	0.00
05/19/1998	21	61	49	SSW	5.8	-	29.81	10.00	0.5	0.00
05/19/1998	22	60	48	SSW	5.8	-	29.81	10.00	0.0	0.00
05/19/1998	23	60	48	S	6.9	-	29.82	10.00	0.0	0.00

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Date: November 11, 1998

To: Paul Taurasi
Camp, Dresser & McKee
10 Cambridge Center
Cambridge, MA 02142

From: Janet K. Fisher
Climatologist JKF

The enclosed is a copy of the data that was recently faxed to you in response to your request for climate data. A bill is enclosed to cover the cost of these data and fax charges. Please return the bottom portion of the bill with your payment. If you have any questions or need additional data, you can contact our office at the address or phone numbers listed above.

Hourly Surface Observations

Station: BOSTON WSFO AP, MA, Year: 1998

mm/dd/yyyy	hh	Temperature	Dewpoint	Wind Direction	Wind Speed	Wind Gusts	Station Pressure	Visibility	Weather Conditions	Total Sky Cover	Hourly Precipitation
__	lst	degF	degF	compass	miles/hour	miles/hour	inch_Hg	miles	text	fraction	inch
08/19/1998	00	62	57	NNE	5.8	-	29.98	10.00		1.0	0.01
08/19/1998	01	61	54	N	10.4	-	29.98	10.00		1.0	0.00
08/19/1998	02	61	53	N	9.2	-	29.97	10.00		1.0	0.00
08/19/1998	03	60	52	NNW	9.2	-	29.97	10.00		1.0	0.00
08/19/1998	04	60	50	N	12.7	-	29.98	10.00		1.0	0.00
08/19/1998	05	59	49	N	12.7	-	30.00	10.00		0.8	0.00
08/19/1998	06	59	48	N	11.5	-	30.02	10.00		0.5	0.00
08/19/1998	07	61	47	N	16.1	-	30.05	10.00		0.5	0.00
08/19/1998	08	62	47	N	18.4	-	30.06	10.00		1.0	0.00
08/19/1998	09	-	-	-	-	-	-	-		-	-
08/19/1998	10	68	48	NNE	12.7	-	30.08	10.00		0.0	0.00
08/19/1998	11	68	49	E	13.8	-	30.08	10.00		0.2	0.00
08/19/1998	12	-	-	-	-	-	-	-		-	-
08/19/1998	13	68	47	E	12.7	-	30.08	10.00		0.2	0.00
08/19/1998	14	68	48	E	12.7	-	30.08	10.00		0.2	0.00
08/19/1998	15	67	50	SE	10.4	-	30.08	10.00		0.2	0.00
08/19/1998	16	67	46	SSE	6.9	-	30.10	10.00		0.2	0.00
08/19/1998	17	67	45	SE	6.9	-	30.10	10.00		0.2	0.00
08/19/1998	18	66	44	SE	6.9	-	30.11	10.00		0.2	0.00
08/19/1998	19	63	48	SE	5.8	-	30.12	10.00		0.0	0.00
08/19/1998	20	62	50	SSE	6.9	-	30.14	10.00		0.0	0.00
08/19/1998	21	63	50	SW	6.9	-	30.16	10.00		0.0	0.00
08/19/1998	22	65	49	WNW	6.9	-	30.17	10.00		0.8	0.00
08/19/1998	23	63	48	NW	9.2	-	30.17	10.00		0.5	0.00
08/20/1998	00	62	49	NNW	9.2	-	30.17	10.00		0.5	0.00
08/20/1998	01	61	49	NW	8.1	-	30.18	10.00		0.0	0.00
08/20/1998	02	60	49	WNW	8.1	-	30.19	10.00		0.0	0.00
08/20/1998	03	59	48	NW	9.2	-	30.19	10.00		0.0	0.00
08/20/1998	04	58	49	NW	4.6	-	30.20	10.00		0.0	0.00
08/20/1998	05	57	49	WNW	6.9	-	30.22	10.00		0.0	0.00
08/20/1998	06	59	48	NNW	8.1	-	30.23	10.00		0.0	0.00
08/20/1998	07	63	48	NNW	6.9	-	30.23	10.00		0.0	0.00
08/20/1998	08	66	48	N	5.8	-	30.24	10.00		0.0	0.00
08/20/1998	09	69	49	N	4.6	-	30.24	10.00		0.0	0.00
08/20/1998	10	68	50	SE	6.9	-	30.24	10.00		0.2	0.00

08/20/1998 11	68	52	SE	10.4	-	30.23	10.00	0.5	0.00
08/20/1998 12	69	50	SE	10.4	-	30.21	10.00	0.5	0.00
08/20/1998 13	70	50	ESE	11.5	-	30.21	10.00	0.5	0.00
08/20/1998 14	71	52	ESE	10.4	-	30.19	10.00	0.5	0.00
08/20/1998 15	70	54	ESE	12.7	-	30.18	10.00	0.5	0.00
08/20/1998 16	70	53	ESE	12.7	-	30.17	10.00	0.5	0.00
08/20/1998 17	68	55	SE	10.4	-	30.16	10.00	0.5	0.00
08/20/1998 18	69	54	SSE	12.7	-	30.16	10.00	0.5	0.00
08/20/1998 19	66	53	SSE	10.4	-	30.17	10.00	0.5	0.00
08/20/1998 20	66	56	S	9.2	-	30.17	10.00	0.5	0.00
08/20/1998 21	66	55	SSW	9.2	-	30.19	10.00	0.8	0.00
08/20/1998 22	66	54	SW	12.7	-	30.19	10.00	0.8	0.00
08/20/1998 23	66	54	WSW	12.7	-	30.19	10.00	0.8	0.00

NORTHEAST
REGIONAL
CLIMATE
CENTER

1123 Bradfield Hall
Cornell University
Ithaca, NY 14853-1901

Phone: (607) 255-1751
Fax: (607) 255-2106

Internet mail: nrcc@cornell.edu

Date: January 22, 1999

To: Matt Mullarkey
Camp, Dresser & McKee
10 Cambridge Center
Cambridge, MA 02142

From: Janet K. Fisher
Climatologist

The enclosed information is being sent in response to your recent request for climate data. A bill is enclosed to cover the cost of these data. Please return the bottom portion of the bill with your payment. If you have any questions or need additional data, you can contact our office at the address or phone numbers listed above.

Hourly Surface Observations

Station: BOSTON WSFO AP, MA, Year: 1998

mm/dd/yyyy	hh	Temperature	Dewpoint	Wind Speed	Wind Direction	Wind Gusts	Peak Wind Speed	Peak Wind Direction	Station Pressure	Visibility	Weather Conditions	Hourly Precipitation
	lst	degF	degF	miles/hour	compass	miles/hour	miles/hour	compass	inch_Hg	miles	text	inch
12/08/1998	00	45	28	12.7	NNW	-	-	-	30.15	10.00		0.00
12/08/1998	01	44	29	10.4	NNW	-	-	-	30.16	10.00		0.00
12/08/1998	02	42	29	6.9	NNW	-	-	-	30.19	10.00		0.00
12/08/1998	03	41	27	10.4	N	-	-	-	30.19	10.00		0.00
12/08/1998	04	40	28	8.1	N	-	-	-	30.20	10.00		0.00
12/08/1998	05	39	27	9.2	N	-	-	-	30.21	10.00		0.00
12/08/1998	06	37	28	5.8	NNE	-	-	-	30.22	10.00		0.00
12/08/1998	07	37	27	8.1	N	-	-	-	30.24	10.00		0.00
12/08/1998	08	38	27	6.9	N	-	-	-	30.24	10.00		0.00
12/08/1998	09	42	33	13.8	E	-	-	-	30.22	10.00		0.00
12/08/1998	10	43	36	11.5	E	-	-	-	30.24	10.00		0.00
12/08/1998	11	43	39	13.8	E	-	-	-	30.20	10.00		0.00
12/08/1998	12	43	38	16.1	ESE	-	-	-	30.15	10.00		0.00
12/08/1998	13	43	37	16.1	ESE	-	-	-	30.13	10.00	light rain	0.00
12/08/1998	14	40	39	17.3	ESE	-	-	-	30.10	4.00	moderate rain, fog/mist	0.02
12/08/1998	15	40	40	12.7	ESE	-	-	-	30.09	3.00	light rain	0.12
12/08/1998	16	41	41	15.0	E	-	-	-	30.06	3.00	light rain	0.02
12/08/1998	17	41	41	15.0	E	-	-	-	30.03	3.00	light rain, fog/mist	0.07
12/08/1998	18	42	42	10.4	NE	-	-	-	30.04	10.00	light rain	0.03
12/08/1998	19	40	42	11.5	NNE	-	-	-	30.01	2.00	light rain, fog/mist	0.03
12/08/1998	20	40	40	12.7	N	-	-	-	30.02	2.00	light rain, fog/mist	0.07
12/08/1998	21	40	40	10.4	NNE	-	-	-	30.01	4.00	light rain, fog/mist	0.04
12/08/1998	22	40	40	8.1	N	-	-	-	30.00	2.00	light rain, fog/mist	0.00
12/08/1998	23	40	40	8.1	NNW	-	-	-	30.00	5.00	moderate drizzle, fog/mist	0.00
12/09/1998	00	37	37	9.2	NNW	-	-	-	30.01	3.00	moderate drizzle, fog/mist	0.00
12/09/1998	01	36	36	8.1	NNW	-	-	-	30.01	3.00	fog/mist	0.00
12/09/1998	02	35	35	9.2	NNW	-	-	-	30.03	3.00	fog/mist	0.00
12/09/1998	03	36	36	8.1	NNW	-	-	-	30.05	1.50	fog/mist	0.00

12/09/1998	04	35	35	9.2	NNW	-	-	-	30.05	10.00	0.00
12/09/1998	05	34	34	9.2	NW	-	-	-	30.07	10.00	0.00
12/09/1998	06	34	33	9.2	NW	-	-	-	30.09	10.00	0.00
12/09/1998	07	34	32	9.2	NNW	-	-	-	30.11	10.00	0.00
12/09/1998	08	35	31	11.5	NW	-	-	-	30.15	10.00	0.00
12/09/1998	09	38	31	13.8	NNW	-	-	-	30.17	10.00	0.00
12/09/1998	10	39	29	18.4	NNW	23.0	-	-	30.17	10.00	0.00
12/09/1998	11	41	29	13.8	NW	19.6	-	-	30.18	10.00	0.00
12/09/1998	12	43	28	10.4	NW	18.4	-	-	30.17	10.00	0.00
12/09/1998	13	45	28	13.8	WNW	-	-	-	30.16	10.00	0.00
12/09/1998	14	45	28	10.4	NW	23.0	-	-	30.16	10.00	0.00
12/09/1998	15	45	29	12.7	WNW	-	-	-	30.17	10.00	0.00
12/09/1998	16	43	30	18.4	WNW	-	-	-	30.20	10.00	0.00
12/09/1998	17	42	30	12.7	WNW	-	-	-	30.22	10.00	0.00
12/09/1998	18	41	31	11.5	WNW	-	-	-	30.23	10.00	0.00
12/09/1998	19	41	31	9.2	W	-	-	-	30.24	10.00	0.00
12/09/1998	20	41	32	11.5	W	-	-	-	30.26	10.00	0.00
12/09/1998	21	41	32	13.8	W	-	-	-	30.26	10.00	0.00
12/09/1998	22	40	32	13.8	W	-	-	-	30.27	10.00	0.00
12/09/1998	23	40	32	11.5	W	-	-	-	30.28	10.00	0.00
12/10/1998	00	38	32	8.1	WNW	-	-	-	30.29	10.00	0.00
12/10/1998	01	37	32	9.2	W	-	-	-	30.30	10.00	0.00
12/10/1998	02	37	32	8.1	WNW	-	-	-	30.30	10.00	0.00
12/10/1998	03	-	-	-	-	-	-	-	-	-	-
12/10/1998	04	37	32	9.2	W	-	-	-	30.30	10.00	0.00
12/10/1998	05	36	32	9.2	WNW	-	-	-	30.30	10.00	0.00
12/10/1998	06	36	32	5.8	W	-	-	-	30.31	10.00	0.00
12/10/1998	07	36	32	5.8	W	-	-	-	30.31	10.00	0.00
12/10/1998	08	38	33	10.4	W	-	-	-	30.30	10.00	0.00
12/10/1998	09	40	33	9.2	W	-	-	-	30.31	10.00	0.00
12/10/1998	10	41	34	8.1	SW	-	-	-	30.30	10.00	0.00
12/10/1998	11	44	33	8.1	W	-	-	-	30.27	10.00	0.00
12/10/1998	12	45	32	8.1	W	-	-	-	30.23	10.00	0.00
12/10/1998	13	46	33	10.4	W	-	-	-	30.21	10.00	0.00
12/10/1998	14	47	33	6.9	W	-	-	-	30.18	10.00	0.00
12/10/1998	15	47	32	10.4	W	-	-	-	30.16	10.00	0.00
12/10/1998	16	45	32	12.7	WSW	-	-	-	30.13	10.00	0.00
12/10/1998	17	44	32	5.8	W	-	-	-	30.13	10.00	0.00
12/10/1998	18	44	32	8.1	WSW	-	-	-	30.14	10.00	0.00
12/10/1998	19	43	32	8.1	SW	-	-	-	30.14	10.00	0.00
12/10/1998	20	43	31	10.4	WSW	-	-	-	30.13	10.00	0.00
12/10/1998	21	42	31	10.4	WSW	-	-	-	30.13	10.00	0.00

12/10/1998	22	43	31	13.8	WSW	-	-	-	30.11	10.00	0.00
12/10/1998	23	42	32	12.7	WSW	-	-	-	30.10	10.00	0.00
12/11/1998	00	43	31	11.5	W	-	-	-	30.08	10.00	0.00
12/11/1998	01	43	31	11.5	W	-	-	-	30.06	10.00	0.00
12/11/1998	02	43	31	15.0	W	-	-	-	30.06	10.00	0.00
12/11/1998	03	42	31	13.8	W	-	-	-	30.05	10.00	0.00
12/11/1998	04	42	31	15.0	WSW	-	-	-	30.03	10.00	0.00
12/11/1998	05	41	31	15.0	W	24.2	-	-	30.03	10.00	0.00
12/11/1998	06	40	31	12.7	W	19.6	-	-	30.04	10.00	0.00
12/11/1998	07	40	32	16.1	W	23.0	-	-	30.05	10.00	0.00
12/11/1998	08	41	32	12.7	W	23.0	-	-	30.06	10.00	0.00
12/11/1998	09	42	33	11.5	W	-	-	-	30.08	10.00	0.00
12/11/1998	10	43	32	16.1	WNW	21.9	-	-	30.09	10.00	0.00
12/11/1998	11	43	30	18.4	NW	25.3	-	-	30.08	10.00	0.00
12/11/1998	12	43	28	17.3	NW	23.0	29.9	WNW	30.08	10.00	0.00
12/11/1998	13	43	28	17.3	NW	27.6	29.9	WNW	30.08	10.00	0.00
12/11/1998	14	43	30	16.1	WNW	26.5	-	-	30.11	10.00	0.00
12/11/1998	15	44	28	20.7	WNW	25.3	34.5	NW	30.13	10.00	0.00
12/11/1998	16	42	26	16.1	NW	24.2	31.1	NW	30.16	10.00	0.00
12/11/1998	17	40	26	18.4	WNW	24.2	-	-	30.19	10.00	0.00
12/11/1998	18	39	26	19.6	NW	27.6	-	-	30.23	10.00	0.00
12/11/1998	19	38	27	12.7	NW	20.7	-	-	30.26	10.00	0.00
12/11/1998	20	37	28	10.4	NW	-	-	-	30.28	10.00	0.00
12/11/1998	21	35	28	8.1	NW	-	-	-	30.30	10.00	0.00
12/11/1998	22	35	28	11.5	WNW	-	-	-	30.31	10.00	0.00
12/11/1998	23	34	26	9.2	NW	-	-	-	30.32	10.00	0.00

Appendix K
Landfill Gas Analytical Data

@AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 9808343

Work Order Summary

CLIENT:	Mr. Bill Scully Camp, Dresser & McKee 10 Cambridge Center Cambridge, MA 02142	**BILL TO:** Same	
PHONE:	617-252-8363	**P.O. #** 0519-22913-rt. samp	
FAX:	617-621-2565	**PROJECT #** Town of Waltham Woerd Ave Landfill	
DATE RECEIVED:	8/24/98		
DATE COMPLETED:	9/8/98		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	LFG-1	TO-14	10.0 "Hg
02A	LFG-2	TO-14	6.0 "Hg
03A	LFG-3	TO-14	5.0 "Hg
04A	Lab Blank	TO-14	NA
04B	Lab Blank	TO-14	NA

CERTIFIED BY: Robert Clemmer
Laboratory Director

DATE: 9/8/98

Certification numbers: CA ELAP - 1149, NY ELAP - 11291, UT ELAP - E-217

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630
(916) 985-1000 • (800) 985-5955 • FAX (916) 985-1020

AIR TOXICS LTD.

SAMPLE NAME : LFG-1

ID#: 9808343-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5090211	Date of Collection:	8/20/98
Dil. Factor:	1.00	Date of Analysis:	9/ 2/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Freon 12	0.50	Not Detected
Freon 114	0.50	Not Detected
Chloromethane	0.50	Not Detected
Vinyl Chloride	0.50	Not Detected
Bromomethane	0.50	Not Detected
Chloroethane	0.50	Not Detected
Freon 11	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
Methylene Chloride	0.50	Not Detected
1,1-Dichloroethane	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Carbon Tetrachloride	0.50	Not Detected
Benzene	0.50	Not Detected
1,2-Dichloroethane	0.50	Not Detected
Trichloroethene	0.50	Not Detected
1,2-Dichloropropane	0.50	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected
Toluene	0.50	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
Ethylene Dibromide	0.50	Not Detected
Chlorobenzene	0.50	Not Detected
Ethyl Benzene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Styrene	0.50	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
Chlorotoluene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
Propylene	2.0	Not Detected
1,3-Butadiene	2.0	Not Detected
Acetone	2.0	Not Detected
Carbon Disulfide	2.0	Not Detected
2-Propanol	2.0	Not Detected
trans-1,2-Dichloroethene	2.0	Not Detected

AIR TOXICS LTD.

SAMPLE NAME : LFG-1

ID#: 9808343-01A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5090211	Date of Collection:	8/20/98
Dil. Factor:	1.00	Date of Analysis:	9/ 2/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Vinyl Acetate	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected
Hexane	2.0	Not Detected
Tetrahydrofuran	2.0	Not Detected
Cyclohexane	2.0	Not Detected
1,4-Dioxane	2.0	Not Detected
Bromodichloromethane	2.0	Not Detected
4-Methyl-2-pentanone	2.0	Not Detected
2-Hexanone	2.0	Not Detected
Dibromochloromethane	2.0	Not Detected
Bromoform	2.0	Not Detected
4-Ethyltoluene	2.0	Not Detected
Ethanol	2.0	Not Detected
Methyl tert-Butyl Ether	2.0	Not Detected
Heptane	2.0	Not Detected

Container Type: 6 Liter Silco Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	103	70-130

AIR TOXICS LTD.

SAMPLE NAME : LFG-2

ID#: 9808343-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5083120	Date of Collection:	8/20/98
Dil. Factor:	1.68	Date of Analysis:	9/ 1/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Freon 12	0.84	3.9
Freon 114	0.84	1.8
Chloromethane	0.84	Not Detected
Vinyl Chloride	0.84	Not Detected
Bromomethane	0.84	Not Detected
Chloroethane	0.84	Not Detected
Freon 11	0.84	Not Detected
1,1-Dichloroethene	0.84	Not Detected
Freon 113	0.84	0.93
Methylene Chloride	0.84	Not Detected
1,1-Dichloroethane	0.84	Not Detected
cis-1,2-Dichloroethene	0.84	1.3
Chloroform	0.84	Not Detected
1,1,1-Trichloroethane	0.84	Not Detected
Carbon Tetrachloride	0.84	Not Detected
Benzene	0.84	Not Detected
1,2-Dichloroethane	0.84	Not Detected
Trichloroethene	0.84	25
1,2-Dichloropropane	0.84	Not Detected
cis-1,3-Dichloropropene	0.84	Not Detected
Toluene	0.84	Not Detected
trans-1,3-Dichloropropene	0.84	Not Detected
1,1,2-Trichloroethane	0.84	Not Detected
Tetrachloroethene	0.84	14
Ethylene Dibromide	0.84	Not Detected
Chlorobenzene	0.84	Not Detected
Ethyl Benzene	0.84	Not Detected
m,p-Xylene	0.84	Not Detected
o-Xylene	0.84	Not Detected
Styrene	0.84	Not Detected
1,1,2,2-Tetrachloroethane	0.84	Not Detected
1,3,5-Trimethylbenzene	0.84	Not Detected
1,2,4-Trimethylbenzene	0.84	Not Detected
1,3-Dichlorobenzene	0.84	Not Detected
1,4-Dichlorobenzene	0.84	Not Detected
Chlorotoluene	0.84	Not Detected
1,2-Dichlorobenzene	0.84	Not Detected
1,2,4-Trichlorobenzene	0.84	Not Detected
Hexachlorobutadiene	0.84	Not Detected
Propylene	3.4	5.4
1,3-Butadiene	3.4	Not Detected
Acetone	3.4	3.9
Carbon Disulfide	3.4	Not Detected
2-Propanol	3.4	Not Detected
trans-1,2-Dichloroethene	3.4	Not Detected

AIR TOXICS LTD.

SAMPLE NAME : LFG-2

ID#: 9808343-02A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5083120	Date of Collection:	8/20/98
Dil. Factor:	1.68	Date of Analysis:	9/ 1/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Vinyl Acetate	3.4	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.4	Not Detected
Hexane	3.4	Not Detected
Tetrahydrofuran	3.4	Not Detected
Cyclohexane	3.4	Not Detected
1,4-Dioxane	3.4	Not Detected
Bromodichloromethane	3.4	Not Detected
4-Methyl-2-pentanone	3.4	Not Detected
2-Hexanone	3.4	Not Detected
Dibromochloromethane	3.4	Not Detected
Bromoform	3.4	Not Detected
4-Ethyltoluene	3.4	Not Detected
Ethanol	3.4	8.7
Methyl tert-Butyl Ether	3.4	Not Detected
Heptane	3.4	Not Detected

Container Type: 6 Liter Silco Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

AIR TOXICS LTD.

SAMPLE NAME : LFG-3

ID#: 9808343-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5083121	Date of Collection:	8/20/98
Dil. Factor:	1.61	Date of Analysis:	9/ 1/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Freon 12	0.81	9.3
Freon 114	0.81	Not Detected
Chloromethane	0.81	Not Detected
Vinyl Chloride	0.81	Not Detected
Bromomethane	0.81	Not Detected
Chloroethane	0.81	Not Detected
Freon 11	0.81	13
1,1-Dichloroethene	0.81	Not Detected
Freon 113	0.81	1.6
Methylene Chloride	0.81	Not Detected
1,1-Dichloroethane	0.81	10
cis-1,2-Dichloroethene	0.81	2.1
Chloroform	0.81	2.0
1,1,1-Trichloroethane	0.81	9.8
Carbon Tetrachloride	0.81	Not Detected
Benzene	0.81	Not Detected
1,2-Dichloroethane	0.81	Not Detected
Trichloroethene	0.81	88
1,2-Dichloropropane	0.81	Not Detected
cis-1,3-Dichloropropene	0.81	Not Detected
Toluene	0.81	Not Detected
trans-1,3-Dichloropropene	0.81	Not Detected
1,1,2-Trichloroethane	0.81	Not Detected
Tetrachloroethene	0.81	180
Ethylene Dibromide	0.81	Not Detected
Chlorobenzene	0.81	Not Detected
Ethyl Benzene	0.81	Not Detected
m,p-Xylene	0.81	Not Detected
o-Xylene	0.81	Not Detected
Styrene	0.81	Not Detected
1,1,2,2-Tetrachloroethane	0.81	Not Detected
1,3,5-Trimethylbenzene	0.81	Not Detected
1,2,4-Trimethylbenzene	0.81	Not Detected
1,3-Dichlorobenzene	0.81	Not Detected
1,4-Dichlorobenzene	0.81	Not Detected
Chlorotoluene	0.81	Not Detected
1,2-Dichlorobenzene	0.81	Not Detected
1,2,4-Trichlorobenzene	0.81	Not Detected
Hexachlorobutadiene	0.81	Not Detected
Propylene	3.2	3.8
1,3-Butadiene	3.2	Not Detected
Acetone	3.2	Not Detected
Carbon Disulfide	3.2	Not Detected
2-Propanol	3.2	Not Detected
trans-1,2-Dichloroethene	3.2	Not Detected

AIR TOXICS LTD.

SAMPLE NAME : LFG-3

ID#: 9808343-03A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5083121	Date of Collection:	8/20/98
Dil. Factor:	1.61	Date of Analysis:	9/ 1/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Vinyl Acetate	3.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.2	Not Detected
Hexane	3.2	Not Detected
Tetrahydrofuran	3.2	Not Detected
Cyclohexane	3.2	Not Detected
1,4-Dioxane	3.2	Not Detected
Bromodichloromethane	3.2	Not Detected
4-Methyl-2-pentanone	3.2	Not Detected
2-Hexanone	3.2	Not Detected
Dibromochloromethane	3.2	Not Detected
Bromoform	3.2	Not Detected
4-Ethyltoluene	3.2	Not Detected
Ethanol	3.2	6.2
Methyl tert-Butyl Ether	3.2	Not Detected
Heptane	3.2	Not Detected

Container Type: 6 Liter Silco Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	98	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9808343-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5083104	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	8/31/98

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Freon 12	0.50	Not Detected
Freon 114	0.50	Not Detected
Chloromethane	0.50	Not Detected
Vinyl Chloride	0.50	Not Detected
Bromomethane	0.50	Not Detected
Chloroethane	0.50	Not Detected
Freon 11	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
Methylene Chloride	0.50	Not Detected
1,1-Dichloroethane	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Carbon Tetrachloride	0.50	Not Detected
Benzene	0.50	Not Detected
1,2-Dichloroethane	0.50	Not Detected
Trichloroethene	0.50	Not Detected
1,2-Dichloropropane	0.50	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected
Toluene	0.50	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
Ethylene Dibromide	0.50	Not Detected
Chlorobenzene	0.50	Not Detected
Ethyl Benzene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Styrene	0.50	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
Chlorotoluene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
Propylene	2.0	Not Detected
1,3-Butadiene	2.0	Not Detected
Acetone	2.0	Not Detected
Carbon Disulfide	2.0	Not Detected
2-Propanol	2.0	Not Detected
trans-1,2-Dichloroethene	2.0	Not Detected

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9808343-04A

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5083104	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 8/31/98	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Vinyl Acetate	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected
Hexane	2.0	Not Detected
Tetrahydrofuran	2.0	Not Detected
Cyclohexane	2.0	Not Detected
1,4-Dioxane	2.0	Not Detected
Bromodichloromethane	2.0	Not Detected
4-Methyl-2-pentanone	2.0	Not Detected
2-Hexanone	2.0	Not Detected
Dibromochloromethane	2.0	Not Detected
Bromoform	2.0	Not Detected
4-Ethyltoluene	2.0	Not Detected
Ethanol	2.0	Not Detected
Methyl tert-Butyl Ether	2.0	Not Detected
Heptane	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	97	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9808343-04B

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5090203	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 9/ 2/98	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Freon 12	0.50	Not Detected
Freon 114	0.50	Not Detected
Chloromethane	0.50	Not Detected
Vinyl Chloride	0.50	Not Detected
Bromomethane	0.50	Not Detected
Chloroethane	0.50	Not Detected
Freon 11	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
Methylene Chloride	0.50	Not Detected
1,1-Dichloroethane	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Carbon Tetrachloride	0.50	Not Detected
Benzene	0.50	Not Detected
1,2-Dichloroethane	0.50	Not Detected
Trichloroethene	0.50	Not Detected
1,2-Dichloropropane	0.50	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected
Toluene	0.50	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
Ethylene Dibromide	0.50	Not Detected
Chlorobenzene	0.50	Not Detected
Ethyl Benzene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Styrene	0.50	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
Chlorotoluene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected
Propylene	2.0	Not Detected
1,3-Butadiene	2.0	Not Detected
Acetone	2.0	Not Detected
Carbon Disulfide	2.0	Not Detected
2-Propanol	2.0	Not Detected
trans-1,2-Dichloroethene	2.0	Not Detected

AIR TOXICS LTD.

SAMPLE NAME : Lab Blank

ID#: 9808343-04B

EPA METHOD TO-14 GC/MS Full Scan

File Name:	5090203	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 9/ 2/98	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Vinyl Acetate	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected
Hexane	2.0	Not Detected
Tetrahydrofuran	2.0	Not Detected
Cyclohexane	2.0	Not Detected
1,4-Dioxane	2.0	Not Detected
Bromodichloromethane	2.0	Not Detected
4-Methyl-2-pentanone	2.0	Not Detected
2-Hexanone	2.0	Not Detected
Dibromochloromethane	2.0	Not Detected
Bromoform	2.0	Not Detected
4-Ethyltoluene	2.0	Not Detected
Ethanol	2.0	Not Detected
Methyl tert-Butyl Ether	2.0	Not Detected
Heptane	2.0	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	102	70-130

Chain of Custody

CDM Analytical Laboratory | 840 Memorial Drive, Cambridge, MA 02139 | Phone: (617) 354-4448 | Fax: (617) 354-0764

Field Log # 980343 Page 1 of 1

Client: Town of Waltham | Address: Wood Ave. | SDG#:

Project Name: Wood Ave Landfill | TAT: Standard

Project #: | Phone: | TAT Approved by:

Contact: Lori Webster CRB 978 371-1170 | Fax #: Bill CDM # 0519-22913-rt, samp | Lab Accl. #:

Report to: Paul Tauras-CDM ph 617-252-8000

CLIENT SAMPLE ID	DATE Time	TIME Date	MATRIX S - Soil W - Water D - Drinking	# OF CONT.	CDM SAMPLE ID See Attached SDG DR for Aliquot #'s & CDM Bottle Id's	VOA 524.2	VOA 624/8240	VOA 8260	VOA Other	SEMI VOA 525	SEMI VOA 625/8270 A, B/N, ABN	SEMI VOA PAH	SEMI VOA Other	MISC PEST / PCB	MISC TPH 418.1	MISC PET ID	METALS PP13	METALS RCRA 8	METALS Other	METALS Filtered (Y/N)	OTHER EPA Method TO-14	OTHER	OTHER	OTHER	OTHER	OTHER receipt
LF6-1	11:48	8/20/98	Gas	1																	✓					10.0" Hg
LF6-2	10:55	8/20/98	Gas	1																	✓					6.0" Hg
LF6-3	12:31	8/20/98	Gas	1																	✓					5.0 " Hg
																										8/25/98

A - HCl | D - NaOH | P - Plastic

B - HNO_3 | E - NaThio | G - Glass

C - H_2SO_4 | F - Other | V - Vial

Container Type:

Preservative:

Volume:

Samples Received:

- Cooler Temperature: _____ °C
- Chilled/properly preserved? ☐ yes ☐ no
- In good condition? ☐ yes ☐ no
- Evidence of tampering? ☐ yes ☐ no

Instructions:

Fax Results ☐
State Forms ☐
SMART Report ☐
Disk Deliverable ☐
(_____) TICS ☐

Sampled & Relinquished by:	Date	Time	Received by:	Date	Time
Lori Webster	8/20/98	8:45	Theresa Mepelo HC	8/21/98	9:50
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Shipper/Airbill#: | Custody Seal#: | Method of Shipment: ☐ Courier ☐ Airborne ☐ Fed-ex ☐ UPS ☐ Hand ☐ Other

NOTE: All samples submitted subject to Standard Terms & Conditions

Comments:	Flow Rate	Fill Time	Initial Pressure	Final Pressure
LF6-1	300ml/min	13min 25sec	27.5	9.5
LF6-2	300ml/min	13min 20sec.	27.2	5.5
LF6-3	300ml/min	13min 20sec	27.4	5.0

Custody Seal Intact (Y) N None _ Temp. Ambient

Appendix L
Toxicity Profiles

ACETONE [1)]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Acetone Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Very little information can be located regarding acetone's overall effects.	No information was provided.	Red blood cell parameters were significantly increased after oral consumption. Increased liver weights, and marked increase in the severity of tubular degeneration of the kidney. Inhalation of vapors has been known to cause transient eye and nose irritation.	No information was provided.	No information was provided.	Acetone did not show mutagenic activity when tested in a variety of strains.	No information was provided.	No information was provided.	Conclusions could not be drawn based on the lack of data concerning carcinogenicity in humans or in animals.

Notes:
(1): Refer to original source (EPA-iris, 1999) for details.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

ARSENIC

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Arsenic Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
Chronic exposure is associated with polyneuropathy and skin lesions.	No information provided.	Known to cause non-cancerous possibly pre-cancerous skin changes in exposed individuals.	Known to cause increased incidence of multiple malformations among children born to women occupationally exposed.	Known to result in adverse reproductive effects in animals. Known to be fetotoxic and embryotoxic.	Causes chromosomal damage in humans and animals. Elevated incidence of chromosome aberrations.	Causes progressive polyneuropathy involving motor and sensory nerves particularly affecting the extremities and myelinated long-axon neurons.	No information was provided.	Causes skin cancer when ingested. Causes lung tumors when it is inhaled.

Notes:
(1): "No information provided" indicates no information was provided by original source.
(2): "No studies were located" indicates no studies were located by original source.

BARIUM [1]

Summary of Primary Health Effects in Humans and Experimental Animals

Health Effects by Route of Exposure and Endpoint of Intent								
Overview of Barium Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Small amounts of barium can produce difficulties in pressure, changes in heart rhythm, changes in nerve reflexes.	I: No studies were located regarding lethality in humans or in animals. O: Acute oral LD50 ranges from 132 to 277 mg/kg/day (rat). Indicates that barium is toxic by acute oral gavage exposure.	I: Minor respiratory effects, G.I. effects, hematological effects. O: Respiratory effects, cardiovascular, gastrointestinal, hematological, musculoskeletal, renal, and minor hepatic effects. D: No conclusive information was available regarding systemic effects.	I: Reduced survival, underdevelopment, lowered, weight gain, and various hematological alterations (rats). O: Limited information was available regarding developmental effects in humans or in animals. D: No studies were located regarding developmental effects in humans or in animals.	I: Disturbance in spermatogenesis, decreased number of sperm (rat). O: No adverse effects were noted at doses as high as 135 mg/kg/day. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxicity in humans or in animals. D: No studies were located regarding genotoxic effects in humans or in animals.	I: Limited information is available. Absence of deep tendon reflexes was observed. O: Numbness and tingling around the mouth and neck. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: Limited data is available. Acute gavage exposure of rats to doses less than 198 mg/kg/day was not associated with changes in thymus weight. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding cancer in humans or in animals. O: No conclusive information was provided regarding carcinogenic effects. D: No adequate human or animal data were available for evaluating carcinogenicity.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

BENZO(A)ANTHRACENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Benzo(a)anthracene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Enzyme alterations in the mucosa of the G.I. tract. D: Can cause skin disorders.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: No studies were located regarding genotoxic effects in humans.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: Increased incidence of hepatotomas and pulmonary adenomas. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

BENZO(A)PYRENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Benzo(a)pyrene Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
Can cause harm to your health.	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Minimal information is available regarding systemic effects in humans or animals.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: No studies were located regarding genotoxic effects in humans or in animals.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: 30 mg was reported to bind to DNA in CD-1 mouse.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: Immunogenic when applied dermally.	O: Limited studies were located regarding carcinogenic effects in humans or in animals. I: Limited studies were located regarding carcinogenic effects in humans. D: Studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

BENZO(B)FLUORANTHENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Benzo(b)fluoranthene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Can cause skin disorders.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: Single topical application of 30 mg was reported to bind to DNA in CD-1 mouse skin.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

BENZO(G,H,I)PERYLENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Benzo(g,h,i)perylene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Can cause skin disorders.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: No studies were located regarding genotoxic effects in humans.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

BENZO(K)FLUORANTHENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Benzo(k)fluoranthene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Can cause skin disorders.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: Single topical application of 100 mg was reported to bind to DNA in CD-mouse skin.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

CADMIUM[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Cadmium Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Minimal information is available regarding systemic effects in humans or animals.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: No studies were located regarding genotoxic effects in humans.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: Limited studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

CHLOROFORM [1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Chloroform Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
Chloroform affects the central nervous system, liver, and kidney.	**I:** Data regarding inhalation exposure levels in humans were not available. An LC50 of 10,000 ppm for 4 hours was reported for rats. **O:** A fatal oral dose may be as little as 10 ml. **D:** Pertinent data regarding lethality due to dermal exposure.	**I:** Target organs are liver, kidney, and central nervous system. Liver and kidney are the most sensitive. **O:** The liver and kidney are target organs of oral exposure to chloroform. **D:** Application of 100 mg/kg for 24 hour caused de-generative changes in the kidney tubules (rabbits).	**I:** No data regarding developmental effects in humans. In animals exposure of pregnant rats to 30 ppm 7 hours/day on days 6-15 of gestation resulted in no effects on the offspring. **O:** In animals no effects occurred at a dose of 20 mg/kg/day. No fetal effects occurred at 50 mg/kg/day **D:** Pertinent data regarding developmental effects due to dermal exposure.	**I:** No data regarding reproductive effects in humans was available. Exposure of male mice to 400 or 800 ppm 4 hours/day for 5 days caused a significant increase in the percentage of abnormal sperm. **O:** Rats administered 410 mg/kg/day, but not 150 mg/kg/day 6 days/week/ for 13 weeks had gonadal atrophy. **D:** Pertinent data regarding reproductive effects due to dermal exposure.	**I:** Chloroform gains access to germinal tissue and may pose a mutagenic risk. **O:** No significant data was available for adverse effects after oral exposure. **D:** No information was provided.	**I:** No data regarding neurological effects in humans or animals were available. **O:** No information was provided. **D:** No information was provided.	**I:** No data regarding immunological effects in humans or animals were available. **O:** No information was provided. **D:** No information was provided.	**I:** No data were available regarding cancer in humans or animals following inhalation of chloroform. **O:** Studies in animals indicate that chloroform is carcinogenic. **D:** Pertinent data regarding the carcinogenicity of chloroform after dermal exposure.

Notes:
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CHROMIUM [1]

Summary of Primary Health Effects in Humans and Experimental Animals

Health Effects by Route of Exposure and Endpoint of Intent								
Overview of Chromium Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Chromium III is one form considered to be an essential nutrient that helps to maintain metabolism of glucose, fat, and cholesterol. Chromium VI may cause adverse effects at the site of contact. Chromium VI may also cause kidney and liver effects.	I: LC50 ranges from 33 to 65 mg/m3 (4 hr.) (Chromium VI O: LD50 for Chromium VI 16.7 -22.5 mg/kg. LD50s for Chromium III compounds 3.25 g/kg and 11.26 g/kg were calculated. D: LD50 value for Chromium VI compounds range from 1,000 mg/kg to 1,640 mg/kg.	I: Respiratory tract is the target of intermediate and chronic inhalation exposure (Chromium VI). O: Chronic oral studies of chromium compounds have not identified any adverse effects. D: No information was provided.	I: Parental administration of Chromium III or Chromium VI resulted in adverse developmental effects. O: Parental administration of Chromium III or Chromium VI resulted in adverse developmental effects. D: No information was provided.	I: Parental administration of Chromium III or Chromium VI resulted in adverse reproductive effects. O: Parental administration of Chromium III or Chromium VI resulted in adverse reproductive effects. D: No information was provided.	I: Chromium VI is a more active genotoxin than Chromium III. O: Chromium VI is a more active genotoxin than Chromium III. D: No information was provided.	I: No information was provided. O: No information was provided D: No information was provided.	I: No information was provided. O: No information was provided. D: No information was provided.	I: Case studies indicate that occupational exposure to chromium compounds is associated with respiratory cancer. O: Chronic oral administration of chromium III has not resulted in significantly increased tumor incidences. Inadequate data for Chromium VI. D: No information was provided.

Notes:
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CHRYSENE [1]

Summary of Primary Health Effects in Humans and Experimental Animals

Health Effects by Route of Exposure and Endpoint of Intent								
Overview of Chrysene Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Chrysene has been reported to be a toxic chemical that causes cancer in laboratory animals when applied via the dermal route.	I: No information is available regarding lethality.	I: No information is available regarding systemic effects.	I: No information is available regarding developmental effects.	I: No information is available regarding reproductive effects.	I: No information is available regarding genotoxic effects.	I: No information was provided regarding neurological effects.	I: No information was provided regarding immunological effects.	I: No reports directly correlating inhalation of chrysene and the induction of cancer are available.
	O: No information is available regarding lethality.	O: No information is available regarding systemic effects.	O: No information is available regarding developmental effects.	O: No information is available regarding reproductive effects.	O: No information is available regarding genotoxic effects.	O: No information was provided regarding neurological effects.	O: No information was provided regarding immunological effects.	O: No information was provided regarding carcinogenic effects.
	D: No information is available regarding lethality.	D: No information is available regarding systemic effects.	D: No information is available regarding developmental effects.	D: No information is available regarding reproductive effects.	D: No information is available regarding genotoxic effects.	D: No information was provided regarding neurological effects.	D: No information was provided regarding immunological effects.	D: A dose of 1.2 mg/kg/day applied to the skin of mice for 17 months developed benign and malignant skin tumors.

Notes:
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(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.

COPPER[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Copper Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent: Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Copper is necessarily for good health. In large single or daily intakes can harm your health. Long-term exposure to copper dust can irritate your nose, mouth and eyes, and cause headaches, dizziness, nausea, and diarrhea. High intakes can cause liver and kidney damage.	I: No studies were located regarding lethality in humans or animals following exposure.	I: In humans copper is a respiratory irritant. Factory workers exposed to copper dust experienced mucosal irritation of the month, eyes, and nose.	I: No studies were located regarding developmental effects in humans or animals.	I: Sexual impotence was reported in 16% of examined factory workers exposed to copper dust.	I: No studies were located regarding genotoxic effects in humans or in animals.	I: Headaches, vertigo, and drowsiness were reported by factory workers exposed to copper dust.	I: No studies were located regarding immunological effects in humans or animals.	I: No studies were located regarding cancer effects in humans or in animals.
	O: Thirteen of 53 patients died after ingesting 6 -637 mg/kg/d copper. Increased mortality was observed in rats fed a diet containing 4000 ppm of copper for 1 week.	O: Gastrointestinal , hepatic, and renal effects have been observed in humans following the consumption of contaminated water or copper sulfate in suicide attempts.	O: No studies were located regarding developmental effects in humans. In animals increased fetal mortality was observed in the fetuses of mice fed > 104 mg/kg/d copper as copper sulfate.	O: No studies were located regarding reproductive effects in humans. In animals, no adverse effects were observed.	O: No studies were located regarding genotoxic effects in experimental animals.	O: No studies were located regarding neurological effects in humans or animals.	O: No studies were located regarding immunological effects in humans or in animals.	O: No studies were located regarding carcinogenic effects in humans. In animals, cancer was not observed in rats or mice exposed to copper at various concentrations.
					D: No studies were located in the literature reviewed.		D: In some individuals exposure to copper produces pruritic dermatitis.	D: No studies were located in the literature reviewed.
	D: No studies were located regarding lethality in humans or animals following exposure.	D: Hemolytic anemia was observed in a severely burned and debilitated child in whom copper sulfate crystals were being applied to granulation tissue..	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.		D: No studies were located in the literature reviewed.		

Notes:
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DIBENZO(A,H)ANTHRACENE [1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Dibenzo(a,h)anthracene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals.	**I:** No studies were located regarding systemic effects in humans or animals.	**I:** No studies were located regarding developmental effects in humans or animals.	**I:** No studies were located regarding reproductive effects in humans or animals.	**I:** No studies were located regarding genotoxic effects in humans or animals.	**I:** No studies were located regarding neurological effects in humans or in animals.	**I:** No studies were located regarding immunological effects in humans or in animals.	**I:** No studies were located regarding carcinogenicity in humans or in animals.
	O: No studies were located regarding lethality in humans.	**O:** Minimal information is available regarding systemic effects in humans or animals.	**O:** No studies were located regarding developmental effects in humans.	**O:** No studies were located regarding reproductive effects in humans.	**O:** No studies were located regarding genotoxic effects in humans or in animals.	**O:** No studies were located regarding neurological effects in humans or in animals.	**O:** No studies were located regarding immunological effects in humans or in animals.	**O:** Limited studies were located regarding carcinogenicity in humans or in animals.
	D: No studies were located regarding lethality in humans or in animals.	**D:** Minimal information is available regarding systemic effects in humans or animals.	**D:** No studies were located regarding developmental effects in humans.	**D:** No studies were located reproductive effects in humans or in animals.	**D:** No studies were located regarding genotoxic effects in humans or in animals.	**D:** No studies were located regarding neurological effects in humans or in animals.	**D:** No studies were located regarding immunological effects in humans or in animals.	**D:** No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
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FLUORANTHENE [1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Fluoranthene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Minimal information is available regarding systemic effects in humans or animals.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: No studies were located regarding genotoxic effects in humans.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
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FLUORENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Fluorene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Minimal information is available regarding systemic effects in humans or animals.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: No studies were located regarding genotoxic effects in humans.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
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INDENO(1,2,3-CD)PYRENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Indeno(1,2,3-cd)pyrene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Minimal information is available regarding systemic effects in humans or animals.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: Single topical application of 100 mg was reported to bind to DNA in CD-mouse skin.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
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LEAD [1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Lead Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
Lead is especially dangerous to unborn children. More of the lead swallowed by children enters their bodies and they are more sensitive to its effects.	Lethality data for oral exposure is limited to LDLO values. The lowest LDLO value for a dog is 191 mg/kg.	The end points of greatest concern for human health after oral exposure are heme synthesis, and erythropoiesis, neurobehavioral toxicity, cardiovascular toxicity, and vitamin D metabolism and growth.	Studies provide no evidence that oral exposure to lead results in malformations.	Caused irregular estrous cycles in females , testicular damage was seen in male rats.	Conflicting information is available, a clastogenic effect has been suggested.	Nerve conduction velocity is slowed. In children effects such as lower IQ levels have been associated with lead exposure.	No information is provided.	Statistically increased incidences of kidney tumors.

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MANGANESE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Manganese Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
A small amount of manganese each day is believed to be important in maintaining your health. However, too much manganese can cause serious illness. Manganese miners or steel workers exposed to high levels of manganese dust may have mental and emotional disturbances.	I: No studies were located regarding lethality in humans or animals following exposure.	I: May cause respiratory, hematological hepatic, and renal effects.	I: Very little information is available on the developmental effects.	I: Sexual impotence was reported in males suffering from "manganism".	I: No studies were located regrding genotoxic effects in humans or in animals.	I: Exposure to high levels may cause a disabling sydrome of neurological effects termed "manganism".	I: No studies were located regarding immunological effects in humans or animals.	I: No studies were located regarding cancer effects in humans or in animals.
	O: No studies were located regarding lethality in humans or animals following exposure.	O: Studies in animals provide data regarding the effects on systemic target tissue following ingestion.	O: The incidence of birth defects has beeen investigated but the data available are too limited to judge if the incidence is higher than expected.	O: No studies were located regarding reproductive effects in humans. In animals, the principal effect seems to be decreased testosterone production.	O: No studies were located regarding genotoxic effects in humans. In male rats, repeated oral doses of 0.014 mg/kg/d for 80 days did not produce any significant chromosomal damage.	O: Limited evidence suggests that oral exposure leads to neurological effects in humans.	O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located in the literature reviewed.	O: No studies were located regarding carcinogenic effects in humans. In animals, chronic feeding studies have yielded eqivocal evidence of a carcinogenic potential. D: No studies were located in the literature reviewed.
	D: No studies were located regarding lethality in humans or animals following exposure.	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.		

Notes:
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MERCURY (1)

Summary of Primary Health Effects in Humans and Experimental Animals

Health Effects by Route of Exposure and Endpoint of Intent								
Overview of Mercury Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Long term exposure to organic or inorganic mercury can irreversibly damage the brain, kidneys, or developing fetuses. The form of mercury and the way people are exposed to it influence which of these health effects will be more severe.	I: Following acute exposure to high concentrations death was attributed to loss of respiratory function as a result of severe damage to pulmonary tissue. O: The lethal doses ranged from 29 to at least 50 mg/kg. D: No studies were located regarding lethality in humans or experimental animals.	I: Serious cardiovascular and pulmonary effects in humans Gastrointestinal, hepatic and renal effects. O: Kidney and central nervous system effects. D: Studies report the occurrence of neurotoxic and nephrotoxic effects following dermal exposure.	I: Studies in humans following prenatal exposure to mercury suggest chronic exposure results in increased frequencies of menstrual disturbances and spontaneous abortions. O: No studies were located regarding developmental effects in humans. In animals, increased percentage of fetal resorptions were observed (hamsters). D: No studies were located regarding developmental effects in humans or experimental animals.	I: Exposure to metallic mercury causes prolongation of estrus cycles. O: No studies were located regarding developmental effects in humans. In animals 1 mg /k/day affected male fertility. D: No studies were located regarding reproductive effects in humans or experimental animals.	I: Increased incidence of structural chromosomal anomalies. O: A positive correlation between blood mercury levels and increased frequencies of chromosomal aberrations was reported. D: No studies were located regarding genotoxic effects in humans or experimental animals.	I: Central nervous system is critical system for elemental mercury. O: Studies failed to reveal any evidence of neurotoxicity in mice administered 1 or 3 mg/kg/day of $HgCl_2$. D: Exposure via the dermal route is one of the most common routes of exposure, therefore symptom such as acrodynia may be related to the dermal route of exposure.	I: No studies were located regarding immunological effects in humans or in animals. O: Evidence indicates immune system is affected. D: Contact allergies have been reported however results are not conclusive.	I: There were no reliable studies indicating that inorganic or organic mercury are carcinogenic. O: There were no reliable studies indicating that inorganic or organic mercury are carcinogenic. D: No studies were located regarding carcinogenic effects in humans or in animals.

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METHYLENE CHLORIDE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Methylene Chloride Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
Irritates the eyes, nose and throat. Methylene chloride can affect the central nervous system. May cause symptoms similar to those of alcohol.	I: Exposure to exceedingly high human fatalities. LC50 value ranges from 11,000 to 16,000 ppm. O: Oral LD50 ranges from 1,000 to 2,000 mg/kg. D: No studies were located.	I: Central nervous system, hepatic effects, renal effects. O: Hepatic effects. D: No studies were located.	I: Evidence does currently exist to conclusively characterize the developmentally toxic potential of methylene chloride in humans. O: Evidence does currently exist to conclusively characterize the developmentally toxic potential of methylene chloride in humans. D: No studies were located.	I: Methylene chloride did not adversely affect reproduction in rats at 0, 100, 500, or 1,500 ppm . O: No information was provided regarding reproductive effects. D: No studies were located.	I: Evidence of mutagenicity in mammalian cells is lacking. O: Evidence of mutagenicity in mammalian cells is lacking. D: No studies were located.	I: No information was provided. O: No information was provided. D: No studies were located.	I: No information was provided. O: No information was provided. D: No studies were located regarding immunological effects in humans or in animals.	I: A dose dependent increase in liver and lung adenomas and carcinomas occurred after exposure to 2,000 or 4,000 ppm (lifetime) (rat). O: An increase in liver tumors was noted at 50 and 250 mg/kg/day. D: No studies were located regarding carcinogenic effects in experimental animals.

Notes:
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NAPHTHALENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Naphthalene Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
The primary health concern for humans exposed is that of hemolytic anemia. Other effects include nausea, vomiting, kidney damage, and liver damage.	I: Studies show that at the highest level that could be generated in inhalation chambers no deaths occurred. O: Oral LD50 ranges from 2,200 and 2,400 mg/kg for male and female rats respectively. D: No deaths occurred within a 14-day observation period when naphthalene was applied at 2,500 mg/kg to the skin (rats)	I: Hematological effects, G.I. effects, renal effects. O: Hematological effects. D: Hematological effects.	I: No studies were located regarding developmental effects in humans or in animals. O: No cogenital effects were seen after administration of 300 mg/kg/day. D: No studies were located regarding developmental effects in humans or in animals.	I: No studies were located regarding reproductive effects in humans or in animals. O: Dosages up to 400 mg/kg/ day resulted in no apparent adverse reproductive effects. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans or in animals. D: No studies were located regarding genotoxic effects in humans or in animals.	I: Occurrence of nausea, headache malaise, and confusion. O: Neurological symptoms produced are confusion, and lethargy. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: Oral doses as high as 267 mg/kg/day for 14 days showed no effects on humoral immune responses. D: No studies were located regarding immunological effects in humans	I: Pulmonary adenomas at exposure levels of 10 or 30 ppm (mice). O: Rats receiving 41 mg/kg/day revealed no tumor development. D: No conclusive studies were located regarding carcinogenic effects in humans or in animals.

Notes:
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PHENANTHRENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Phenanthrene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals.	I: No studies were located regarding developmental effects in humans or in animals.	I: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals.	I: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals.
	O: No studies were located regarding lethality in humans.	O: Enzyme alterations in the mucosa of the G.I. tract.	O: No studies were located regarding developmental effects in humans.	O: No studies were located regarding reproductive effects in humans.	O: No studies were located regarding genotoxic effects in humans.	O: No studies were located regarding neurological effects in humans or in animals.	O: No studies were located regarding immunological effects in humans or in animals.	O: No studies were located regarding carcinogenic effects in humans or in animals.
	D: No studies were located regarding lethality in humans or animals.	D: Can cause skin disorders.	D: No studies were located regarding developmental effects in humans.	D: No studies were located regarding reproductive effects in humans or in animals.	D: No studies were located regarding genotoxic effects in humans.	D: No studies were located regarding neurological effects in humans or in animals.	D: No studies were located regarding immunological effects in humans or in animals.	D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
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(3): "No studies were located" indicates no studies were located by original source.

PYRENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Overview of Pyrene Related Health Effects	Health Effects by Route of Exposure and Endpoint of Intent							
	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
	I: No studies were located regarding lethality in humans or animals. O: No studies were located regarding lethality in humans. D: No studies were located regarding lethality in humans or animals.	I: No studies were located regarding systemic effects in humans or animals. O: Minimal information is available regarding systemic effects in humans or animals. D: Can cause skin disorders.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans. D: No studies were located regarding developmental effects in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans. D: No studies were located regarding genotoxic effects in humans.	I: No studies were located regarding neurological effects in humans or in animals. O: No studies were located regarding neurological effects in humans or in animals. D: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans or in animals. D: No studies were located regarding immunological effects in humans or in animals.	I: No studies were located regarding carcinogenic effects in humans or in animals. O: No studies were located regarding carcinogenic effects in humans. D: No studies were located that gave evidence of a direct association between dermal exposure and cancer induction.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
(2): "No information provided" indicates no information was provided by original source.
(3): "No studies were located" indicates no studies were located by original source.

SELENIUM[1]

Summary of Primary Health Effects in Humans and Experimental Animals

Health Effects by Route of Exposure and Endpoint of Intent								
Overview of Selenium Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Selenium can be toxic at levels only moderately higher than the nutritional requirement. Severity of the toxic effects depends on how much was ingested.	I: No studies were located regarding lethality in humans. In animals, LC50 values for 1,4,or 8 hour exposures were 12.7 mg/m3, 9mg/m3, and 1-4 mg/m3 respectively (guinea pig) (hydrogen selenide) O: No cases of death in humans in the U.S. have been attributable intermediate or chronic oral exposures.	I: Respiratory tract is the primary site of injury following exposure to selenium dust - gastrointestinal and cardiovascular effects also occur. O: Tachycardia has been reported as a result of acute oral exposure in humans.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies have demonstrated that selenium is teratogenic in humans.	I: No studies were located regarding reproductive effects in humans or in animals. O: No studies were located regarding reproductive effects in humans. In animals selenium administered in the diet or drinking water does over short exposure periods did not appear to affect the fertility of females, unless the intake is sufficiently high enough to cause general toxicity.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans.	I. Occupational: Headaches, dizziness, and malaise were reported by workers following acute occupational exposure. O: Following acute oral exposure to selenium compounds in humans irritability, chills, and tremors were reported.	I: No studies were located regarding immunological effects in humans or in animals. O: No studies were located regarding immunological effects in humans. In animals, rats administered sodium selenite in drinking water at a dose of 0.75mg/kg/day for 10 weeks exhibited reduced humoral antibody.	I: There are no epidemiologic data that support a causal association between the inhalation of elemental selenium dusts or selenium compounds and the induction of cancer in humans. O: In humans studies have revealed either no association between selenium and the incidence of cancer or a negative association.
D: No studies were located regarding the health effects associated with the dermal route of exposure in humans or in animals.								D: The results of animal studies have not indicated that elemental selenium or selenium compounds are carcinogenic when topically applied.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
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SILVER [1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Silver Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
No adverse health effect have been reported in humans. Some areas of the skin and other body tissues may turn gray after many exposures.	I: No studies were located lethality in humans or in animals. O: Death was reported in rats receiving 222.2 mg/kg/day of silver nitrate over a longer duration . D: No significant studies were located regarding lethality in humans or in animals.	I: Respiratory effects have been observed infrequently in humans. O: Gray discoloration of the skin has been observed . D: Exposure to silver for extended periods of time or repeated exposure can lead to local skin discoloration.	I: No studies were located regarding developmental effects in humans or in animals. O: No studies were located regarding developmental effects in humans or in animals. D: No studies were located regarding developmental effects in humans or in animals.	I: No studies were located regarding reproductive effects in humans or in animals. O: No significant studies were located regarding reproductive effects in humans or in animals. D: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regarding genotoxic effects in humans or in animals. O: No studies were located regarding genotoxic effects in humans or in animals. D: No studies were located regarding genotoxic effects in humans or in animals.	I: No studies were located regarding neurological effects in humans or in animals. O: Direct correlation between the exposure to silver and neurological effects has not been determined. O: No studies were located regarding neurological effects in humans or in animals.	I: No studies were located regarding immunological effects in humans or in animals. O: No information was provided. D: Medical case histories describe mild allergic responses. Sensitization has been observed.	I: No studies were located regarding the carcinogenicity of silver. O: No studies were located regarding the carcinogenicity of silver. D: No studies were located regarding the carcinogenicity of silver.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
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TETRACHLOROETHYLENE[1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Tetrachloroethylene Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
In high concentrations in air single exposures can cause CNS effects. In amounts much higher than typical environmental levels tetrachloroethylene has been shown to cause liver and kidney cancers, and leukemia.	I: LC50 of 5,200 ppm for 4 hr for mice was reported. O: LD50s of 3,835 and 3,005 mg/kg were determined for male and female rats. D: Pertinent data regarding lethality due to dermal exposure were not found in the available literature.	I: The CNS, liver, and kidney are the main target organs of inhalation exposure. O: The CNS, liver, and kidney are the main target organs of oral exposure. D: Pertinent data regarding systemic effects due to dermal exposure were not found in the available literature.	I: No studies were located regarding developmental effects in humans. In animals, mice exposed to 300 ppm for 7 h/day on days 16 to 15 of gestation had increased embryotoxic effects. O: Pertinent data regarding developmental toxicity due to oral exposure were not found in the available literature. D: Pertinent data regarding developmental toxicity due to dermal exposure were not found in the available literature.	I: An increased frequency of abnormal sperm was observed in mice exposed to 500 but not to 100 ppm for 7 h/day on 5 consecutive days. O: Pertinent data regarding reproductive toxicity due to oral exposure were not found in the available literature. D: Pertinent data regarding developmental toxicity due to dermal exposure were exposure were not found in the available literature.	I: No substantial studies were located regarding genotoxic effects in humans or in animals. O: No substantial studies were located regarding genotoxic effects in humans or in animals. D: Pertinent data regarding developmental toxicity due to dermal exposure were not found in the available literature.	I: No information was provided. O: No information was provided. D: No information was provided. D: Rapid, shallow breathing, and convulsions were observed in animals dermally exposed.	I: No information was provided. O: No information was provided. D: No information was provided. D: No studies were located regarding immunological effects in humans	I: Exposure to 100 or 200 ppm showed significantly increased incidences of hepatocellular carcinomas at both concentrations. O: Increased incidences of hepatocellular carcinomas in mice treated by gavage. D: No papillomas or carcinomas of the skin or tumors at any distal sites following dermal application of the compound.

Notes:
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(I): Inhalation route of exposure.
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TRICHLOROETHYLENE [1]

Summary of Primary Health Effects in Humans and Experimental Animals

Health Effects by Route of Exposure and Endpoint of Intent								
Overview of Trichloroethylene Related Health Effects	Death	Systemic Effects	Developmental Effects	Reproductive Effects	Genotoxic Effects	Neurological Effects	Immunological Effects	Cancer
Dizziness, headache, slowed reaction time, sleepiness, and facial numbness occurred in workers breathing trichloroethylene. Central nervous effects have also been seen after ingestion. After long-term exposure liver, kidney, hematological effects occur.	I: Four-hour inhalation LC50 of 12,500 ppm for rats has been calculated. O: A single dose of 7,000 mg/kg is lethal to humans. D: Dermal LD50 is ≥ 29 g/kg.	I: Principal targets for inhaled trichloroethylene are the central nervous system, liver, kidney, and hematological system. O: Animal studies indicate that the liver and kidney are the principal target organs of oral exposure. D: Pertinent data regarding systemic effects were not available.	I: Studies suggest trichloroethylene is fetotoxic and has developmental effects. O: A reduction in the number of live pups occurred in rats. D: Pertinent data developmental effects were not available.	I: A significant increase in sperm abnormalities in mice that were exposed to 2,000 ppm, but not 200 ppm. O: Impaired copulatory behavior was observed at 1,000 mg/kg/day. D: Pertinent data reproductive effects were not available.	I: No conclusive information was available regarding genotoxic effects. O: No conclusive information was available regarding genotoxic effects. D: Pertinent data genotoxic effects were not available.	I: No information was provided. O: No information was provided. D: No information was provided.	I: No information was provided. regarding immunological effects in humans or in animals. O: No information was provided. regarding immunological effects in humans or in animals. D: No information was provided. regarding immunological effects in humans or in animals.	I: Increased incidences of tumors have been observed in animals. O: Several studies have indicated that an association may exist between leukemia in humans and exposure to trichloroethylene. D: Topical application of 1 mg 3 times per week for 581 days was not tumorigenic in female mice.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
(D): Dermal route of exposure.
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(3): "No studies were located" indicates no studies were located by original source.

ZINC[1]

Summary of Primary Health Effects in Humans and Experimental Animals

	Health Effects by Route of Exposure and Endpoint of Intent							
Overview of Zinc Related Health Effects	**Death**	**Systemic Effects**	**Developmental Effects**	**Reproductive Effects**	**Genotoxic Effects**	**Neurological Effects**	**Immunological Effects**	**Cancer**
Eating or drinking too much zinc is known to affect helath in humans. The major effect of over exposure to zinc is that of anemai or "iron poor blood" and digestive problems.	I: In humans death has resulted from acute high dose inhalation of zinc chloride smoke.	I: Respiratory and hematological effects may occur following exposure by inhalation.	I: No studies were located regarding developmental effects in humans or in animals.	I: No studies were located regarding reproductive effects in humans or in animals.	I: No studies were located regrding genotoxic effects in humans. Mice exposed to zinc oxide had an increase in chromosomal aberrations in bone marrow cells.	I: Nonspecific neurological effects such as headaches and malaise have been reported in humans.	I: No studies were located regarding immunological effects in humans or animals.	I: No relationship between the ocurence of cancer in humans and occupational exposure to zinc has been demostrated.
	O: 850 mg/kg/d as zinc oxide in the diet for between 3 and 13 days was lethal to ferrets.	O: Ingestion may result in a variety of systemic effects in the gastrointestinal and hematopoietic systems of humans and animals.	O: Fetal health risks may result from zinc deficiency. No teratogenic effects were reported in animals.	O: No studies were located regarding reproductive effects in humans. In animals, total cessation of reproduction was observed in female rats ingesting zinc in a diet containing 500 mg/kg/d..	O: No studies were located regarding genotoxic effects in humans. In animals chromosomal abberations have been observed in mice following oral exposure to zinc at 650 mg/kg/d.	O: Light-headedness, lethargy, staggering, and difficulty in writing may occur following expoure.	O: Exposure has been reported to imapair immune and inflammatory responses. D: No studies were located in the literature reviewed.	O: Very limited data were found regarding cancer in humans and animals.
	D: No studies were located regarding lethality in humans or animals following exposure.	D: Zinc has been reported to promote the healing of wounds when applied dermally.	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.	D: No studies were located in the literature reviewed.		D: No studies were located in the literature reviewed.

Notes:
(1): Refer to original source (1990 ATSDR) for details
(I): Inhalation route of exposure.
(O): Oral route of exposure.
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(2): "No information provided" indicates no information was provided by original source.
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Appendix M
Landfill Gas Model

Woerd Avenue Landfill Site Human Health Risk Assessment
Landfill Gas Dispersion Modeling Results

Prepared by: VRT
Date: 2/16/99
Checked by:
Date:

Input Information:

NMOC concentration in landfill gas: 595 ppmdv expressed as hexane with MW of: 86.18
Equivalent mass/volume conc. is: 2095636.228 µg/m³ [µg/m³ = (ppm)40.87(MW)]
LANDFILL Maximum NMOC em. rate: 0.114 Mg/yr
0.0036 g/s

Area Sources 100% % of total Landfill Gas

Area source: 8.69 Acres
35167.561 m²
Total Area: 35167.561 Total m²
Area sources NMOC em. rate: 0.0036 g/s
1.028E-07 g/(s * m²)

Point Sources 0% % of total Landfill Gas
Point sources are capped and opened only for sampling
Point sources NMOC em. rate: 0.0000 g/s
Number of point Sources emitting Landfill Gas 3
Individual Point Source NMOC em. Rate: 0.0000 g/s

NMOC Concentrations
Highest One-Hour Average - ISCST3 using 36-Directional Screening Meteorology

	Maximum Concentrations				
Case	*1-Hour Conc. (ug/m3)*	*3-Hour Conc. (ug/m3)*	*8-Hour Conc. (ug/m3)*	*24-Hour Conc. (ug/m3)*	*Annual Conc. (ug/m3)*
Area Sources	5.481	4.933	3.837	2.193	0.439
Total	5.481	4.933	3.837	2.193	0.439

Woerd Avenue Landfill Site Human Health Risk Assessment
Landfill Gas Dispersion Modeling Results

Prepared by: VRT
Date: 2/16/99
Checked by:
Date:

Landfill Gas Speciated VOC Content (in ppbv)

Pollutant	Sample Identification				Molecular Weight
	LFG-1 (ppbv)	LFG-2 (ppbv)	LFG-3 (ppbv)	Maximum (ppbv)	
Freon 12	*0.25*	3.9	9.3	9.3	**120.91**
Freon 114	*0.25*	1.8	*0.405*	1.8	**170.93**
Chloromethane	*0.25*	*0.42*	*0.405*	0.42	**50.49**
Vinyl Chloride	*0.25*	*0.42*	*0.405*	0.42	**62.5**
Bromomethane	*0.25*	*0.42*	*0.405*	0.42	**94.94**
Chloroethane	*0.25*	*0.42*	*0.405*	0.42	**64.52**
Freon 11	*0.25*	*0.42*	13	13	**137.4**
1,1-Dichloroethene	*0.25*	*0.42*	*0.405*	0.42	**96.94**
Freon 113	*0.25*	0.93	1.6	1.6	**187.38**
Methylene Chloride	*0.25*	*0.42*	*0.405*	0.42	**84.93**
1,1-Dichloroethane	*0.25*	*0.42*	10	10	**98.96**
cis-1,2-Dichloroethene	*0.25*	1.3	2.1	2.1	**96.94**
Chloroform	*0.25*	*0.42*	2.0	2	**119.39**
1,1,1-Trichloroethane	*0.25*	*0.42*	9.8	9.8	**133.41**
Carbon Tetrachloride	*0.25*	*0.42*	*0.405*	0.42	**153.82**
Benzene	*0.25*	*0.42*	*0.405*	0.42	**78.11**
1,2-Dichloroethane	*0.25*	*0.42*	*0.405*	0.42	**98.96**
Trichloroethane	*0.25*	25	88	88	**133.41**
1,2-Dichloropropane	*0.25*	*0.42*	*0.405*	0.42	**112.99**
cis-1,3-Dichloropropene	*0.25*	*0.42*	*0.405*	0.42	**110.97**
Toluene	*0.25*	*0.42*	*0.405*	0.42	**92.14**
trans-1,3-Dichloropropene	*0.25*	*0.42*	*0.405*	0.42	**110.97**
1,1,2-Trichloroethane	*0.25*	*0.42*	*0.405*	0.42	**133.41**
Tetrachloroethene	*0.25*	14	180	180	**165.83**
Ethylene Dibromide	*0.25*	*0.42*	*0.405*	0.42	**187.87**
Chlorobenzene	*0.25*	*0.42*	*0.405*	0.42	**112.56**
Ethyl Benzene	*0.25*	*0.42*	*0.405*	0.42	**106.17**
m,p-Xylene	*0.25*	*0.42*	*0.405*	0.42	**106.17**
o-Xylene	*0.25*	*0.42*	*0.405*	0.42	**106.17**
Styrene	*0.25*	*0.42*	*0.405*	0.42	**104.15**
1,1,2,2-Tetrachloroethane	*0.25*	*0.42*	*0.405*	0.42	**167.85**
1,3,5-Trimethylbenzene	*0.25*	*0.42*	*0.405*	0.42	**120.2**
1,2,4-Trimethylbenzene	*0.25*	*0.42*	*0.405*	0.42	**120.2**
1,3-Dichlorobenzene	*0.25*	*0.42*	*0.405*	0.42	**147.01**
1,4-Dichlorobenzene	*0.25*	*0.42*	*0.405*	0.42	**147.01**
Chlorotoluene	*0.25*	*0.42*	*0.405*	0.42	**126.59**
1,2-Dichlorobenzene	*0.25*	*0.42*	*0.405*	0.42	**147.01**
1,2,4-Trichlorobenzene	*0.25*	*0.42*	*0.405*	0.42	**181.45**
Hexachlorobutadiene	*0.25*	*0.42*	*0.405*	0.42	**260.76**
Propylene	*1.0*	5.4	3.8	5.4	**42.08**
1,3-Butadiene	*1.0*	*1.7*	*1.6*	1.7	**54.09**
Acetone	*1.0*	3.9	*1.6*	3.9	**58.08**
Carbon Disulfide	*1.0*	*1.7*	*1.6*	1.7	**76.14**
2-Propanol	*1.0*	*1.7*	*1.6*	1.7	**60.1**
trans-1,2-Dichloroethene	*1.0*	*1.7*	*1.6*	1.7	**96.94**
Vinyl Acetate	*1.0*	*1.7*	*1.6*	1.7	**86.09**
2-Butanone (MEK)	*1.0*	*1.7*	*1.6*	1.7	**72.11**
Hexane	*1.0*	*1.7*	*1.6*	1.7	**86.18**
Tetrahydrofuran	*1.0*	*1.7*	*1.6*	1.7	**72.11**
Cyclohexane	*1.0*	*1.7*	*1.6*	1.7	**84.16**

Woerd Avenue Landfill Site Human Health Risk Assessment
Landfill Gas Dispersion Modeling Results

Prepared by: VRT
Date: 2/16/99
Checked by:
Date:

Landfill Gas Speciated VOC Content (in ppbv)

	Sample Identification				
Pollutant	LFG-1 (ppbv)	LFG-2 (ppbv)	LFG-3 (ppbv)	Maximum (ppbv)	Molecular Weight
1,4-Dioxane	*1.0*	*1.7*	*1.6*	1.7	**88.1**
Bromodichloromethane	*1.0*	*1.7*	*1.6*	1.7	**163.83**
Bromoform	*1.0*	*1.7*	*1.6*	1.7	**252.77**
4-Ethyltoluene	*1.0*	*1.7*	*1.6*	1.7	**200.26**
Ethanol	*1.0*	8.7	6.2	8.7	**46.07**
Methyl tert-Butyl Ether	*1.0*	*1.7*	*1.6*	1.7	**88.15**
Heptane	*1.0*	*1.7*	*1.6*	1.7	**100.21**

Not Detected - Half of Detection Level Used

Woerd Avenue Landfill Site Human Health Risk Assessment
Landfill Gas Dispersion Modeling Results

Prepared by: VRT
Date: 2/16/99
Checked by:
Date:

Individual Carcinogenic VOC Predicted Ambient Concentrations

Compound	Molecular Weight (g/mole)	Maximum Concentration in Landfill Gas (ppbv)	Maximum Concentration in Landfill Gas (µg/m³)	Ratio of VOC to NMOC Concentration in Landfill Gas	Annual Concentration Maximum (µg/m³)
Freon 12	120.91	9.3	46.0	2.19E-05	9.62E-06
Freon 114	170.93	1.8	12.6	6.00E-06	2.63E-06
Chloromethane	50.49	0.4	0.9	4.14E-07	1.81E-07
Vinyl Chloride	62.5	0.4	1.1	5.12E-07	2.24E-07
Bromomethane	94.94	0.4	1.6	7.78E-07	3.41E-07
Chloroethane	64.52	0.4	1.1	5.28E-07	2.32E-07
Freon 11	137.4	13.0	73.0	3.48E-05	1.53E-05
1,1-Dichloroethene	96.94	0.4	1.7	7.94E-07	3.48E-07
Freon 113	187.38	1.6	12.3	5.85E-06	2.56E-06
Methylene Chloride	84.93	0.4	1.5	6.96E-07	3.05E-07
1,1-Dichloroethane	98.96	10.0	40.4	1.93E-05	8.46E-06
cis-1,2-Dichloroethene	96.94	2.1	8.3	3.97E-06	1.74E-06
Chloroform	119.39	2.0	9.8	4.66E-06	2.04E-06
1,1,1-Trichloroethane	133.41	9.8	53.4	2.55E-05	1.12E-05
Carbon Tetrachloride	153.82	0.4	2.6	1.26E-06	5.52E-07
Benzene	78.11	0.4	1.3	6.40E-07	2.81E-07
1,2-Dichloroethane	98.96	0.4	1.7	8.11E-07	3.55E-07
Trichloroethane	133.41	88.0	479.8	2.29E-04	1.00E-04
1,2-Dichloropropane	112.99	0.4	1.9	9.26E-07	4.06E-07
cis-1,3-Dichloropropene	110.97	0.4	1.9	9.09E-07	3.99E-07
Toluene	92.14	0.4	1.6	7.55E-07	3.31E-07
trans-1,3-Dichloropropene	110.97	0.4	1.9	9.09E-07	3.99E-07
1,1,2-Trichloroethane	133.41	0.4	2.3	1.09E-06	4.79E-07
Tetrachloroethene	165.83	180.0	1219.9	5.82E-04	2.55E-04
Ethylene Dibromide	187.87	0.4	3.2	1.54E-06	6.75E-07
Chlorobenzene	112.56	0.4	1.9	9.22E-07	4.04E-07
Ethyl Benzene	106.17	0.4	1.8	8.70E-07	3.81E-07
m,p-Xylene	106.17	0.4	1.8	8.70E-07	3.81E-07
o-Xylene	106.17	0.4	1.8	8.70E-07	3.81E-07
Styrene	104.15	0.4	1.8	8.53E-07	3.74E-07
1,1,2,2-Tetrachloroethane	167.85	0.4	2.9	1.37E-06	6.03E-07
1,3,5-Trimethylbenzene	120.2	0.4	2.1	9.85E-07	4.32E-07
1,2,4-Trimethylbenzene	120.2	0.4	2.1	9.85E-07	4.32E-07
1,3-Dichlorobenzene	147.01	0.4	2.5	1.20E-06	5.28E-07
1,4-Dichlorobenzene	147.01	0.4	2.5	1.20E-06	5.28E-07
Chlorotoluene	126.59	0.4	2.2	1.04E-06	4.55E-07
1,2-Dichlorobenzene	147.01	0.4	2.5	1.20E-06	5.28E-07
1,2,4-Trichlorobenzene	181.45	0.4	3.1	1.49E-06	6.52E-07
Hexachlorobutadiene	260.76	0.4	4.5	2.14E-06	9.37E-07
Propylene	42.08	5.4	9.3	4.43E-06	1.94E-06
1,3-Butadiene	54.09	1.7	3.8	1.79E-06	7.86E-07
Acetone	58.08	3.9	9.3	4.42E-06	1.94E-06
Carbon Disulfide	76.14	1.7	5.3	2.52E-06	1.11E-06
2-Propanol	60.1	1.7	4.2	1.99E-06	8.74E-07
trans-1,2-Dichloroethene	96.94	1.7	6.7	3.21E-06	1.41E-06
Vinyl Acetate	86.09	1.7	6.0	2.85E-06	1.25E-06

Woerd Avenue Landfill Site Human Health Risk Assessment
Landfill Gas Dispersion Modeling Results

Prepared by: VRT
Date: 2/16/99
Checked by:
Date:

Individual Carcinogenic VOC Predicted Ambient Concentrations

Compound	*Molecular Weight (g/mole)*	*Maximum Concentration in Landfill Gas (ppbv)*	*Maximum Concentration in Landfill Gas (µg/m³)*	*Ratio of VOC to NMOC Concentration in Landfill Gas*	*Annual Concentration Maximum (µg/m³)*
2-Butanone (MEK)	72.11	1.7	5.0	2.39E-06	1.05E-06
Hexane	86.18	1.7	6.0	2.86E-06	1.25E-06
Tetrahydrofuran	72.11	1.7	5.0	2.39E-06	1.05E-06
Cyclohexane	84.16	1.7	5.8	2.79E-06	1.22E-06
1,4-Dioxane	88.1	1.7	6.1	2.92E-06	1.28E-06
Bromodichloromethane	163.83	1.7	11.4	5.43E-06	2.38E-06
Bromoform	252.77	1.7	17.6	8.38E-06	3.67E-06
4-Ethyltoluene	200.26	1.7	13.9	6.64E-06	2.91E-06
Ethanol	46.07	8.7	16.4	7.82E-06	3.43E-06
Methyl tert-Butyl Ether	88.15	1.7	6.1	2.92E-06	1.28E-06
Heptane	100.21	1.7	7.0	3.32E-06	1.46E-06

Appendix N
Risk Calculations

TABLE 1
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT/FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF NONCANCER RISK FROM INCIDENTAL INGESTION OF SEDIMENT - HOT SPOT LOCATION COVE-2

$ADD_{sed} = [OHM]_{sed} * I * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
I	= daily sediment ingestion rate on days exposed during the exposure period (mg/day)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/day)
ED	= exposure duration: the typical duration of each exposure event (day/event)
EP	= duration of exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)
C_1	= conversion factor (mass) (kg/mg)

Chemical	**OHM_{soil}** Conc. in Sediment[1] (mg/kg)	**I** Ingestion Rate[2] (mg/day)	**RAF** Relative Absorption Factor[3] (unitless)	**EF** Exposure Frequency[4] (event/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period (years)	**C_1** Conv. Factor (mass) (kg/mg)	**BW** Body Weight[5] (kg)	**AP** Averaging Period For Noncarcinogens (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Chronic Oral RfD** (mg/kg-day)	**Hazard Quotient**	**Distribution of Risk by Chemical** (%)
PAHs													
Benzo(a)anthracene	1.4	50	0.91	1.7E-01	1	7	1.0E-06	31	7	3.5E-07	3.0E-01	1.2E-06	0%
Benzo(a)pyrene	1.3	50	0.91	1.7E-01	1	7	1.0E-06	31	7	3.2E-07	3.0E-02	1.1E-05	0%
Chrysene	1.5	50	0.91	1.7E-01	1	7	1.0E-06	31	7	3.7E-07	3.0E+00	1.2E-07	0%
Fluoranthene	3.0	50	1	1.7E-01	1	7	1.0E-06	31	7	8.2E-07	4.0E-02	2.1E-05	0%
Phenanthrene	2.3	50	0.91	1.7E-01	1	7	1.0E-06	31	7	5.7E-07	3.0E-01	1.9E-06	0%
Pyrene	2.3	50	1	1.7E-01	1	7	1.0E-06	31	7	6.3E-07	3.0E-02	2.1E-05	0%
Metals													
Arsenic	14	50	1	1.7E-01	1	7	1.0E-06	31	7	3.8E-06	3.0E-04	1.3E-02	0%
Barium	170	50	1	1.7E-01	1	7	1.0E-06	31	7	4.7E-05	7.0E-02	6.7E-04	0%
Cadmium	14	50	1	1.7E-01	1	7	1.0E-06	31	7	3.8E-06	1.5E-03	2.6E-03	0%
Chromium	74	50	1	1.7E-01	1	7	1.0E-06	31	7	2.0E-05	1.0E+00	2.0E-05	0%
Lead	110,000	50	0.5	1.7E-01	1	7	1.0E-06	31	7	1.5E-02	7.5E-04	2.0E+01	100%
Manganese	190	50	1	1.7E-01	1	7	1.0E-06	31	7	5.2E-05	1.4E-01	3.7E-04	0%
Zinc	600	50	1	1.7E-01	1	7	1.0E-06	31	7	1.6E-04	3.0E-01	5.5E-04	0%
PCBs / Pesticides													
Dieldrin	0.0217	50	1	1.7E-01	1	7	1.0E-06	31	7	5.9E-09	5.0E-05	1.2E-04	0%
Aroclor 1254	0.136	50	0.85	1.7E-01	1	7	1.0E-06	31	7	3.2E-08	2.0E-05	1.6E-03	0%
											Hazard Index =	**2.0E+01**	**100%**

Notes:
(1): Detected concentration from Hot-Spot location Cove-2.
(2): MDEP, 1995.
(3): MDEP, 1994.
(4): Frequency based on 62 events/ 365 days (2 days per week, months of April through October).
(5): Median body weight for a male child 6-13 years old.

TABLE 2
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT/FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF CANCER RISK FROM INCIDENTAL INGESTION OF SEDIMENT - HOT SPOT LOCATION COVE- 2

$ADD_{sed} = [OHM]_{sed} * I * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
I	= daily sediment ingestion rate on days exposed during the exposure period (mg/day)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/day)
ED	= exposure duration: the typical duration of each exposure event (day/event)
EP	= duration of exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (days)
C_1	= conversion factor (mass) (kg/mg)

Chemical	**OHM_{sed}** Conc. in Sediment [1] (mg/kg)	**I** Ingestion Rate [2] (mg/day)	**RAF** Relative Absorption Factor (unitless)	**EF** Exposure Frequency [3] (event/day)	**ED** Duration of Exposure Event (day/event)	**EP** Duration of Exposure Period [4] (years)	**C_1** Conv. Factor (mass) (kg/mg)	**BW** Body Weight [5] (kg)	**AP** Averaging Period Carcinogens (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Oral Cancer Slope Factor** $(mg/kg\text{-}day)^{-1}$	**Chemical Specific Cancer Risk**	**Distribution of Risk by Chemical** (%)
PAHs													
Benzo(a)anthracene	1.4	50	1	1.7E-01	1	7	1.0E-06	31	75	3.6E-08	7.3E-01	2.6E-08	3%
Benzo(a)pyrene	1.3	50	1	1.7E-01	1	7	1.0E-06	31	75	3.3E-08	7.3E+00	2.4E-07	29%
Chrysene	1.5	50	1	1.7E-01	1	7	1.0E-06	31	75	3.8E-08	7.3E-02	2.8E-09	0%
Metals													
Arsenic	14	50	1	1.7E-01	1	7	1.0E-06	31	75	3.6E-07	1.5E+00	5.4E-07	65%
PCBs / Pesticides													
4,4'-DDD	0.012	50	1	1.7E-01	1	7	1.0E-06	31	75	3.0E-10	2.4E-01	7.2E-11	0%
Dieldrin	0.022	50	1	1.7E-01	1	7	1.0E-06	31	75	5.5E-10	1.6E+01	8.9E-09	1%
Aroclor 1260	0.12	50	0.85	1.7E-01	1	7	1.0E-06	31	75	2.6E-09	2.0E+00	5.2E-09	1%
										Excess Lifetime Cancer Risk		**8.E-07**	**100%**

Notes:
(1): Detected concentrations from Hot-Spot location Cove-2.
(2): MDEP, 1995.
(3): Frequency based on 62 events / 365 days (2 days per week, months of April through October).
(4): Receptor is a child between the ages of 6 and 13 years of age.
(5): Median body weight , ages 6-13 years.

TABLE 3
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT/FUTUTRE CHILD TRESPASSING SCENARIO
ESTIMATION OF NONCANCER RISK FROM DERMAL CONTACT WITH SEDIMENT - HOT SPOT LOCATION COVE-2

$ADD_{sed} = [OHM]_{sed} * SA * MS * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
SA	= skin surface area in contact with sediment on days exposed (cm^2/day)
MS	= mass of sediment in contact with the unit surface area of skin (mg/cm^2)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (events/day)
ED	= exposure duration: the typical duration of each exposure event (days/event)
EP	= exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)
C_1	= conversion factor (mass) (kg/mg)

Chemical	**OHM_{sed}** Conc. in Sediment [1] (mg/kg)	**SA** Skin Surface Area [2] (cm^2/day)	**MS** Mass of Sediment Adhered [3] (mg/cm^2)	**RAF** Relative Absorption Factor [4] (unitless)	**EF** Exposure Frequency [5] (event/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period (years)	**C_1** Conv. Factor (mass) (kg/mg)	**BW** Body Weight [6] (kg)	**AP** Averaging Period for Non Carcinogens (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Chronic Oral RfD** (mg/kg-day)	**Hazard Quotient**	**Distribution of Risk by Chemical** (%)
PAHs														
Benzo(a)anthracene	1.4	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	2.3E-06	3.0E-01	7.7E-06	0%
Benzo(a)pyrene	1.3	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	2.2E-06	3.0E-02	7.2E-05	0%
Chrysene	1.5	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	2.5E-06	3.0E+00	8.3E-07	0%
Fluoranthene	3.0	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	7	5.5E-06	4.0E-02	1.4E-04	0%
Phenanthrene	2.3	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	3.8E-06	3.0E-01	1.3E-05	0%
Pyrene	2.3	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	7	4.2E-06	3.0E-02	1.4E-04	0%
Metals														
Arsenic	14	3,296	0.51	0.03	1.7E-01	1	7	1.0E-06	31	7	3.9E-06	3.0E-04	1.3E-02	0%
Barium	170	3,296	0.51	1	1.7E-01	1	7	1.0E-06	31	7	1.6E-03	7.0E-02	2.2E-02	0%
Cadmium	14	3,296	0.51	0.14	1.7E-01	1	7	1.0E-06	31	7	1.8E-05	1.5E-03	1.2E-02	0%
Chromium	74	3,296	0.51	0.04	1.7E-01	1	7	1.0E-06	31	7	2.7E-05	1.0E+00	2.7E-05	0%
Lead	110,000	3,296	0.51	0.006	1.7E-01	1	7	1.0E-06	31	7	6.1E-03	7.5E-04	8.1E+00	99%
Manganese	190	3,296	0.51	1	1.7E-01	1	7	1.0E-06	31	7	1.8E-03	1.4E-01	1.3E-02	0%
Zinc	600	3,296	0.51	0.02	1.7E-01	1	7	1.0E-06	31	7	1.1E-04	3.0E-01	3.7E-04	0%
PCBs/Pesticides														
Dieldrin	0.0217	3,296	0.51	0.25	1.7E-01	1	7	1.0E-06	31	7	5.0E-08	5.0E-05	1.0E-03	0%
Aroclor 1254	0.136	3,296	0.51	0.067	1.7E-01	1	7	1.0E-06	31	7	8.4E-08	2.0E-05	4.2E-03	0%
												Hazard Index	**8.2E+00**	**100%**

Notes:
(1): Detected concentration from Hot-Spot location Cove-2.
(2): Median skin surface area of a child (average male and female) for hands, forearms, lower legs and feet for age group.
(3): MDEP, 1995.
(4): MDEP, 1994.
(5): Frequency based on 62 events/ 365 days (2 days per week, months of April through October).
(6): Median body weight for a child 6-13 years old.

TABLE 4
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT/FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF CANCER RISK FROM DERMAL CONTACT WITH SEDIMENT - HOT SPOT LOCATION COVE-2

$ADD_{sed} = [OHM]_{sed} * SA * MS * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
SA	= skin surface area in contact with sediment on days exposed (cm^2/day)
MS	= mass of sediment in contact with the unit surface area of skin (mg/cm^2)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (hours/day)
ED	= exposure duration: the typical duration of each exposure event (day/year)
EP	= exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (days)
C_1	= conversion factor (mass) (kg/mg)

Chemical	**OHM_{sed}** Conc. in Sediment [1] (mg/kg)	**SA** Skin Surface Area [2] (cm^2/day)	**MS** Mass of Soil Adhered [3] (mg/cm^2)	**RAF** Relative Absorption Factor [4] (unitless)	**EF** Exposure Frequency [5] (event/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period (years)	**C_1** Conv. Factor (mass) (kg/mg)	**BW** Body Weight [6] (kg)	**AP** Averaging Period Carcinogens[8] (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Oral Cancer Slope Factor** $(mg/kg\text{-}day)^{-1}$	**Chemical Specific Cancer Risk**	**Distribution of Risk by Chemical** (%)
PAHs														
Benzo(a)anthracene	1.4	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	2.4E-07	7.3E-01	1.8E-07	7%
Benzo(a)pyrene	1.3	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	2.2E-07	7.3E+00	1.6E-06	66%
Chrysene	1.5	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	2.6E-07	7.2E-02	1.9E-08	1%
Metals														
Arsenic	14	3,296	0.51	0.03	1.7E-01	1	7	1.0E-06	31	75	3.6E-07	1.5E+00	5.4E-07	22%
PCBs/Pesticides														
4,4'-DDD	0.012	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	2.0E-09	2.4E-01	4.8E-10	0%
Dieldrin	0.022	3,296	0.51	0.25	1.7E-01	1	7	1.0E-06	31	75	4.7E-09	1.6E+01	7.5E-08	3%
Aroclor 1260	0.12	3,296	0.51	0.067	1.7E-01	1	7	1.0E-06	31	75	6.9E-09	2.0E+00	1.4E-08	1%
											Excess Lifetime Cancer Risk		**2.E-06**	**100%**

Notes:
(1): Detected concentration from Hot-Spot location Cove-2.
(2): Median skin surface area of a child (average male and female) for hands, forearms, lower legs and feet for age group.
(3): MDEP, 1995.
(4): MDEP, 1994.
(5): Frequency based on 62 events/ 365 days (2 days per week, months of April through October).
(6): Median body weight for a child 6-13 years old.

TABLE 5
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT / FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF NONCANCER HEALTH EFFECTS FROM INCIDENTAL INGESTION OF SURFACE WATER - HOT SPOT LOCATION COVE- 2

$ADD_{sw} = [OHM]_{sw} * I * RAF * EF * ED * EP / BW * AP$

where:

OHM_{sw}	= representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
I	= daily surface water ingestion rate on days exposed during the exposure period (L/day)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/year)
ED	= exposure duration: the typical duration of each exposure event (day/event)
EP	= duration of exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)

Chemical	**OHM_{sw}** Average Conc. in Surface Water [1] (mg/L)	**I** Ingestion Rate [2] (L/day)	**RAF** Relative Absorption Factor [3] (unitless)	**EF** Exposure Frequency [4] (event/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period [5] (years)	**BW** Body Weight [6] (kg)	**AP** Averaging Period For Noncarcinogens (years)	**ADD_{sw}** Average Daily Dose (mg/kg-day)	**Chronic Oral RfD** (mg/kg-day)	**Hazard Quotient**	**Distribution of Risk by Chemical** (%)
Metals												
Manganese	0.057	0.05	1	1.7E-01	1	7	31	7	1.6E-05	1.4E-01	1.1E-04	26%
Silver	0.0057	0.05	1	1.7E-01	1	7	31	7	1.6E-06	5.0E-03	3.1E-04	74%
										Hazard Index =	**4.2E-04**	**100%**

Notes:
(1): Concentration from surface water sample at hot spot location Cove 2.
(2): MDEP, 1995.
(3): MDEP, 1994.
(4): Frequency based on 62 events / 365 days (2 days per week, months of April through October).
(5): Receptor is a child between the ages of 6 and 13 years of age.
(6): Median body weight , ages 6-13 years.

TABLE 6
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT / FUTURE CHILD TRESSPASSER SCENARIO
ESTIMATION OF CANCER RISK FROM INCIDENTAL INGESTION OF SURFACE WATER - HOT SPOT LOCATION COVE- 2

$ADD_{sw} = [OHM]_{sw} * I * RAF * EF * ED * EP / BW * AP$

where:

OHM_{sw}	= representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
I	= daily surface water ingestion rate on days exposed during the exposure period (L/day)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/year)
ED	= exposure duration: the typical duration of each exposure event (day/event)
EP	= duration of exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)

Chemical	**OHM_{sw}** Average Conc. in Surface Water (mg/L)	**I** Ingestion Rate (L/day)	**RAF** Relative Absorption Factor (unitless)	**EF** Exposure Frequency (event/year)	**ED** Duration of Exposure Event (day/event)	**EP** Duration of Exposure Period (years)	**BW** Body Weight (kg)	**AP** Averaging Period Carcinogens (years)	**ADD_{sw}** Average Daily Dose (mg/kg-day)	**Oral Cancer Slope Factor** $(mg/kg\text{-}day)^{-1}$	**Chemical Specific Cancer Risk**	**Distribution of Risk by Chemical** (%)

No Carcinogenic Chemicals for this Pathway

TABLE 7
READING LANDFILL
READING, MASSACHUSETTS

CURRENT / FUTURE CHILD TRESPASSER SCENARIO
ESTIMATION OF NONCANCER HEALTH EFFECTS FROM DERMAL CONTACT WITH SURFACE WATER - HOT SPOT LOCATION COVE-2

$ADD_{sw} = [OHM]_{sw} * SA * KP * RAF * EF * ED * EP * C_1 * C_2 / BW * AP$

where:

OHM_{sw} = representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
SA = skin surface area in contact with surface water on days exposed (cm^2)
K_p = Permeability Constant (cm/hr)
RAF = relative absorption factor (unitless)
EF = exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (events/day)
ED = exposure duration: the typical duration of each exposure event (days/event)
EP = exposure period: the period of time over which exposure may occur (years)
BW = body weight (kg)
AP = averaging period (years)
C_1 = conversion factor (mass) (L/cm^3)
C_2 = conversion factor (time) (hrs/day)

Chemical	**OHM_{sw}** Average Conc. in Surface Water [1] (mg/L)	**SA** Skin Surface Area [2] (cm^2)	**K_p** Permeability Constant [3] (cm/hr)	**RAF** Relative Absorption Factor [4] (unitless)	**EF** Exposure Frequency [5] (events/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period [6] (years)	**C_1** Conv. Factor (mass) (L/cm^3)	**C_2** Conv. Factor (time) (hrs/day)	**BW** Body Weight [7] (kg)	**AP** Averaging Period for Non-Carcinogens (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Chronic Oral RfD** (mg/kg-day)	**Hazard Quotient**	**Distribution of Risk by Chemical** (%)
Manganese	0.057	3,296	1.0E-03	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	2.5E-05	1.4E-01	1.8E-04	37%
Silver	0.0057	3,296	6.0E-04	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	1.5E-06	5.0E-03	3.0E-04	63%
													Hazard Index =	**4.7E-04**	**100%**

Notes:
(1): Concentration from surface water sample COVE-2.
(2): Assumes hands, forearms, lower legs , and feet of a child between the ages of 6 and 13 is exposed to surface water during wading.
(3): Dermal Exposure Assessment: Principles and Applications, (EPA, 1992).
(4): MDEP, 1994.
(5): Frequency based on 62events / 365 days (2 days per week, months of April through October).
(6): Receptor is a child between the ages of 6 and 13 years of age
(7): Median body weight , ages 6-13 years.

TABLE 8
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT / FUTURE CHILD TRESPASSER SCENARIO
ESTIMATION OF CANCER RISK FROM DERMAL CONTACT WITH SURFACE WATER - HOT SPOT LOCATION COVE 2

$ADD_{sw} = [OHM]_{sw} * SA * KP * RAF * EF * ED * EP * C_1 * C_2 / BW * AP$

where:

OHM_{sw}	= representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
SA	= skin surface area in contact with surface water on days exposed (cm^2)
K_p	= Permeability Constant (cm/hr)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (events/year)
ED	= exposure duration: the typical duration of each exposure event (days/event)
EP	= exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)
C_1	= conversion factor (mass) (L/cm^3)
C_2	= conversion factor (time) (hrs/day)

Chemical	OHM_{sw} Average Conc. in Surface Water (mg/L)	SA Skin Surface Area (cm^2)	K_p Permeability Constant (cm/hr)	RAF Relative Absorption Factor (unitless)	EF Exposure Frequency (events/year)	ED Exposure Duration (day/event)	EP Exposure Period (years)	C_1 Conv. Factor (mass) (L/cm^3)	C_2 Conv. Factor (time) (hrs/day)	BW Body Weight (kg)	AP Averaging Period Carcinogens (years)	ADD_{sw} Average Daily Dose (mg/kg-day)	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Chemical Specific Cancer Risk	Distribution of Risk by Chemical (%)

No Carcinogenic Chemicals for this Pathway

TABLE 9
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

POTENTIAL CURRENT/FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF NONCANCER RISK FROM INCIDENTAL INGESTION OF SEDIMENT

$ADD_{sed} = [OHM]_{sed} * I * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
I	= daily sediment ingestion rate on days exposed during the exposure period (mg/day)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/day)
ED	= exposure duration: the typical duration of each exposure event (day/event)
EP	= duration of exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)
C_1	= conversion factor (mass) (kg/mg)

Chemical	OHM_{soil} Conc. in Sediment[1] (mg/kg)	I Ingestion Rate[2] (mg/day)	RAF Relative Absorption Factor[3] (unitless)	EF Exposure Frequency[4] (event/day)	ED Exposure Duration (day/event)	EP Exposure Period (years)	C_1 Conv. Factor (mass) (kg/mg)	BW Body Weight[5] (kg)	AP Averaging Period For Noncarcinogens (years)	ADD_{sed} Average Daily Dose (mg/kg-day)	Chronic Oral RfD (mg/kg-day)	Hazard Quotient	Distribution of Risk by Chemical (%)
PAHs													
Acenaphthene	2.9	50	1	1.7E-01	1	7	1.0E-06	31	7	7.9E-07	6.0E-02	1.3E-05	0%
Anthracene	4.5	50	1	1.7E-01	1	7	1.0E-06	31	7	1.2E-06	3.0E-01	4.1E-06	0%
Benzo(a)anthracene	5.0	50	0.91	1.7E-01	1	7	1.0E-06	31	7	1.2E-06	3.0E-01	4.2E-06	0%
Benzo(b)fluoranthene	3.7	50	0.91	1.7E-01	1	7	1.0E-06	31	7	9.2E-07	4.0E-02	2.3E-05	0%
Benzo(k)fluoranthene	4.1	50	0.91	1.7E-01	1	7	1.0E-06	31	7	1.0E-06	4.0E-02	2.6E-05	0%
Benzo(g,h,i)perylene	3.2	50	0.91	1.7E-01	1	7	1.0E-06	31	7	8.0E-07	3.0E-02	2.7E-05	0%
Benzo(a)pyrene	4.6	50	0.91	1.7E-01	1	7	1.0E-06	31	7	1.1E-06	3.0E-02	3.8E-05	0%
Chrysene	5.1	50	0.91	1.7E-01	1	7	1.0E-06	31	7	1.3E-06	3.0E+00	4.2E-07	0%
Fluoranthene	9.2	50	1	1.7E-01	1	7	1.0E-06	31	7	2.5E-06	4.0E-02	6.3E-05	0%
Fluorene	3.1	50	1	1.7E-01	1	7	1.0E-06	31	7	8.5E-07	4.0E-02	2.1E-05	0%
Indeno(1,2,3-cd)pyrene	2.9	50	0.91	1.7E-01	1	7	1.0E-06	31	7	7.2E-07	4.0E-02	1.8E-05	0%
Naphthalene	2.6	50	1	1.7E-01	1	7	1.0E-06	31	7	7.1E-07	2.0E-02	3.6E-05	0%
Phenanthrene	10	50	0.91	1.7E-01	1	7	1.0E-06	31	7	2.5E-06	3.0E-01	8.3E-06	0%
Pyrene	8.0	50	1	1.7E-01	1	7	1.0E-06	31	7	2.2E-06	3.0E-02	7.3E-05	0%
Metals													
Arsenic	13	50	1	1.7E-01	1	7	1.0E-06	31	7	3.6E-06	3.0E-04	1.2E-02	9%
Barium	395	50	1	1.7E-01	1	7	1.0E-06	31	7	1.1E-04	7.0E-02	1.5E-03	1%
Cadmium	10	50	1	1.7E-01	1	7	1.0E-06	31	7	2.7E-06	1.5E-03	1.8E-03	1%
Chromium	61	50	1	1.7E-01	1	7	1.0E-06	31	7	1.7E-05	1.0E+00	1.7E-05	0%
Lead	638	50	0.5	1.7E-01	1	7	1.0E-06	31	7	8.7E-05	7.5E-04	1.2E-01	84%
Manganese	239	50	1	1.7E-01	1	7	1.0E-06	31	7	6.5E-05	1.4E-01	4.7E-04	0%
Mecury	0.54	50	1	1.7E-01	1	7	1.0E-06	31	7	1.5E-07	3.0E-04	4.9E-04	0%
Zinc	885	50	1	1.7E-01	1	7	1.0E-06	31	7	2.4E-04	3.0E-01	8.1E-04	1%
PCBs / Pesticides													
Chlordane	0.23	50	1	1.7E-01	1	7	1.0E-06	31	7	6.4E-08	5.0E-04	1.3E-04	0%
Dieldrin	0.04	50	1	1.7E-01	1	7	1.0E-06	31	7	1.2E-08	5.0E-05	2.4E-04	0%
Aroclor 1254	0.45	50	0.85	1.7E-01	1	7	1.0E-06	31	7	1.0E-07	2.0E-05	5.2E-03	4%
											Hazard Index =	**1.4E-01**	**100%**

Notes:
(1): Average concentration calculated using one-half the detctection limit.
(2): MDEP, 1995.
(3): MDEP, 1994.
(4): Frequency based on 62 events/ 365 days (2 days per week, months of April through October).
(5): Median body weight for a male child 6-13 years old.

TABLE 10
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

POTENTIAL CURRENT/FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF CANCER RISK FROM INCIDENTAL INGESTION OF SEDIMENT

$ADD_{sed} = [OHM]_{sed} * I * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
I	= daily sediment ingestion rate on days exposed during the exposure period (mg/day)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/day)
ED	= exposure duration: the typical duration of each exposure event (day/event)
EP	= duration of exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (days)
C_1	= conversion factor (mass) (kg/mg)

Chemical	OHM_{sed} Conc. in Sediment [1] (mg/kg)	I Ingestion Rate [2] (mg/day)	RAF Relative Absorption Factor (unitless)	EF Exposure Frequency [3] (event/day)	ED Duration of Exposure Event (day/event)	EP Duration of Exposure Period [4] (years)	C_1 Conv. Factor (mass) (kg/mg)	BW Body Weight [5] (kg)	AP Averaging Period Carcinogens (years)	ADD_{sed} Average Daily Dose (mg/kg-day)	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Chemical Specific Cancer Risk	Distribution of Risk by Chemical (%)
PAHs													
Benzo(a)anthracene	5	50	1	1.7E-01	1	7	1.0E-06	31	75	1.3E-07	7.3E-01	9.3E-08	6%
Benzo(b)fluoranthene	3.7	50	1	1.7E-01	1	7	1.0E-06	31	75	9.5E-08	7.3E-01	6.9E-08	4%
Benzo(k)fluoranthene	4.1	50	1	1.7E-01	1	7	1.0E-06	31	75	1.0E-07	7.3E-02	7.7E-09	0%
Benzo(a)pyrene	4.6	50	1	1.7E-01	1	7	1.0E-06	31	75	1.2E-07	7.3E+00	8.6E-07	53%
Chrysene	5.1	50	1	1.7E-01	1	7	1.0E-06	31	75	1.3E-07	7.3E-02	9.5E-09	1%
Indeno(1,2,3-cd)pyrene	2.9	50	1	1.7E-01	1	7	1.0E-06	31	75	7.4E-08	7.3E-01	5.4E-08	3%
Metals													
Arsenic	13	50	1	1.7E-01	1	7	1.0E-06	31	75	3.3E-07	1.5E+00	5.0E-07	31%
PCBs / Pesticides													
Chlordane	0.23	50	1	1.7E-01	1	7	1.0E-06	31	75	5.9E-09	3.5E-01	2.1E-09	0%
4,4'-DDD	0.08	50	1	1.7E-01	1	7	1.0E-06	31	75	2.0E-09	2.4E-01	4.9E-10	0%
Dieldrin	0.04	50	1	1.7E-01	1	7	1.0E-06	31	75	1.0E-09	1.6E+01	1.6E-08	1%
Aroclor 1260	0.25	50	0.85	1.7E-01	1	7	1.0E-06	31	75	5.4E-09	2.0E+00	1.1E-08	1%
										Excess Lifetime Cancer Risk =		**1.6E-06**	**100%**

Notes:
(1): Average concentration calculated using one-half the detctection limit.
(2): MDEP, 1995.
(3): Frequency based on 62 events / 365 days (2 days per week, months of April through October).
(4): Receptor is a child between the ages of 6 and 13 years of age.
(5): Median body weight , ages 6-13 years.

TABLE 11
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

POTENTIAL CURRENT/FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF NONCANCER RISK FROM DERMAL CONTACT WITH SEDIMENT

$ADD_{sed} = [OHM]_{sed} * SA * MS * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
SA	= skin surface area in contact with sediment on days exposed (cm^2/day)
MS	= mass of sediment in contact with the unit surface area of skin (mg/cm^2)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (events/day)
ED	= exposure duration: the typical duration of each exposure event (days/event)
EP	= exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)
C_1	= conversion factor (mass) (kg/mg)

Chemical	**OHM_{sed}** Average Conc. in Sediment [1] (mg/kg)	**SA** Skin Surface Area [2] (cm^2/day)	**MS** Mass of Sediment Adhered [3] (mg/cm^2)	**RAF** Relative Absorption Factor [4] (unitless)	**EF** Exposure Frequency [5] (event/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period (years)	**C_1** Conv. Factor (mass) (kg/mg)	**BW** Body Weight [6] (kg)	**AP** Averaging Period for Non-Carcinogens (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Chronic Oral RfD** (mg/kg-day)	**Hazard Quotient**	**Distribution of Risk by Chemical** (%)
PAHs														
Acenaphthene	2.9	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	7	5.3E-06	6.0E-02	8.9E-05	0%
Anthracene	4.5	3,296	0.51	0.29	1.7E-01	1	7	1.0E-06	31	7	1.2E-05	3.0E-01	4.0E-05	0%
Benzo(a)anthracene	5.0	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	8.3E-06	3.0E-01	2.8E-05	0%
Benzo(b)fluoranthene	3.7	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	6.1E-06	4.0E-02	1.5E-04	0%
Benzo(k)fluoranthene	4.1	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	6.8E-06	4.0E-02	1.7E-04	0%
Benzo(g,h,i)perylene	3.2	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	5.3E-06	3.0E-02	1.8E-04	0%
Benzo(a)pyrene	4.6	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	7.6E-06	3.0E-02	2.5E-04	0%
Chrysene	5.1	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	8.5E-06	3.0E+00	2.8E-06	0%
Fluoranthene	9.2	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	7	1.7E-05	4.0E-02	4.2E-04	0%
Fluorene	3.1	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	7	5.7E-06	4.0E-02	1.4E-04	0%
Indeno(1,2,3-cd)pyrene	2.9	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	4.8E-06	4.0E-02	1.2E-04	0%
Naphthalene	2.6	3,296	0.51	0.1	1.7E-01	1	7	1.0E-06	31	7	2.4E-06	2.0E-02	1.2E-04	0%
Phenanthrene	10	3,296	0.51	0.18	1.7E-01	1	7	1.0E-06	31	7	1.7E-05	3.0E-01	5.5E-05	0%
Pyrene	8.0	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	7	1.5E-05	3.0E-02	4.9E-04	0%
Metals														
Arsenic	13	3,296	0.51	0.03	1.7E-01	1	7	1.0E-06	31	7	3.6E-06	3.0E-04	1.2E-02	8%
Barium	395	3,296	0.51	1	1.7E-01	1	7	1.0E-06	31	7	3.6E-03	7.0E-02	5.2E-02	34%
Cadmium	10	3,296	0.51	0.14	1.7E-01	1	7	1.0E-06	31	7	1.3E-05	1.5E-03	8.6E-03	6%
Chromium	61	3,296	0.51	0.04	1.7E-01	1	7	1.0E-06	31	7	2.2E-05	1.0E+00	2.2E-05	0%
Lead	638	3,296	0.51	0.006	1.7E-01	1	7	1.0E-06	31	7	3.5E-05	7.5E-04	4.7E-02	30%
Manganese	239	3,296	0.51	1	1.7E-01	1	7	1.0E-06	31	7	2.2E-03	1.4E-01	1.6E-02	10%
Mercury	0.54	3,296	0.51	0.05	1.7E-01	1	7	1.0E-06	31	7	2.5E-07	3.0E-04	8.3E-04	1%
Zinc	885	3,296	0.51	0.02	1.7E-01	1	7	1.0E-06	31	7	1.6E-04	3.0E-01	5.4E-04	0%
PCBs / Pesticides														
Chlordane	0.23	3,296	0.51	0.05	1.7E-01	1	7	1.0E-06	31	7	1.1E-07	5.0E-04	2.1E-04	0%
Dieldrin	0.04	3,296	0.51	0.25	1.7E-01	1	7	1.0E-06	31	7	9.9E-08	5.0E-05	2.0E-03	1%
Aroclor 1254	0.45	3,296	0.51	0.067	1.7E-01	1	7	1.0E-06	31	7	2.8E-07	2.0E-05	1.4E-02	9%
												Hazard Index =	**1.6E-01**	**100%**

Notes:
(1): Average concentration calculated using one-half the detctection limit.
(2): Median skin surface area of a child (average male and female) for hands, forearms, lower legs and feet for age group.
(3): MDEP, 1995.
(4): MDEP, 1994.
(5): Frequency based on 62 events/ 365 days (2 days per week, months of April through October).
(6): Median body weight for a child 6-13 years old.

TABLE 12
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

POTENTIAL CURRENT/FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF CANCER RISK FROM DERMAL CONTACT WITH SEDIMENT

$ADD_{sed} = [OHM]_{sed} * SA * MS * RAF * EF * ED * EP * C_1 / BW * AP$

where:

OHM_{sed}	= representative concentration of OHM in the sediment at the exposure point during the period of exposure (mg/kg)
SA	= skin surface area in contact with sediment on days exposed (cm^2/day)
MS	= mass of sediment in contact with the unit surface area of skin (mg/cm^2)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (hours/day)
ED	= exposure duration: the typical duration of each exposure event (day/year)
EP	= exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (days)
C_1	= conversion factor (mass) (kg/mg)

Chemical	**OHM_{sed}** Conc. in Sediment [1] (mg/kg)	**SA** Skin Surface Area [2] (cm^2/day)	**MS** Mass of Soil Adhered [3] (mg/cm^2)	**RAF** Relative Absorption Factor [4] (unitless)	**EF** Exposure Frequency [5] (event/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period (years)	**C_1** Conv. Factor (mass) (kg/mg)	**BW** Body Weight [6] (kg)	**AP** Averaging Period Carcinogens[8] (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Oral Cancer Slope Factor** $(mg/kg\text{-}day)^{-1}$	**Chemical Specific Cancer Risk**	**Distribution of Risk by Chemical** (%)
PAHs														
Benzo(a)anthracene	5	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	8.6E-07	7.3E-01	6.3E-07	8%
Benzo(b)fluoranthene	3.7	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	6.4E-07	7.3E-01	4.6E-07	6%
Benzo(k)fluoranthene	4.1	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	7.0E-07	7.3E-02	5.1E-08	1%
Benzo(a)pyrene	4.6	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	7.9E-07	7.3E+00	5.8E-06	72%
Chrysene	5.1	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	8.8E-07	7.3E-02	6.4E-08	1%
Indeno(1,2,3-cd)pyrene	2.9	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	5.0E-07	7.3E-01	3.6E-07	5%
Metals														
Arsenic	13	3,296	0.51	0.03	1.7E-01	1	7	1.0E-06	31	75	3.4E-07	1.5E+00	5.0E-07	6%
PCBs / Pesticides														
Chlordane	0.23	3,296	0.51	0.05	1.7E-01	1	7	1.0E-06	31	75	9.9E-09	3.5E-01	3.5E-09	0%
4,4'-DDD	0.08	3,296	0.51	0.2	1.7E-01	1	7	1.0E-06	31	75	1.4E-08	2.4E-01	3.3E-09	0%
Dieldrin	0.04	3,296	0.51	0.25	1.7E-01	1	7	1.0E-06	31	75	8.6E-09	1.6E+01	1.4E-07	2%
Aroclor 1260	0.25	3,296	0.51	0.067	1.7E-01	1	7	1.0E-06	31	75	1.4E-08	2.0E+00	2.9E-08	0%
												Excess Lifetime Cancer Risk =	**8.0E-06**	**100%**

Notes:
(1): Average concentration calculated using one-half the detctection limit.
(2): Median skin surface area of a child (average male and female) for hands, forearms, lower legs and feet for age group.
(3): MDEP, 1995.
(4): MDEP, 1994.
(5): Frequency based on 62 events/ 365 days (2 days per week, months of April through October).
(6): Median body weight for a child 6-13 years old.

TABLE 13
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT / FUTURE CHILD TRESPASSING SCENARIO
ESTIMATION OF NONCANCER HEALTH EFFECTS FROM INCIDENTAL INGESTION OF SURFACE WATER

$ADD_{sw} = [OHM]_{sw} * I * RAF * EF * ED * EP / BW * AP$

where:

OHM_{sw} = representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
I = daily surface water ingestion rate on days exposed during the exposure period (L/day)
RAF = relative absorption factor (unitless)
EF = exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/year)
ED = exposure duration: the typical duration of each exposure event (day/event)
EP = duration of exposure period: the period of time over which exposure may occur (years)
BW = body weight (kg)
AP = averaging period (years)

	OHM_{sw} Average Conc. in Surface Water [1]	**I** Ingestion Rate [2]	**RAF** Relative Absorption Factor [3]	**EF** Exposure Frequency [4]	**ED** Exposure Duration	**EP** Exposure Period [5]	**BW** Body Weight [6]	**AP** Averaging Period For Noncarcinogens	**ADD_{sw}** Average Daily Dose	**Chronic Oral RfD**	**Hazard Quotient**	**Distribution of Risk by Chemical**
Chemical	(mg/L)	(L/day)	(unitless)	(event/day)	(day/event)	(years)	(kg)	(years)	(mg/kg-day)	(mg/kg-day)		(%)
Metals												
Arsenic	0.004	0.05	1	1.7E-01	1	7	31	7	1.2E-06	3.0E-04	4.0E-03	50%
Barium	0.36	0.05	1	1.7E-01	1	7	31	7	9.8E-05	7.0E-02	1.4E-03	17%
Chromium	0.008	0.05	1	1.7E-01	1	7	31	7	2.1E-06	1.0E+00	2.1E-06	0%
Lead	0.009	0.05	0.5	1.7E-01	1	7	31	7	1.2E-06	7.5E-04	1.6E-03	20%
Manganese	0.25	0.05	1	1.7E-01	1	7	31	7	7.0E-05	1.4E-01	5.0E-04	6%
Selenium	0.009	0.05	1	1.7E-01	1	7	31	7	2.5E-06	5.0E-03	4.9E-04	6%
Zinc	0.059	0.05	1	1.7E-01	1	7	31	7	1.6E-05	3.0E-01	5.4E-05	1%
										Hazard Index =	**8.1E-03**	**100%**

Notes:
(1): Average concentration calculated using half the detection limit.
(2): MDEP, 1995.
(3): MDEP, 1994.
(4): Frequency based on 62 events / 365 days (2 days per week, months of April through October).
(5): Receptor is a child between the ages of 6 and 13 years of age.
(6): Median body weight , ages 6-13 years.

TABLE 14
WOERD AVENUE LANDFILL
WALTHAM, MASSCHUSETTS

CURRENT / FUTURE CHILD TRESSPASSER SCENARIO
ESTIMATION OF CANCER RISK FROM INCIDENTAL INGESTION OF SURFACE WATER

$ADD_{sw} = [OHM]_{sw} * I * RAF * EF * ED * EP / BW * AP$

where:

OHM_{sw} = representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
I = daily surface water ingestion rate on days exposed during the exposure period (L/day)
RAF = relative absorption factor (unitless)
EF = exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (event/year)
ED = exposure duration: the typical duration of each exposure event (day/event)
EP = duration of exposure period: the period of time over which exposure may occur (years)
BW = body weight (kg)
AP = averaging period (years)

Chemical	**OHM_{sw}** Average Conc. in Surface Water [1] (mg/L)	**I** Ingestion Rate [2] (L/day)	**RAF** Relative Absorption Factor [3] (unitless)	**EF** Exposure Frequency [4] (event/year)	**ED** Duration of Exposure Event (day/event)	**EP** Duration of Exposure Period [5] (years)	**BW** Body Weight [6] (kg)	**AP** Averaging Period Carcinogens (years)	**ADD_{sw}** Average Daily Dose (mg/kg-day)	**Oral Cancer Slope Factor** $(mg/kg\text{-}day)^{-1}$	**Chemical Specific Cancer Risk**	**Distribution of Risk by Chemical** (%)
Metals												
Arsenic	0.004	0.05	1	1.70E-01	1	7	31	75	1.1E-07	1.5E+00	1.7E-07	100%
									Exceess Lifetime Cancer Risk =		**1.7E-07**	**100%**

Notes:
(1): Average concentration calculated using one half the detection limit.
(2): MDEP, 1995.
(3): MDEP, 1995.
(4): Frequency based on 62 events / 365 days (2 days per week, months of April through October).
(5): Receptor is a child between the ages of 6 and 13 years of age.
(6): Median body weight , ages 6-13 years.

TABLE 15
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT / FUTURE CHILD TRESPASSER SCENARIO
ESTIMATION OF NONCANCER HEALTH EFFECTS FROM DERMAL CONTACT WITH SURFACE WATER

$ADD_{sw} = [OHM]_{sw} * SA * KP * RAF * EF * ED * EP * C_1 * C_2 / BW * AP$

where:

OHM_{sw}	= representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
SA	= skin surface area in contact with surface water on days exposed (cm^2)
K_p	= Permeability Constant (cm/hr)
RAF	= relative absorption factor (unitless)
EF	= exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (events/day)
ED	= exposure duration: the typical duration of each exposure event (days/event)
EP	= exposure period: the period of time over which exposure may occur (years)
BW	= body weight (kg)
AP	= averaging period (years)
C_1	= conversion factor (mass) (L/cm^3)
C_2	= conversion factor (time) (hrs/day)

Chemical	**OHM_{sw}** Average Conc. in Surface Water [1] (mg/L)	**SA** Skin Surface Area [2] (cm^2)	**K_p** Permeability Constant [3] (cm/hr)	**RAF** Relative Absorption Factor [4] (unitless)	**EF** Exposure Frequency [5] (events/day)	**ED** Exposure Duration (day/event)	**EP** Exposure Period [6] (years)	**C_1** Conv. Factor (mass) (L/cm^3)	**C_2** Conv. Factor (time) (hrs/day)	**BW** Body Weight [7] (kg)	**AP** Averaging Period for Non-Carcinogens (years)	**ADD_{sed}** Average Daily Dose (mg/kg-day)	**Chronic Oral RfD** (mg/kg-day)	**Hazard Quotient**	**Distribution of Risk by Chemical** (%)
Metals															
Arsenic	0.004	3,296	1.0E-03	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	1.9E-06	3.0E-04	6.3E-03	62%
Barium	0.36	3,296	1.0E-03	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	1.5E-04	7.0E-02	2.2E-03	22%
Chromium	0.008	3,296	2.0E-03	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	6.7E-06	1.0E+00	6.7E-06	0%
Lead	0.009	3,296	4.0E-06	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	1.5E-08	7.5E-04	2.0E-05	0%
Manganese	0.25	3,296	1.0E-03	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	1.1E-04	1.4E-01	7.9E-04	8%
Selenium	0.009	3,296	1.0E-03	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	3.9E-06	5.0E-03	7.8E-04	8%
Zinc	0.059	3,296	6.0E-04	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	7	1.5E-05	3.0E-01	5.1E-05	0%
													Hazard Index =	**1.0E-02**	**100%**

Notes:
(1): Average concentration calculated using one half the detection limit.
(2): Assumes hands, forearms, lower legs , and feet of a child between the ages of 6 and 13 is exposed to surface water during wading.
(3): Dermal Exposure Assessment: Principles and Applications, (EPA, 1992).
(4): MDEP, 1994.
(5): Frequency based on 62events / 365 days (2 days per week, months of April through October).
(6): Receptor is a child between the ages of 6 and 13 years of age
(7): Median body weight , ages 6-13 years.

TABLE 16
WOERD AVENUE LANDFILL
WALTHAM, MASSACHUSETTS

CURRENT / FUTURE CHILD TRESPASSER SCENARIO
ESTIMATION OF CANCER RISK FROM DERMAL CONTACT WITH SURFACE WATER

$ADD_{sw} = [OHM]_{sw} * SA * KP * RAF * EF * ED * EP * C_1 * C_2 / BW * AP$

where:

OHM_{sw} = representative concentration of OHM in the surface water at the exposure point during the period of exposure (mg/L)
SA = skin surface area in contact with surface water on days exposed (cm^2)
K_p = Permeability Constant (cm/hr)
RAF = relative absorption factor (unitless)
EF = exposure frequency: the number of exposure events during the exposure period divided by the number of days in the exposure period (events/year)
ED = exposure duration: the typical duration of each exposure event (days/event)
EP = exposure period: the period of time over which exposure may occur (years)
BW = body weight (kg)
AP = averaging period (years)
C_1 = conversion factor (mass) (L/cm^3)
C_2 = conversion factor (time) (hrs/day)

Chemical	**OHM_{sw}** Average Conc. in Surface Water [1] (mg/L)	**SA** Skin Surface Area [2] (cm^2)	**K_p** Permeability Constant [3] (cm/hr)	**RAF** Relative Absorption Factor [4] (unitless)	**EF** Exposure Frequency [5] (events/year)	**ED** Exposure Duration (day/event)	**EP** Exposure Period [6] (years)	**C_1** Conv. Factor (mass) (L/cm^3)	**C_2** Conv. Factor (time) (hrs/day)	**BW** Body Weight [7] (kg)	**AP** Averaging Period Carcinogens [8] (years)	**ADD_{sw}** Average Daily Dose (mg/kg-day)	**Oral Cancer Slope Factor** $(mg/kg\text{-}day)^{-1}$	**Chemical Specific Cancer Risk**	**Distribution of Risk by Chemical** (%)
Metals															
Arsenic	0.004	3,296	1.0E-03	1	1.7E-01	1	7	1.0E-03	2.4E+01	31	75	1.8E-07	1.5E+00	2.7E-07	100%
													Excess Lifetime Cancer Risk =	**2.7E-07**	**100%**

Notes:
(1): Average concentration calculated using one half the detection limit.
(2): Assumes hands, forearms, lower legs , and feet of a child between the ages of 6 and 13 is exposed to surface water during wading.
(3): Dermal Exposure Assessment: Principles and Applications, (EPA, 1992).
(4): MDEP, 1994.
(5): Frequency based on 62events / 365 days (2 days per week, months of April through October).
(6): Receptor is a child between the ages of 6 and 13 years of age
(7): Median body weight , ages 6-13 years.

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Metropolitan Boston – Northeast Regional Office

JANE SWIFT
Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

MAR 2 9 2002

Ronald G. Vokey, Planning Director
City of Waltham
Planning Department
119 School Street
Waltham, MA 02451

RE: WALTHAM – SWM
Woerd Ave Landfill
Technical Review of Permit Application
Application for: BWPSW23 – Comprehensive Site Assessment
Transmittal Number: W008254

Dear Mr. Vokey:

The Department of Environmental Protection, Bureau of Waste Prevention (The Department) has performed a Technical Review of the document titled Comprehensive Site Assessment for Woerd Avenue Landfill in Waltham Massachusetts. The October 1999 report, prepared by the consulting firm Camp Dresser & McKee of Cambridge, Massachusetts was forwarded to the Department with a cover letter dated June 13, 2001.

The 8.7-acre landfill site has been used for waste disposal since 1912 and stopped accepting waste in 1973. The City of Waltham proposes to use the site, which is currently heavily wooded, as a recreation site. Considering the age and history of the site the Department has determined that the main issue at this site is to ensure proper closure and capping of the landfill to ensure that the proposed post-closure use does not have adverse impacts on residents (particularly children) who would use the proposed facility.

The Department has determined that the document is acceptable with the following conditions:

1. It is still unclear whether the exact aerial limits of waste at the site have been accurately delineated. Previous reports (e.g. TWM Northeast, 1990) have indicated that waste may be present outside the property boundary of the landfill including under the parking lot at the eastern portion of the adjacent Parker Hannifin property. This issue was emphasized in Condition #3 of the Department's September 11, 1997 Conditional Approval of the Initial Site Assessment of the site. The condition stated that the limits of the waste must be adequately determined and physically confirmed using "test pit evacuation, borings, and other suitable methods" and reported in the CSA.

   The CSA describes a test pit excavation exercise involving twenty-three (23) pits along the perimeter of the site that does not result in determining the limits of waste. All test pits excavated contained waste. A satisfactory test pit program would normally involve excavation of a number of pits in a relatively straight line beginning in an area known to contain waste and continuing away from the waste until pits excavated do not contain waste. The Department required that a more satisfactory program of waste limit delineation be included in the final closure plans so that the proposed cap properly covers all of the waste.

   It is also unclear whether the lateral and vertical extent of the waste along Cram Cove has been adequately determined. In addition, the CSA reports very high levels of lead in sediments in the Cove. The Department requires that final closure plans and discussions include waste delineation in the area and methods of addressing potential eminent hazard conditions of lead in the area.

2. The Department concurs with the CSA recommendation (#1) that the final closure plans for the landfill be designed to include all the requirements of the Department's regulations describing a standard landfill cap. The City's proposed post-closure use of the landfill site and it's close proximity to residential homes and industrial properties make it necessary that a standard cap be the minimum requirement for the site. Additional measures may also be necessary during the post closure period to protect the environment and potential users of the site. The Department emphasizes that should post closure conditions make it necessary it will be the City's responsibility to make modifications or implement actions at the site to avert and remediate adverse impacts of the landfill on users and potential users of the site.

3. The Department has previously (9/11/1999 letter) required that groundwater monitoring be extended to include information from existing monitoring wells at adjacent properties including the Parker Hannifin property "to better understand groundwater flow direction in the area." The Department will require that this condition be included in the post-closure monitoring plan for the site.

4. Section 6, Conclusions and Recommendations, of the CSA unilaterally determined that surface water samples would not be analyzed for VOCs. The Department requires that sampling schedules and analytes of all media be coordinated with Department staff before decisions are made on eliminating constituents to be tested. In that regard, the Department will require that immediately following final closure of the site all media be

tested for the complete suite of constituents indicated by Department regulations and guidance documents for, at least, two rounds of sampling. Based on the results of those samples the Department will determine the constituents to be dropped after a petition is submitted to the Department to drop such constituents.

Comments on the CSA, particularly Section 5: Human Health Characterization, are included in Attachment 1. You will note that the comments are very detailed and raise many specific issues. For example, they include comments on very high lead concentrations in sediments in Cram Cove, groundwater discharge from the landfill into the cove, and landfill gas questions after the landfill is capped. The Department requires that, in addition to the comments above, the comments and issues raised in Attachment 1 be addressed before or in the next stages of the landfill assessment and closure process. These will be considered in light of the City's proposed post closure use of the landfill site for expansion of the playgrounds currently located adjacent to the landfill.

If you have any questions regarding the items discussed above contact Mr. Abdul Turay of our Boston office at 617-292-5522 or call me at 978-661-7609.

Sincerely,

Heidi M. O'Brien
DRD, NERO

HMO/jhc/at: w/Attachment

Cc: Bruce Haskell, CDM

Ted Fields, Principal Planner
Waltham Planning Dept.

Jeff Chormann, BWP Boston

ATTACHMENT 1

Review of the *Comprehensive Site Assessment, Waltham Landfill, Volume I: Appendices A through E, October 1999*

INTRODUCTION

The Department has reviewed the *Comprehensive Site Assessment, Waltham Landfill, Volume I: Appendices A through E, October 1999* heretofore known as the CSA. The report was reviewed for consistency with Massachusetts DEP policy BWSC/ORS-95-141, *Guidance for Disposal Site Risk Characterization* (April 1996) and the risk characterization requirements of the Massachusetts Contingency Plan, 310 CMR 40.0000 as it applies to landfills pursuant to 310 CMR 40.0114. Camp Dresser & McKee, Inc. prepared the report.

CONCLUSIONS

- The CSA recommends further evaluation of the extent of sediment contamination in Cram's Cove and the vicinity. The Department concurs with this assessment but would go even further: given the very high concentrations of contaminants in the sediment, strong consideration should be given to either capping or removing this localized area of contamination once the contamination has been delineated.

- Based on its review of the CSA, the Department agrees with the conclusions that there is a significant risk of harm to human health for the trespasser. Despite agreement on this point, there are a number of critical aspects to the human health risk assessment that are currently not addressed. For instance, the current child trespasser scenario does not incorporate exposure to ambient air, nor surface soil as the site is uncapped.

- The groundwater elevations all depict a subsurface geology where groundwater flows from the landfill to the river. Despite this evidence, the CSA failed to evaluate the discharge of contaminated groundwater to Cram's Cove and the Charles River for effects to fish and other wildlife.

RECOMMENDATIONS

The Department has the following recommendations:

1. Investigate the vertical and horizontal extent of sediment contamination in Cram's Cove.
2. Investigate the true extent of waste along the landfill borders.
3. Discuss the potential for landfill gas to be transported via preferential migration pathways to the homes located adjacent to the landfill.
4. Provide the rationale for omitting PCBs and pesticides from the suite of analyses.

5. Evaluate the discharge of contaminated groundwater to Cram's Cove.
6. Use the recommended criteria when comparing the surface water and sediment concentrations to determine the potential for ecological risk.
7. Incorporate the detected non-methane organic compounds (NMOCs) from the landfill gas into the current exposure scenario for the trespasser.
8. Expand the exposure scenarios to include subchronic as well as a recreational exposure scenario.
9. Utilize dose-response values according to the hierarchy listed below.
10. Discuss and consider landfill gas behavior under the cap if a gas collection system is not utilized at the site.

BACKGROUND

The site is located in Waltham, Massachusetts and is bordered by the streets of Rumford Avenue, Woerd Avenue, Crescent Street, and Moody Street. The landfill is uncapped on about 8 acres of land. Refuse is no longer visible as the landfill is heavily wooded with large deciduous trees such as quaking aspen interspersed with sumac. Nearby are the former Rumford Avenue incinerator, Cram's Cove that is part of the Charles River, the industrial property formerly owned by Parker Hannafin, Norumbega Terrace to the northwest, and the Moody Street playground to the east.

About 1912 the landfill began accepting significant amounts of coal ash along with old cars. The landfill also accepted incinerator residue and other non-combustible waste. Operations ceased in 1973, but two years previous the landfill was ordered to address several complaints including inadequate daily cover, maintenance, improper disposal of refuse, and a general lack of cleanliness. In 1971, the Massachusetts Water Resources Commission required the city to remove debris from Cram's Cove and extend the existing storm drain.

The City of Waltham plans to cap the landfill and build additional soccer fields and a passive recreational area.

DISCUSSION

Lead was detected in sediment at very high concentrations at Cove-2 during the August 1998 sampling round. Composite sediment sampling was subsequently conducted in December 1998 presumably to delineate the extent of the hot spot. It should be noted that composite sampling will not delineate the hot spot but rather will dilute the higher concentrations with relatively cleaner sediment. Nevertheless, the lead and zinc sediment concentrations were *still* elevated above the probable effect concentration (PEC). This is the concentration likely to cause significant mortality for benthic macroinvertebrates in sediment. In other words it is a strong indication of very poor sediment quality.

The report's conclusions and recommendations state that the source for the lead is likely other industries located in the general vicinity. Industrial parks and residential

neighborhoods do exist around the perimeter of the old landfill, but refuse at one time extended into Cram's Cove. Page 1-3, first bullet, states the following: "These steps involved removal of debris from Cram's Cove, extending the storm drain, and submission of final plans and specifications for covering the dump with cover material." Based on this information, there seems to be a direct connection between the presence of lead in the sediment with the source as the landfill.

Residential homes are located within 500 feet of the landfill and landfill gas has been detected in a monitoring location nearby. The report fails, however, to address the potential for landfill gas to be transported via utility conduits to the homes in the neighborhood.

As noted in the report (page 2-1), the true size of the landfill has yet to be determined as none of the 23 test pits were able to delineate the horizontal and vertical extent of the waste. The Department recommends that the full extent of the waste be properly delineated prior to any cap installation.

The site history notes that incinerator ash and other non-combustibles were land filled at the site. During the sampling only VOCs, SVOCs, and inorganics were investigated while PCBs and pesticides were not. At a minimum, the report should provide the rationale for excluding certain contaminants from the sampling strategy.

Several of the wells had high concentrations of contaminants. The Department would recommend an expanded discussion on the migration of landfill-related constituents into the wells.

Table 4-1, page 4-6 of the CSA, compares metals in surface water against Maximum Contaminant Levels (MCLs). Please note that the MCLs are applicable when the water resource is used as a drinking water source. Rather, the report should conduct an Environmental Risk Screening by comparing the concentrations in surface water versus EPA's *National Recommended Water Quality Criteria-Correction April 1999.* The proximity of Cram's Cove and Charles River necessitate an evaluation of this sort.

The surface water sampling was conducted in August and December 1998. The results from the Cove 1 and 2 locations were generally undetected during the August 1998 sampling round, but noticeable for the elevated concentrations of iron, barium, and manganese during the December 1998 sampling round. Often iron, barium, and manganese are associated with leachate discharging to a water body when groundwater levels and runoff are more pronounced. For this reason, the Department recommends that the discussion on the fate and transport of groundwater to Cram's Cove and the Charles River be expanded.

Several dose response values for COCs (e.g., Reference Concentrations and Unit Risk Factors) are not consistent with DEP policy. Dose response values should be obtained using the methods described in Chapter 7 of the Guidance. In brief, values should be obtained from the following sources listed in order of priority:

Non-Cancer Effects

- US EPA's Integrated Risk Information System (IRIS)
- US EPA's Health Effects Assessment Summary Tables (HEAST)
- Other dose-response values developed by ORS (http://www.state.ma.us/dep/ors/files/chemical.htm).
- Allowable Threshold Concentrations (ATCs) as described in the Draft Indoor Air Sampling and Evaluation Guide (http://www.state.ma.us/dep/ors/files/indair01.pdf)
- Minimum Risk Levels from the Agency for Toxic Substances and Disease Registry
- Calculation of a dose-response value using toxicity information from the literature

Cancer Effects

- U.S. EPA's Integrated Risk Information System (IRIS)
- U.S. EPA's Health Effects Assessment Summary Tables (HEAST)
- Dose-response values developed by ORS (http://www.state.ma.us/dep/ors/files/chemical.htm).
- Cancer Potency Factors from California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA)

The ATCs are currently available on the DEP website: http://mass.gov/dep/ors/files/atcs1995.doc

The future child recreational scenario incorporates an air model to calculate the expected landfill gas emissions. The findings show No Significant Risk from inhalation due to landfill gas. This was not done, however, for the current trespasser based on the actual or measured landfill gas concentrations. The Department recommends that the current risk to the child trespasser be calculated.

The Department has two general comments with respect to the air model used to predict landfill gas concentrations and inhalation by future receptors.

- The determination of future landfill gas emissions is based on an air model with a default parameter of a cap without a gas collection system in place. This is contrary to Massachusetts regulations for gas control as per 310 CMR 19.117(3).
- Sampling for non-methane organic compounds (NMOCs) was completed for one round of sampling only, August 1998. Based on this small data set, caution is advised when drawing *any* definitive conclusions about the quantity and potency of landfill gas emissions over time.

SPECIFIC COMMENTS

Comment #1:
Page 4-8, Section 4.7.4, *Landfill Gas*

The fourth paragraph in the section states that NMOCs were not detected in the field survey during the second sampling round. This is accurate for location LFG-1 but inaccurate for the other two locations, LFG-2 and LFG-3, where there were 9 and 11 compounds detected, respectively.

Comment #2:
Page 4-6, Section 4.7.2, *Surface Water Quality*

The surface water concentrations are compared versus the MCLs in Table 3-4 of the report. Surface water samples, when considering ecological risk, should be compared and discussed versus the *National Recommended Water Quality Criteria-Correction* (EPA 1999).

Comment #3:
Page 4-6, Section 4.7.3, *Sediment Quality*

Cram Cove was sampled for metals in the sediments and lead was detected at very high levels. Risks to both ecological and human receptors are tripped based on lead detected at 110,000 mg/Kg in the sediments. Since this report was issued in 1998, the MA DEP now recommends using the sediment criteria values as published in MacDonald et al. (2000). The Cove-2 lead concentration is nearly 10 times greater than the probable effect concentration (128 mg/kg) developed by the authors. Concentrations greater than the PEC are likely to see adverse effects on sediment-dwelling organisms. The CSA should, therefore, conclude that Significant Risk exists in the environment.

Comment #4:
Page 4-9, Section 4.8, *Contamination Migration Pathways*

The CSA reports that landfill gas migration is not a "problem" according to the data interpretations section. Yet the discussion fails to put the concentrations of methane in any sort of context by comparing it to known standards or literature values. Moreover, it is difficult to draw any conclusions about the prevalence of emissions of NMOCs since only one sampling round was conducted. The Department recommends at least four quarters of sampling for NMOCs before any definitive conclusions can be drawn.

Comment #5:
Page 5-3, Section 5.2.1, *Current and Foreseeable Land Use*

The section states that activity at the landfill is limited to use by trespassers for "various recreational activities". During a recent site visit, several walking trails were evident through the landfill in addition there appeared to be several encampments where homeless men and women were living. The landfill lies adjacent to the Moody Street playground and there is no fencing or signs around the perimeter of the landfill. Consequently, this allows unimpeded access to the site. In addition, the risk assessment did not collect surface soil samples. In light of this, the report should make special note

of the shortcomings of the site investigation and discuss the potential risk to receptors, which may come in contact with surface soil and possibly refuse.

Comment #6:
Page 5-4, Section 5.2.2, *Soil and Groundwater Categories*, first paragraph on page

The section states that the groundwater is not considered GW-2 since there are no buildings on site or is expected to be constructed on site in the future. While this is true, it does not take into account that there are residential homes not more than 500 feet away. Some discussion is recommended regarding the homes nearby and whether they might be impacted by landfill gas transport.

Comment #7:
Page 5-12, *Exposure Point Concentrations*

The first paragraph discusses the calculation of the sediment exposure point concentration (EPC) for Cove-2. This location was designated as a "hot spot" and the EPC was based on the concentrations in that one sample. The calculation of the other sediment EPC is based on the other sediment sampling locations but how the individual chemical concentrations were calculated is not clear. Please provide the method for calculating EPCs

Comment #8:
Page 5-12, *Exposure Point Concentrations*, 4th paragraph

The paragraphs at the end of this section describe how the EPCs for ambient air were derived. The future scenario is determined by using the third generation Industrial Source Complex-Short term model (ISCST3). Depending on the size of the landfill and meteorological conditions the landfill gas emissions can be predicted. While the model is acceptable for determining future risk, the risk assessment fails to address the risk to current residents who live adjacent to the facility. In other words, the one round of landfill gas sampling collected in August 1998 was used to identify the ambient air COCs but not used in the risk evaluation. Consequently, the current risk potential has not been addressed. Furthermore, in the uncertainty section, the risk assessment needs to discuss the shortcomings of collecting just one round of samples for non-methane organic compounds (NMOCs), which will tend to drive the risk assessment more so than the other constituents of landfill gas, i.e. methane, hydrogen sulfide, and carbon dioxide.

Comment #9:
Page 5-12, *Exposure Point Concentrations*, 5th paragraph

The ISCST3 model assumed that since there was no gas collection system in place, that, "all gas produced would be emitted through the surface of the capped landfill." The Department contends that this assumption may be faulty and may underestimate the concentrations of NMOCs of landfill gas emissions from the site. When the collection system is instituted, the landfill gas will be concentrated at a finite number of exhaust

ports around the perimeter of the landfill and thus the NMOCs concentrations will rise from their current levels. For this reason, The Department believes that the risk may be under estimated to the local population in the area.

Comment #10:
Page 5-13, Table 5-6, *Summary of Assumptions for Each Exposure Scenario*

The Department has several comments regarding the exposure assumptions presented in the report.

- The risk assessment fails to look at subchronic exposures for any of the scenarios. The recommended exposure and averaging period is 210 days and should be applied, at a minimum, to the Current/Future Child Trespasser
- The current exposure of those neighbors nearby to ambient air landfill gas emissions has not been addressed.
- The recreational scenario does not address that receptors may use Cram's Cove for canoeing and kayaking and fishing. There is a Metropolitan District Commission (MDC) boat ramp close to Cram's Cove yet the risk assessment fails to address this potential scenario.
- The age range, 6 to 13 years old, for the Future Child Recreational Scenario may overestimate the youngest age range likely to visit and use the soccer and baseball fields.

Comment #11:
Page 6-3, Section 6.2, *Recommendations*, item #2

Waltham Landfill is proposed to receive a standard DEP cap in accordance with the requirements of 310 CMR 19.140. The Department recommends that along with this cap that a landfill gas collection system be installed because of the paucity of air sampling data for NMOCs (August 1998 only); and also because of the cancer potency of two of the known chemicals detected in air. Moreover, due to the close proximity of residences and the future heavy use by sports enthusiasts, once the gas collection system is implemented the emissions should be filtered through a carbon canister to reduce the toxicity of the gas emissions.

Comment #12:
Page 6-3, Section 6.2, *Recommendations*, item #3

The section states that if public access is allowed the area will have to be either fenced off or somehow secluded. While a fence may restrict access to humans, it does not address the continuing source of contamination to ecological receptors. Furthermore, since the hot spot location is in the cove, a fence might restrict access on the landside but will do little to address access to persons recreating in the Charles River.

The conclusions of the report are that there is a Significant Risk (HI=28) to the "Current/Future Child Trespasser" based on dermal exposure and ingestion of sediment

from the hot spot area. The Department recommends that during the landfill capping that consideration be given to dredging or capping this area in some way to prevent future exposure. There clearly is a risk to both human and ecological receptors from the "hot spot".

REFERENCES

MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems. *Archives of Environmental Contamination Toxicology* 39: 20-31.

CDM
One Cambridge Place, 50 Hampshire Street
Cambridge, Massachusetts 02139
tel: 617 452-6000
fax: 617 452-8000

October 30, 2003

Mr. John Carrigan
Section Chief - Solid Waste
Massachusetts Department of Environmental Protection
Northeast Regional Office
One Winter Street
Boston, Massachusetts 02109

Subject: Response to Comments on Comprehensive Site Assessment
Woerd Avenue Landfill Site, Waltham, Massachusetts
Transmittal Number: W008254

Dear Mr. Carrigan:

Camp Dresser & McKee Inc. (CDM) has prepared this letter in response to the comments contained in the approval letter dated March 29, 2002 from your office on the Comprehensive Site Assessment (CSA) for the Woerd Avenue landfill in Waltham. In providing responses to the Department of Environmental Protection's (DEP) comments, CDM has consolidated the issues into following significant comments provided both in the approval letter and its attachment.

In summary, CDM will provide information on the historic filling in the vicinity of the landfill and a proposed program for delineating any landfilled waste beyond the City's property. CDM will also collect additional samples of sediments for lead in Cram Cove near where the sediment sample with a high lead concentration was previously collected. Based on the results of this subsequent sampling program, CDM will make recommendations on the need for an immediate removal action. Finally, CDM will collect samples from the existing groundwater and landfill gas monitoring wells as well as those on the adjacent Parker Hannifan site, if they can be accessed, and provide an interim environmental monitoring plan for the site.

The City is currently reviewing potential post-closure uses of the site. The results of the subsequent investigations outlined below will have an impact on the viability of the site use. If the City elects to use the site for a recreational facility, CDM will update the risk assessment specific to the proposed use. Otherwise, the proposed capping plan will incorporate a standard DEP cap as outlined in the Solid Waste Management Regulations (310 CMR 19.000).

The following are CDM's specific responses to the issues raised in the approval letter:

- Delineation of the Edge of Landfilled Waste. Historically, this area of Waltham and Newton was wetlands and floodplains associated with the Charles River. These expansive low-lying areas were historically filled with materials such as ash from residential coal burning and municipal solid waste incinerators and non-combustible materials. These waste materials are similar to the types of materials that were historically landfilled at the Woerd Avenue site. This condition has been confirmed by a review of historic documents including aerial photographs and maps.

  The issues of delineating the edge of landfilled materials in this area is significantly more difficult than obtaining access onto abutting properties to conduct the "satisfactory test pit program" described in the DEP letter. The materials in the general vicinity will visually be very similar to those that were part of the landfill operations. This similarity has been documented in a variety of reports filed by property owners around the landfill site under the Massachusetts Contingency Plan (MCP, 310 CMR 40.000).

  To address the DEP's comment that the City properly delineates the edge of waste, CDM proposes a two step process. As an initial step, CDM will review and summarize information generated on this area since the completion of the CSA report in 1999. This information will include MCP report filings for abutting properties including the former Parker Hannifan site and the Rumford Avenue Incinerator in Newton. CDM will also work with the City to collect historic maps and aerial photographs of the area available through the cities of Newton and Waltham and a detailed review of the ownership including subdivisions of the properties directly abutting the City-owned properties. This information will be summarized in a letter report to the DEP with recommendations on locations where the landfill operations conducted by the City of Waltham were historically conducted.

  Based on this review, the City will contact abutting property owners to obtain access to conduct further subsurface explorations on their property where it is suspected that the City may have landfilled historically. If permission is granted, CDM will provide the DEP with a site-specific approach for the field program on the properties for review and approval. It should be noted that test pits may not be appropriate given the paved and developed areas that surround the site and that CDM may recommend Geoprobes or conventional drilling depending on the situation. The proposed scope of work will also address the need for sampling of the surficial soils to determine imminent hazard

conditions. The decision to sample will be based on the current site use and the depth of landfilled materials found during the field investigation program.

The review of background information and subsequent field program will include the delineation of any historical landfilling that may now be under water in Cram Cove.

The City will keep the DEP aware of the status of this process and anticipates finishing the initial phase by March 1, 2004. At that time, CDM will submit the proposed field program and request access from the abutting property owners. The timing of the completion of the field program will be based on weather and the cooperation of the property owners.

- Delineation of Wetland Sediment Contamination in Cram Cove. During the CSA, CDM collected a sample with an extremely high concentration of lead in sediments from Cram Cove. Subsequent sampling found lower levels in composite samples. CDM understands that high lead in sediments has been identified at other locations in the Cove that may not be linked to the landfill site. Therefore, CDM will review filings made under the MCP for sites surrounding the Cove and provide a summary of the historic site uses as well as any analytical testing of wetland sediments. CDM will also obtain copies of any ecological risk assessments conducted as part of these projects based on the concentrations of contaminants found in Cove sediments.

  CDM will collect up to ten discrete samples of wetland sediments in the Cove adjacent to the landfill site. These samples will be forwarded to a laboratory for analysis of total lead only and the results will be reported to the DEP along with a discussion of the need for further sampling or an immediate action.

- Post-Closure Use of the Landfill Site. At this time, the City is reviewing the proposal to utilize the landfill site for a recreational field. Based on the ultimate final use of the site including the final extent of landfilled materials delineated above. If appropriate, a revised quantitative risk assessment will be provided to the DEP along with the post-closure use permit application for the landfill site.

- Further Water Quality and Landfill Gas Sampling. As part of this subsequent program, CDM will collect one round of samples from all the existing groundwater monitoring wells and surface water locations on the City's property and have them analyzed for the standard solid waste parameters found in section 19.132 of the Solid Waste Management Regulations, including volatile organic compounds. CDM will also collect landfill gas samples from the well locations installed around the site perimeter as part of the CSA.

As part of this program, CDM will attempt to access the monitoring wells located on the former Parker Hannifan property. If access can be obtained, the wells located adjacent to the landfill will be analyzed for the standard solid waste parameters.

Following completion of this round, CDM will provide the DEP with a summary letter report with a proposed ongoing environmental monitoring program for the site.

- Human Health Risk Assessment - Soil Sampling. The CSA scope of work approved by the DEP for the site did not include surficial soil sampling to assess a potential exposure to trespassers prior to final capping. This pathway is not typically assessed as part of the landfill assessment process under the Solid Waste Management Regulations (310 CMR 19.000). Therefore, CDM did not collect any surficial soil samples or analyze them in the risk assessment. CDM does not propose to conduct any soil sampling at the site.

- PCB and Pesticide Sampling. The attachment to the comment letter asks why PCBs and pesticides were deleted from the sampling program. These parameters are not the standard parameters included required for CSA's under the DEP regulations and were not part of the approved scope of work. They are also not typically associated with landfills that were primarily for ash materials such as the Woerd Avenue site. Following review of the MCP documents described above, CDM may recommend further sampling of sediments or water quality for these parameters.

We are available to meet with you and your staff to discuss our responses and proposed approach to completing the closure process for the site. Please do not hesitate to contact me at (617) 452-6541 if you have any questions or require anything further.

Very truly yours,

Bruce W. Haskell

Bruce W. Haskell, P.E.
Camp Dresser & McKee Inc.

c: Abdul Turay, DEP-Boston
Ronald Vokey, Waltham
Ted Fields, Waltham
Cheryl Waddick, Waltham

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
METROPOLITAN BOSTON – NORTHEAST REGIONAL OFFICE

MITT ROMNEY
Governor

KERRY HEALEY
Lieutenant Governor

ELLEN ROY HERZFELDER
Secretary

ROBERT W. GOLLEDGE, Jr.
Commissioner

MAR 3 0 2004

Ronald G. Vokey, Planning Director
City of Waltham
Planning Department
119 School Street
Waltham, MA 02451

RE: Woerd Avenue Landfill - Waltham
Application for: BWPSW23 – Comprehensive Site Assessment
Transmittal Number: W008254
Approval with Conditions – Supplemental CSA Scope

Dear Mr. Vokey:

The Metropolitan Boston/Northeast Regional Office of the Department of Environmental Protection, Solid Waste Management Section (the "Department") has reviewed the October 30, 2003 response to the Department's March 29, 2002 conditional approval of the Comprehensive Site Assessment (CSA) for the Woerd Avenue landfill in Waltham, Massachusetts. The response was prepared and submitted on behalf of the Town of Waltham (the "Town") by Camp Dresser & McKee, Inc. of Cambridge, Massachusetts. It details the tasks to be undertaken to satisfy the conditions of the Department's May 29, 2002 approval of the CSA.

The Department approves the tasks described in the October 30, 2003 response subject to the following conditions:

1. The Town shall within thirty (30) days of the date of this letter provide to the Department a schedule for conducting the tasks described in the October 30, 2003 response and for submitting an addendum to the CSA for the Department's review and approval.

2. The addendum to the CSA shall summarize the results of the additional investigations and address the issues identified in the Department's October 30, 2003 approval of the CSA. In addition, the addendum to the CSA shall include a schedule for submittal of a Corrective Action Alternatives Analysis pursuant to 310 CMR 19.150(6).

If you have any questions regarding the items discussed above contact Mr. Abdul Turay of our Boston office at 617-292-5522.

Sincerely,

John Carrigan, Section Chief
Solid Waste Section

Cc: Walter Sweder, Jr., Dir
119 School Street
Waltham, Ma 02154

Bruce Haskell
1 Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

CDM
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April 9, 2004

Mr. John Carrigan
Section Chief - Solid Waste
Northeast Regional Office
One Winter Street
Boston, Massachusetts 02108

Subject: Schedule for Completion of Supplemental Comprehensive Site Assessment Tasks - Woerd Avenue Landfill, Waltham

Dear Mr. Carrigan:

As requested in the letter from the Department dated March 30, 2004, Camp Dresser & McKee Inc. (CDM) has developed the following anticipated schedule for completion of the Supplemental Comprehensive Site Assessment (CSA) tasks at the Woerd Avenue Landfill site. This letter is sent on behalf of the City of Waltham and includes the work required to satisfy the conditions of the Department's May 29, 2002 approval of the CSA.

The City has already begun the appropriation process for the necessary funds to complete the Supplemental CSA work. It is anticipated that the appropriation will be finalized in mid-May with a contract being prepared and signed by July 1, 2004.

CDM estimates that the work will require four months to complete including sample collection and analysis and review of historic and recent information on the landfill site and surrounding areas. CDM will also need to meet with the City after the information and data has been compiled to discuss the next steps and overall approach that will be presented to the DEP as part of the supplemental CSA. Therefore, we anticipate submitting the Supplemental CSA report to your office by November 1, 2004.

Please do not hesitate to contact me at (617) 452-6541 if you have any questions or require anything further.

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Very truly yours,

Bruce W. Haskell

Bruce W. Haskell, P.E.
Camp Dresser & McKee Inc.

c: Ronald Vokey, Waltham
Ted Fields, Waltham
Sheryl Waddick, Waltham

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Cambridge, Massachusetts 02139
tel: 617 452-6000
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January 5, 2005

Mr. John Carrigan
Department of Environmental Protection
Northeast Regional Office
One Winter Street
Boston, Massachusetts 02108

Subject: Summary of Groundwater, Surface Water, Sediment and Gas Sampling Results
Town of Waltham, Massachusetts
Woerd Avenue Landfill - November 2004

Dear Mr. Carrigan:

On November 15-16, 2004, Camp Dresser & McKee Inc. (CDM) personnel collected groundwater, surface water, and sediment samples and field analyzed landfill gas samples at the Woerd Avenue Landfill in Waltham, Massachusetts. The sampling was performed in accordance with the Massachusetts Department of Environmental Protection (DEP) protocol.

Appendix A contains a site plan that shows each sampling location. Appendix B contains tables that summarize field and laboratory sampling results. Table 1 summarizes the analytical results for conventional parameters (alkalinity, total dissolved solids (TDS), nitrate-nitrogen, cyanide, sulfate, chloride, and chemical oxygen demand (COD) and dissolved metals (arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, selenium, silver, and zinc) for groundwater and surface water samples. Table 2 summarizes the analytical results of volatile organic compounds (VOCs) for groundwater and surface water samples. Table 3 summarizes the results of groundwater and surface water parameters measured in the field (pH, temperature, dissolved oxygen, specific conductance, depth to groundwater, and groundwater elevation). Table 4 summarizes the analytical results for lead for sediment samples. Table 5 summarizes the results of the landfill gas monitoring. Analytical values that exceed applicable standards appear shaded in each table. Appendix C contains a copy of the laboratory data sheets.

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This sampling work was completed as part of ongoing Supplemental Comprehensive Site Assessment activities approved by DEP. The following is an analysis of the results collected in this round of sampling:

Groundwater Sampling

CDM collected groundwater samples from the following monitoring well locations: CDM-1A, CDM-2, CDM-2A, CDM-3A, CDM-4, and CDM-4A. Monitoring wells CDM-1 and CDM-3 were dry and could not be sampled this round. Massachusetts Solid Waste Regulations (310 CMR 19.000) requires that sampling results be compared to the established Primary Maximum Contaminant Levels (MCL) Regulation and the Secondary MCLs for each parameter. The Primary MCLs were not exceeded in any of the groundwater samples this round.

Massachusetts Secondary Maximum Contaminant Levels (SMCLs) were exceeded in the following groundwater samples:

- Manganese exceeded the SMCL in all sampling locations at levels ranging form 87.5 ug/l to 3,920 ug/l. The SMCL for manganese is 50 ug/l.
- Iron exceeded the SMCL in CDM-2, CDM-3A, and CDM-4 at concentrations ranging from 897 ug/l to 33,900 ug/l. The SMCL for iron is 300 ug/l.
- TDS exceeded the SMCL in CDM-2, CDM-4, and CDM-4A at concentrations ranging from 633 mg/l to 871 mg/l. The SMCL for TDS is 500 mg/l.
- Chloride exceeded the SMCL in CDM-4A at a concentration of 349.89 mg/l. The SMCL for chloride is 250 mg/l.

Secondary standards are established for aesthetics and taste of a public drinking supply and are not health based.

There were no VOCs exceedances for MCLs or SCMLs detected in the groundwater samples this round.

Surface Water Sampling

CDM collected surface water samples from two locations (COVE-1 and COVE-2) from Cram's Cove as shown on the attached plan.

The Primary MCLs were not exceeded in any of the surface water samples this round.

Massachusetts Secondary Maximum Contaminant Levels (SMCLs) were exceeded in the following surface water samples:

- Manganese exceeded the SMCL in both COVE-1 and COVE-2 at concentrations of 650 ug/l and 463 ug/l, respectively. The SMCL for manganese is 50 ug/l.
- Iron exceeded the SMCL in both COVE-1 and COVE-2 at concentrations of 28,100 ug/l and 15,700 ug/l, respectively. The SMCL for iron is 300 ug/l.
- TDS exceeded the SMCL in both COVE-1 and COVE-2 at concentrations of 1,061 mg/l and 1,150 mg/l, respectively. The SMCL for TDS is 500 mg/l.
- Chloride exceeded the SMCL in COVE-1 at a concentration of 362.39 mg/l. The SMCL for chloride is 250 mg/l.

Sediment Sampling

CDM collected ten sediment samples (SED-1 through SED-10) from the banks of Cram's Cove. SED-1 was taken form the same location as COVE-1, from which point a new sample was taken every twenty feet moving north along the bank finishing with SED-10 in the location of COVE-2. The samples were tested for lead concentration and compared to three standards including the Massachusetts DEP Sediment Guidelines, the Urban Fill Background Criteria – "Natural Soil", and the MCP S-1 Standards.

- Lead exceeded the MADEP Sediment Guidelines in every sediment sample. The standard limit lead is 35.8 mg/kg.
- Lead exceeded the Urban Fill Background Criteria in every sediment sample. The standard limit for lead is 100 mg/Kg.
- Lead exceeds the MCP S-1 standard in every sediment sample except SED-2, SED-3, SED-9, and SED-10 at concentrations ranging from 313 mg/Kg to 673 mg/Kg. The MCP S-1 standard for lead is 300 mg/Kg.

Landfill Gas Sampling

During the November 2004 monitoring event, three landfill gas-monitoring wells (LFG-1 through LGP-3) were sampled for the presence of landfill gas. Concentrations of methane

CDM

BRUCE

(CH_4), carbon dioxide (CO_2), oxygen (O_2), and a Lower Explosive Limit (LEL) reading were obtained using a Landtec GEM 500 Gas Analyzer. Hydrogen Sulfide (H_2S) concentrations were obtained using a tritector. VOC concentration was obtained using an organic vapor meter (OVM).

- CH_4 was detected in landfill gas monitoring location LFG-1 at a concentration to 3.0% by volume of methane. This corresponds to an LEL of 60%, over the regulatory limit of 25% of the LEL.
- CO_2 was detected in all gas monitoring locations at concentrations ranging 11.8% to 18.0% by volume carbon dioxide.
- H_2S was not detected in any landfill gas monitoring locations this round.
- VOCs were detected in landfill gas monitoring locations LFG-2 and LFG-3 at concentrations of 0.9 ppm and 6.5 ppm respectively.

Please do not hesitate to call me at (617) 452-6541 if you have any questions.

Very truly yours,

Bruce W. Haskell

Bruce W. Haskell, P.E.
Camp Dresser & McKee Inc.

c: Ronald Vokey, Waltham
Ted Fields, Waltham

TABLE 1
WOERD AVENUE LANDFILL, WALTHAM, MASSACHUSETTS
NOVEMBER 2004 - GROUNDWATER SAMPLING SUMMARY

SAMPLE NUMBER		DRINKING	NA	0411-215-01	0411-215-02	0411-215-03	NA	0411-251-01	0411-215-04	0411-215-06	0411-215-05	0411-251-03	0411-251-04
SAMPLING DATE		WATER	NA	11/15/04	11/15/04	11/15/04	NA	11/16/04	11/15/04	11/15/04	11/15/04	11/16/04	11/16/04
LOCATION ID	UNITS	REGULATIONS	CDM-1	CDM-1A	CDM-2	CDM-2A	CDM-3	CDM-3A	CDM-4	DUP-1	CDM-4A	COVE-1	COVE-2
CONVENTIONAL PARAMETERS													
ALKALINITY	mg/l	NL	NS	119.48	612.85	70.56	NS	180.87	566.50	661.26	301.58	571.65	783.83
TDS (TOT. DISSOLVED SOLIDS)	mg/l	500 (3,5)	NS	169	692	97	NS	299	633	613	871	1,061	1,150
NITRATE-NITROGEN	mg/l	10 (2,4)	NS	3.2	3.1	1.1	NS	<0.950	3.0	3.1	1.2	2.1	<0.950
CYANIDE, TOTAL	mg/l	0.2(4)	NS	<0.005	<0.005	<0.005	NS	<0.005	0.02	<0.005	<0.005	<0.005	<0.005
SULFATE	mg/l	250(3,5)	NS	17.59	<2.00	3.79	NS	17.15	<2.00	<2.00	<2.00	<2.00	<2.00
CHLORIDE	mg/l	250(5)	NS	9.75	70.98	4.25	NS	29.14	71.48	69.18	349.89	362.39	247.42
COD (CHEMICAL OXYGEN DEMAND)	mg/l	NL	NS	<20	53	<20	NS	<20	105	51	30	51	101
METALS													
ARSENIC	ug/l	50(2,6)	NS	<10.0	<10.0	<10.0	NS	<10.0	<10.0	<10.0	<10.0	13.2	<10.0
BARIUM	ug/l	2,000 (2,4)	NS	39.3	1,830	<10.0	NS	196	1,370	1,380	116	927	886
CADMIUM	ug/l	5 (2,4)	NS	<1.10	<1.10	<1.10	NS	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10
CHROMIUM	ug/l	100(2,4)	NS	<6.00	<6.00	<6.00	NS	<6.00	<6.00	<6.00	<6.00	<6.00	<6.00
COPPER	ug/l	1,300 (2,4)	NS	<5.00	<5.00	<5.00	NS	164	<5.00	<5.00	<5.00	<5.00	<5.00
IRON	ug/l	300 (3,5)	NS	<100	33,900	<100	NS	897	33,400	34,200	278	28,100	15,700
LEAD	ug/l	15 (2,4)	NS	<3.00	<3.00	<3.00	NS	<3.00	<3.00	<3.00	<3.00	<3.00	<3.00
MANGANESE	ug/l	50 (3,5)	NS	95.4	191	87.5	NS	490	209	193	3,920	650	463
MERCURY	ug/l	2 (2,4)	NS	<0.200	<0.200	<0.200	NS	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
SELENIUM	ug/l	50 (2,4)	NS	<5.00	<5.00	<5.00	NS	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
SILVER	ug/l	100 (3,5)	NS	<5.00	<5.00	<5.00	NS	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
ZINC	ug/l	5,000 (3,5)	NS	<30.0	<30.0	<30.0	NS	132	<30.0	<30.0	<30.0	52.9	<30.0

FOOTNOTES:
(1) HIGHLIGHTED AREAS: CONCENTRATION EQUALS OR EXCEEDS
MASSACHUSETTS OR EPA DRINKING WATER STANDARDS OR GUIDELINES
(2) MASSACHUSETTS DRINKING WATER STANDARD OR MAXIMUM CONTAMINANT LEVEL (MCL)
(3) MASSACHUSETTS DRINKING WATER GUIDELINE OR SECONDARY MAXIMUM CONTAMINANT LEVEL (SMCL)
(4) EPA PRIMARY DRINKING WATER STANDARD
(5) EPA SECONDARY DRINKING WATER STANDARD
(6) THE US ENVIRONMENTAL PROTECTION AGENCY HAS LOWERED ITS MCL FOR ARSENIC FROM 50 TO 10 UG/L.
THE MASSACHUSETTS DEP HAS STATED THAT IT WILL NOT BE ADOPTING THE NEW EPA STANDARD UNTIL
JANUARY 23, 2006. UNTIL THEN, THE MASSACHUSETTS DRINKING WATER STANDARD WILL REMAIN 50 UG/L.
<#.# NOT DETECTED TO THE LIMIT INDICATED
DUP-1 TAKEN AT CDM-4
NOT APPLICABLE
NL NO LIMIT
NS NOT SAMPLED

TABLE 4
WOERD AVENUE LANDFILL, WALTHAM, MASSACHUSETTS
SEDIMENT QUALITY SAMPLING- NOVEMBER 2004
SUMMARY OF FIELD MEASUREMENTS

SAMPLE NUMBER		MADEP	Urban Fill	MCP S-1	0411-251-06	0411-251-07	0411-251-08	0411-251-09	0411-251-10	0411-251-11	0411-251-12	0411-251-13	0411-251-14	0411-251-15
SAMPLING DATE		Sediment	Background Criteria-	Standard	11/16/04	11/16/04	11/16/04	11/16/04	11/16/04	11/16/04	11/16/04	11/16/04	11/16/04	11/16/04
LOCATION ID	UNITS	Guidelines	"Natural Soil"		SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-10
Lead	mg/Kg	35.8	100	300	**412**	*114*	*164*	**552**	**481**	**673**	**382**	**313**	*238*	*102*

Notes:
1. Bolding indicates exceedance of MADEP Sediment Guidelines
2. Italics indicates exceedance of Urban Fill Background Criteria for "Natural Soil"
3. Shading indicates exceedance of the MCP S-1 Standard

TABLE 5
WOERD AVENUE LANDFILL, WALTHAM, MASSACHUSETTS
NOVEMBER 2004 - LANDFILL GAS SAMPLING SUMMARY

Sample Location	Date	Sample Point	Methane[2] (% vol.)	% LEL (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	OVM (ppm)	H_2S (ppm)
LFG-1	11/16/2004	Well	3.0	60.0	18.0	2.0	0.0	0.0
LFG-2	11/16/2004	Well	0.0	0.0	16.8	2.6	0.9	0.0
LFG-3	11/16/2004	Well	0.0	0.0	11.8	9.7	6.5	0.0

Notes:
1. Wells and probes were purged for approximately 10 minutes before final readings were recorded.
2. Methane measured with combustible gas indicator.

AmeriSci Boston
Eight School Street
Weymouth, MA 02189
781-337-9334

Laboratory Report

Report Date 12/08/2004
Workorder No. 0411-00215

Customer: Camp Dresser & McKee
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Attention: Mr. Vin Recchia

Subject: WALTHAM LF

Sample: 001 CDM-MW-1A
Date: 11/15/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	

Certifications: MA: MA089 NY:10982 CT: PH0119 RI:A45 CA:205(NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERISCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 001 CDM-MW-1A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0118 RI:A45 CA:205(NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 001 CDM-MW-1A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAN		114	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		104	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		102	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	ND	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/23/2004	
Alkalinity	2320B SM 18TH, 1992	119.48	mg/L	20	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	169	mg/L	3	PJS	11/16/2004	
Sulfate	EPA 375.4	17.59	mg/L	2.00	EEH	11/19/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	3.2	mg/L	0.950	PJS	11/16/2004	
Chloride	SM 4500 CL(-)-B	9.75	mg/L	3.00	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	JRH	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	0.0393	mg/L	0.0100	JRH	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/24/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	JRH	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/29/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	JRH	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	ND	mg/L	0.100	JRH	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	0.0954	mg/L	0.00700	JRH	11/17/2004	

Sample: 002 CDM-MW-2

Certifications: MA: MA069 NY:10984 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 002 CDM-MW-2
(Continued)

Date: 11/15/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERISCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 002 CDM-MW-2
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERISCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 002 CDM-MW-2
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		106	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		104	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		95.2	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	53	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/23/2004	
Alkalinity	2320B SM 18TH, 1992	612.85	mg/L	50	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	692	mg/L	3	PJS	11/16/2004	
Sulfate	EPA 375.4	ND	mg/L	2.00	EEH	11/18/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	3.1	mg/L	0.950	PJS	11/16/2004	
Chloride	SM 4500 CL(-)-B	70.98	mg/L	6.0	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	JRH	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	1.83	mg/L	0.0100	JRH	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/24/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	JRH	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/29/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	JRH	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	33.9	mg/L	0.100	JRH	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	0.131	mg/L	0.00700	JRH	11/17/2004	

Sample: 003 CDM-MW-2A
Date: 11/15/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 003 CDM-MW-2A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA089 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 003 CDM-MW-2A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		108	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		104	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		93.7	%		NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERISCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 003 CDM-MW-2A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Chemical Oxygen Demand	5220D SM 18TH, 1992	ND	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/23/2004	
Alkalinity	2320B SM 18TH, 1992	70.56	mg/L	5	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	97	mg/L	3	PJS	11/16/2004	
Sulfate	EPA 375.4	3.79	mg/L	2.00	EEH	11/18/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	1.1	mg/L	0.950	PJS	11/16/2004	
Chloride	SM 4500 CL(-)-B	4.25	mg/L	3.00	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	JRH	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	ND	mg/L	0.0100	JRH	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/24/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	JRH	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/29/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	JRH	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	ND	mg/L	0.100	JRH	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	0.0875	mg/L	0.00700	JRH	11/17/2004	

Sample: 004 CDM-MW-4
Date: 11/15/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 004 CDM-MW-4
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERISCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 004 CDM-MW-4
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		109	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		104	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		95.1	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	105	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	0.02	mg/L	0.005	SUB	11/23/2004	
Alkalinity	2320B SM 18TH, 1992	566.50	mg/L	50	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	633	mg/L	3	PJS	11/16/2004	
Sulfate	EPA 375.4	ND	mg/L	2.00	EEH	11/18/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERISCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 004 CDM-MW-4
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	3.0	mg/L	0.950	PJS	11/16/2004	
Chloride	SM 4500 CL(-)-B	71.48	mg/L	6.0	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	JRH	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	1.37	mg/L	0.0100	JRH	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/24/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	JRH	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/29/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	JRH	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	33.4	mg/L	0.100	JRH	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	0.209	mg/L	0.00700	JRH	11/17/2004	

Sample: 005 CDM-MW-4A
Date: 11/15/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 005 CDM-MW-4A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 005 CDM-MW-4A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		109	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		103	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		99.2	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	30	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/23/2004	
Alkalinity	2320B SM 18TH, 1992	301.58	mg/L	20	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	871	mg/L	3	PJS	11/16/2004	
Sulfate	EPA 375.4	ND	mg/L	2.00	EEH	11/18/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	1.2	mg/L	0.950	PJS	11/16/2004	
Chloride	SM 4500 CL(-)-B	349.69	mg/L	30.0	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	JRH	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	

Certifications: MA: MA089 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 005 CDM-MW-4A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Barium, Dissolved	EPA 200.7	0.116	mg/L	0.0100	JRH	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/24/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	JRH	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/29/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	JRH	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	0.278	mg/L	0.100	JRH	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	3.92	mg/L	0.00700	JRH	11/17/2004	

Sample: 006 DUP-1
Date: 11/15/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	

Certifications: MA; MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERISCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 006 DUP-1
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 006 DUP-1
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		113	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		107	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		101	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	51	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/23/2004	
Alkalinity	2320B SM 18TH, 1992	661.26	mg/L	50	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	613	mg/L	3	PJS	11/16/2004	
Sulfate	EPA 375.4	ND	mg/L	2.00	EEH	11/18/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	3.1	mg/L	0.950	PJS	11/16/2004	
Chloride	SM 4500 CL(-)-B	69.18	mg/L	6.0	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	JRH	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	1.38	mg/L	0.0100	JRH	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/24/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	JRH	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/29/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:205(NJ: 5974(

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 006 DUP-1
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	JRH	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	34.3	mg/L	0.100	JRH	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	0.193	mg/L	0.00700	JRH	11/17/2004	

Sample: 007 TRIP BLANK
Date: 11/15/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 007 TRIP BLANK
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00215

Sample: 007 TRIP BLANK
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		115	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		109	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		103	%		NAC	11/22/2004	

To the best of my knowledge this report is true and accurate.

Authorized By: _____

John J. Sulkowski, Lab Director

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

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CHAIN OF CUSTODY RECORD

AmeriSci Job No.:
Due Date:
☐ 1 Day ☐ 2 Day ☐ 3 Day ☐ 5 Day ☐ 7 Day ☐ 10 Day
Data Package: 0911 – 215
Page 1 of 1
Temp Upon Receipt: 11.4°C
P.O.#

Company: CDM
Address: 50 Hampshire St, Cambridge Ma 02139
Phone: (617) 452-6000 Fax 1: (617) 452-8576 Fax 2:
Client Contact: Vin Reccora Email:
Project Name: Waltham LF Project Number: Project State: Ma

Matrix: A-Water S-Soil/Solids SL-Sludge OIL-Oil CH-Chips WI-Wipes C-Cassettes W-Waste O-Other
Container: P-Plastic G-Glass V-VOA

Lab ID	Client Sample Identification	Matrix	Container Size	Container Type	Container #	Sampling Date	Sampling Time	Sampling Tech	Grab (G) or Composite (C)	Preservatives	Sample pH at Login	VOCs 8260	COD's	TCN	Wet Chem: ALK, TDS, SO4, NO3, Cl	Metals (Field Filtered) RCRA 8 + Al		Notes
1	CDM-MW-1A	A		P/V	4/2	11/15/04		FS/PA	G		[illegible]	X	X	X	X	X		
2	CDM-MW-2	↓		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓		
3	CDM-MW-2A	↓		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓		
4	CDM-MW-4	↓		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓		
5	CDM-MW-4A	↓		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓		
6	Dup-1	↓		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓		
7	Trip Blank	↓		V	1	↓		↓	↓		–	↓						

Sampled By: (Print) Fred Santoro	Date: 11/15/04	Received By: (Print)	Date:	
(Sign) [signature]	Time:	(Sign)	Time:	
Relinquished By: (Print) Frederic A Santoro	Date: 11/15/04	Received By: (Print)	Date:	
(Sign) [signature]	Time: 1830	(Sign)	Time:	
Relinquished By: (Print)	Date:	Received For Laboratory By: (Print) Mark Porta	Date: 11/15/04	
(Sign)	Time:	(Sign) [signature]	Time: 18:30	

AmeriSci Boston
Eight School Street
Weymouth, MA 02189
781-337-9334

Laboratory Report

Report Date 12/07/2004
Workorder No. 0411-00251

Customer: Camp Dresser & McKee
One Cambridge Place
50 Hampshire Street
Cambridge, MA 02139

Attention: Mr. Vin Recchia

Subject: WALTHAM LF

Sample: 001 MW-3A
Date: 11/16/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 001 MW-3A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected PQL= Practical Quantitation Limit

Sample: 001 MW-3A
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		119	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		104	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		102	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	ND	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/30/2004	
Alkalinity	2320B SM 18TH, 1992	180.87	mg/L	20	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	299	mg/L	3	PJS	11/18/2004	
Sulfate	EPA 375.4	17.15	mg/L	2.00	EEH	11/18/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	ND	mg/L	0.950	PJS	11/18/2004	
Chloride	SM 4500 CL(-)-B	29.14	mg/L	3.00	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	VEN	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	0.196	mg/L	0.0100	VEN	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/30/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	VEN	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/30/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	VEN	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	0.132	mg/L	0.0300	VEN	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	0.164	mg/L	0.00500	VEN	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	0.897	mg/L	0.100	VEN	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	0.490	mg/L	0.00700	JRH	11/30/2004	

Sample: 002 FB-1

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 002 FB-1
(Continued)

Date: 11/16/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 002 FB-1
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 002 FB-1
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAN		114	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		103	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		102	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	ND	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/30/2004	
Alkalinity	2320B SM 18TH, 1992	7.73	mg/L	5	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	96	mg/L	3	PJS	11/18/2004	
Sulfate	EPA 375.4	ND	mg/L	2.00	EEH	11/18/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	ND	mg/L	0.950	PJS	11/18/2004	
Chloride	SM 4500 CL(-)-B	9.75	mg/L	3.00	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	VEN	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	ND	mg/L	0.0100	VEN	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/30/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	VEN	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/30/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	VEN	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	VEN	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	VEN	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	ND	mg/L	0.100	VEN	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	ND	mg/L	0.00700	VEN	11/17/2004	

Sample: 003 SW-(COVE-1)
Date: 11/16/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:205(NJ: 5974

ND = Not Detected **PQL= Practical Quantitation Limit**

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 003 SW-(COVE-1)
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:205(NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 003 SW-(COVE-1)
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		116	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		103	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		96.4	%		NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:205(NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

Sample: 003 SW-(COVE-1)
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Chemical Oxygen Demand	5220D SM 18TH, 1992	51	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/30/2004	
Alkalinity	2320B SM 18TH, 1992	571.65	mg/L	50	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	1061	mg/L	3	PJS	11/18/2004	
Sulfate	EPA 375.4	ND	mg/L	2.00	EEH	11/18/2004	
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	2.1	mg/L	0.950	PJS	11/18/2004	
Chloride	SM 4500 CL(-)-B	362.39	mg/L	30.0	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	0.0132	mg/L	0.0100	JRH	11/22/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	0.927	mg/L	0.0100	JRH	11/22/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	RPL	11/30/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/22/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	JRH	11/22/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/30/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/22/2004	
Zinc, Dissolved	200.7, EPA 1987	0.0529	mg/L	0.0300	JRH	11/22/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	JRH	11/22/2004	
Iron, Dissolved	200.7, EPA 1987	28.1	mg/L	0.100	JRH	11/22/2004	
Manganese, Dissolved	200.7, EPA 1987	0.650	mg/L	0.00700	JRH	11/22/2004	

Sample: 004 SW-(COVE-2)
Date: 11/16/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	

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Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 004 SW-(COVE-2)
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	ND	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

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Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 004 SW-(COVE-2)
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		118	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		106	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		107	%		NAC	11/22/2004	
Chemical Oxygen Demand	5220D SM 18TH, 1992	101	mg/L	20	PJS	11/19/2004	
Total Cyanide	9010/335.3	ND	mg/L	0.005	SUB	11/30/2004	
Alkalinity	2320B SM 18TH, 1992	783.83	mg/L	50	PJS	11/18/2004	
Total Dissolved Solids	2540C SM 18TH, 1992	1150	mg/L	3	PJS	11/18/2004	
Sulfate	EPA 375.4	ND	mg/L	2.00	EEH	11/18/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 59744

ND = Not Detected **PQL= Practical Quantitation Limit**

Sample: 004 SW-(COVE-2)
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Nitrogen, Nitrate	SM 18-20 4500-NO3 D	ND	mg/L	0.950	PJS	11/18/2004	
Chloride	SM 4500 CL(-)-B	247.42	mg/L	30.0	PJS	11/22/2004	
RCRA 8 Metals, Dissolved						00/00/0000	
Arsenic, Dissolved	200.7, EPA 1987	ND	mg/L	0.0100	VEN	11/17/2004	
Selenium Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00500	NAP	11/24/2004	
Barium, Dissolved	EPA 200.7	0.886	mg/L	0.0100	VEN	11/17/2004	
Lead, Dissolved, Furnace	EPA 200.9	ND	mg/L	0.00300	NAP	11/19/2004	
Cadmium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00110	JRH	11/30/2004	
Chromium, Dissolved	200.7, EPA 1987	ND	mg/L	0.00600	VEN	11/17/2004	
Mercury, Dissolved	EPA 245.2	ND	mg/L	0.000200	NAP	11/30/2004	
Silver, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	VEN	11/17/2004	
Zinc, Dissolved	200.7, EPA 1987	ND	mg/L	0.0300	VEN	11/17/2004	
Copper, Dissolved	200.7, EPA 1987	ND	mg/L	0.00500	VEN	11/17/2004	
Iron, Dissolved	200.7, EPA 1987	15.7	mg/L	0.100	VEN	11/17/2004	
Manganese, Dissolved	200.7, EPA 1987	0.463	mg/L	0.00700	JRH	11/30/2004	

Sample: 005 TRIP BLANK
Date: 11/16/2004
Matrix: WATER

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Volatile Organics 8260					NAC	11/22/2004	
Dichlorodifluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Chloride	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
Chloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichlorofluoromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Acrolein	EPA 8260B	ND	ug/L	20	NAC	11/22/2004	
Acetone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,1-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Iodomethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Disulfide	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methylene Chloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

AMERI SCI

Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 005 **TRIP BLANK**
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Acrylonitrile	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
Methyl-Tert-Butyl-Ether	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Vinyl Acetate	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Butanone-(MEK)	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
cis-1,2-Dichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chloroform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1-Dichloropropene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Carbon Tetrachloride	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Benzene	EPA 8260B	4.92	ug/L	0.7	NAC	11/22/2004	
1,2-Dichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Trichloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Methyl-2-Pentanone (MIBK	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
2-Chloroethyl vinyl ether	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
cis-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Toluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
trans-1,3-Dichloropropene	EPA 8260B	ND	ug/L	1.0	NAC	11/22/2004	
Bromodichloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2-Trichloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2-Dibromoethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Hexanone	EPA 8260B	ND	ug/L	25	NAC	11/22/2004	
1,3-Dichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Tetrachloroethylene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Dibromochloromethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Chlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,1,2-Tetrachloroethane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Ethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
O-XYLENE	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
M & P-XYLENE	EPA 8260B	ND	ug/L	10	NAC	11/22/2004	
Styrene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected **PQL= Practical Quantitation Limit**

Sample: 005 **TRIP BLANK**
(Continued)

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Bromoform	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Isopropylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,1,2,2-Tetrachloroethane	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2,3-Trichloropropane	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Propylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Bromobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
2-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3,5-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Chlorotoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
tert-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trimethylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
sec-Butylbenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
4-Isopropyltoluene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,3-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,4-Dichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
n-Butylbenzene	EPA 8260B	ND	ug/L	2.0	NAC	11/22/2004	
1,2-Dichlorobenzene	EPA 8260B	ND	ug/L	0.2	NAC	11/22/2004	
1,2-Dibromo-3-Chloropropan	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,4-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Hexachlorobutadiene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
Naphthalene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
1,2,3-Trichlorobenzene	EPA 8260B	ND	ug/L	5.0	NAC	11/22/2004	
DIBROMOFLUOROMETHAI		111	%		NAC	11/22/2004	
TOLUENE-D8 (SURROGATI		104	%		NAC	11/22/2004	
4-BROMOFLUOROBENZEN		99.1	%		NAC	11/22/2004	

Sample: 006 **SED-1**
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	412	mg/Kg	7.68	JRH	11/18/2004	
Percent Solids		35.5	%		TLL	11/18/2004	

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Workorder No. 0411-00251

Sample: 007 SED-2
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	114	mg/Kg	3.74	JRH	11/18/2004	
Percent Solids		76.3	%		TLL	11/18/2004	

Sample: 008 SED-3
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	164	mg/Kg	6.28	JRH	11/18/2004	
Percent Solids		45.1	%		TLL	11/18/2004	

Sample: 009 SED-4
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	552	mg/Kg	2.30	JRH	11/18/2004	
Percent Solids		26.0	%		TLL	11/18/2004	

Sample: 010 SED-5
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	481	mg/Kg	4.13	JRH	11/18/2004	
Percent Solids		66.7	%		TLL	11/18/2004	

Sample: 011 SED-6

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

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Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 011 SED-6
(Continued)

Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	673	mg/Kg	2.88	JRH	11/18/2004	
Percent Solids		20.6	%		TLL	11/18/2004	

Sample: 012 SED-7
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	332	mg/Kg	3.24	JRH	11/18/2004	
Percent Solids		18.5	%		TLL	11/18/2004	

Sample: 013 SED-8
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	313	mg/Kg	3.48	JRH	11/18/2004	
Percent Solids		17.2	%		TLL	11/18/2004	

Sample: 014 SED-9
Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	238	mg/Kg	3.46	JRH	11/18/2004	
Percent Solids		17.1	%		TLL	11/18/2004	

Sample: 015 SED-10

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Customer: Camp Dresser & McKee

Workorder No. 0411-00251

Sample: 015 SED-10
(Continued)

Date: 11/16/2004
Matrix: SEDIMENT

Parameter	Method	Results	Units	PQL	Analyst	Analysis Date	Qual
Lead	6010B, SW-846	102	mg/Kg	7.44	JRH	11/18/2004	
Percent Solids		36.0	%		TLL	11/18/2004	

To the best of my knowledge this report is true and accurate.

Authorized By: _____

John J. Sulkowski, Lab Director

Certifications: MA: MA069 NY:10982 CT: PH0119 RI:A45 CA:2050 NJ: 5974

ND = Not Detected PQL= Practical Quantitation Limit

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DUE DATE:
☐ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐ 7 DAY ☐ 10 DAY

TEMP UPON RECEIPT: 9.2°C

DATA PACKAGE: 0411-251

P.O.#

COMPANY: CDM

ADDRESS: 50 Hampshire ST, CAMBRIDGE MA 02139

PHONE: 617-452-6000 FAX 1: 617-452-8576 FAX 2:

CLIENT CONTACT: Vin Reccatia EMAIL:

PROJECT NAME: Waltham LF PROJECT NUMBER: PROJECT STATE:

MATRIX: A-WATER S-SOIL/SOLIDS SL-SLUDGE OIL-OIL CH-CHIPS WI-WIPES C-CASSETTES W-WASTE O-OTHER

CONTAINER: P-PLASTIC G-GLASS V-VOA

LAB ID	CLIENT SAMPLE IDENTIFICATION	MATRIX	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING INFORMATION DATE	SAMPLING INFORMATION TIME	SAMPLING INFORMATION TECH	GRAB (G) OR COMPOSITE (C)	PRESERVATIVES	SAMPLE PH AT LOGIN	VOC's 8260	COD's	TCN	WET CHEM Alk, TDS, SO4, NO3, Cl, Hardness (Field Filtered)	RCRA 8's	Notes:
1	MW-3A	A		P/V	4/2	11/16/04		FS/PA	G		2/3/3	X	X	X	X	X	
2	FB-1	↓		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	
3	SW-(Cove-1)																
4	SW-(Cove-2)																
5	TripBlank	↓		V	1	↓		↓	↓		—	↓					

SAMPLED BY: (PRINT) FRED SANTERO	DATE: 11/16/04	RECEIVED BY: (PRINT)	DATE:
(SIGN)	TIME:	(SIGN)	TIME:
RELINQUISHED BY: (PRINT) FRED SANTERO	DATE: 11/16/04	RECEIVED BY: (PRINT)	DATE:
(SIGN)	TIME: 1850	(SIGN)	TIME:
RELINQUISHED BY: (PRINT)	DATE:	RECEIVED FOR LABORATORY BY: (PRINT)	DATE: 11/16/04
(SIGN)	TIME:	(SIGN) Angela Magno	TIME: 18:55

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DUE DATE:
☐ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☐ 7 DAY ☐ 10 DAY

TEMP UPON RECEIPT: 9.2 °C

DATA PACKAGE: 0411-251

P.O.#

COMPANY: CDM

ADDRESS: 30 HAMPSHIRE ST CAMBRIDGE MA 02139

PHONE: 617-452-6000 FAX 1: (617) 452-8576 FAX 2:

CLIENT CONTACT: UMA RECCHIA EMAIL:

PROJECT NAME: Waltham LTE PROJECT NUMBER: PROJECT STATE: MA

MATRIX: A-WATER S-SOIL/SOLIDS SL-SLUDGE OIL-OIL CH-CHIPS WI-WIPES C-CASSETTES W-WASTE O-OTHER

CONTAINER: P-PLASTIC G-GLASS V-VOA

LAB ID	CLIENT SAMPLE IDENTIFICATION	MATRIX	CONTAINER SIZE	CONTAINER TYPE	CONTAINER #	SAMPLING INFORMATION DATE	SAMPLING INFORMATION TIME	SAMPLING INFORMATION TECH	GRAB (G) OR COMPOSITE (C)	PRESERVATIVES	SAMPLE PH AT LOGIN	PB (LEAD)	Notes:
6	SED-1	S		G	1	11/14/04		FS/PA	G			X	
7	SED-2												
8	SED-3												
9	SED-4												
10	SED-5												
11	SED-6												
12	SED-7												
13	SED-8												
14	SED-9												
15	SED-10												

SAMPLED BY: (PRINT) FRED SANTORO	DATE: 11/14/04	RECEIVED BY: (PRINT)	DATE:
(SIGN)	TIME:	(SIGN)	TIME:
RELINQUISHED BY: (PRINT) FRED SANTORO	DATE: 11/16/04	RECEIVED BY: (PRINT)	DATE:
(SIGN)	TIME: 1850	(SIGN)	TIME:
RELINQUISHED BY: (PRINT)	DATE:	RECEIVED FOR LABORATORY BY: (PRINT)	DATE: 11/16/04
(SIGN)	TIME:	(SIGN) Angela Reynolds	TIME: 18 55

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SCI-SOP-1003
Sample Receiving Form

CLIENT:	CDM	WORKORDER:	0411-257
CLIENTS JOB:	Waltham L.F.	RECEIVED BY:	MP/Am
RECEIVED DATE:	11/16/04	SHIPPING METHOD:	Dropoff
TEMP UPON RECEIPT:	9.2°C		

"No" responses must be explained in the comment section below.

Checklist	YES	NO	NA
Were custody seals on shipping container(s) intact? Check "NA" if no seals, or if containers were hand delivered.			X
Were Chain of Custody Forms included with the samples?	X		
Were Chain of Custody Forms properly filled out (ink, signed, etc.)	X		
Were all containers received in good condition (Check for breakage/ leaks)?	X		
Were all containers labeled with required information(Sample Id, date, signed, analysis, preservation)?	X		
Were the correct containers used for the tests indicated?	X		
Were proper preservation techniques indicated?	X		
Were samples received within holding times? If "NO" nonconformance form is required.	X		
Were all VOA bottles checked for the presence of air bubbles? If bubbles were found please note in the comment section.	X		
Were samples in direct contact with wet ice? If "NO" check one: ☐ Blue Ice ☒ No Ice		X	
Is sample temperature recorded ? If "NO" check one: ☐ Unable to record ☑ Temp taken near samples	X		
Were pHs of samples checked and recorded on the COC forms?	X		
Did the laboratory accept samples?	X		
Will samples be subcontracted? If "yes" list subcontractor and tests in specified sections below.	X		
Subcontractor: Phoenix	Date Sent Out: 11/18/04		
Analyses Sent: CN-			

Login Technician: MP	Login Review:
Comments:	

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01	DEC.08	03:03PM	Camp Dresser McKee MA	0:06:58	20	OK ECM	2843

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To: Mr. Vin Recchia
Camp Dresser & McKee

Fax # 617-452-8576 (8664)

AmeriSci Job# 0411-00251
Subject: WALTHAM LF

Pages: _____

Date: Wednesday, December 08, 2004

Time: 9:16:09AM

Comments:

One Cambridge Place, 50 Hampshire Street
Cambridge, Massachusetts 02139
tel: 617 452-6000
fax: 617 452-8000

February 27, 2006

Mr. John Carrigan
Section Chief, Solid Waste Section
Massachusetts Department of Environmental Protection
Northeast Regional Office
205B Lowell Street
Willington, Massachusetts 01851

Subject: Woerd Avenue Landfill
Waltham, Massachusetts
Addendum to Comprehensive Site Assessment
Transmittal No. W008254

Dear Mr. Carrigan:

On behalf of the City of Waltham, Camp Dresser & McKee Inc. (CDM) has prepared this Addendum to the Comprehensive Site Assessment (CSA) for the Woerd Avenue Landfill located in Waltham, Massachusetts. CDM prepared and submitted the CSA Report for the Woerd Avenue Landfill in October 1999. The CSA summarized information gathered during field investigations, identified potential contamination pathways, and provided a quantitative risk assessment and recommendations for environmental monitoring and post-closure uses for the site. The Massachusetts Department of Environmental Protection (MassDEP) issued comments on the CSA in a letter dated March 29, 2002. The letter conditionally approved the CSA, provided that issues identified in the letter were addressed and an addendum to the CSA was submitted. CDM responded to MassDEP's comments in a letter dated October 30, 2003, and proposed additional tasks to be undertaken to satisfy the conditions of MassDEP's approval of the CSA. MassDEP subsequently approved CDM's proposal for addressing MassDEP's comments in a letter dated March 30, 2004.

The scope of work outlined in CDM's response to comments included the following activities:

- Review of documents filed with the MassDEP under the Massachusetts Contingency Plan (MCP) for nearby parcels.
- Review of historical plans, aerial photographs, and interviews related to the historic filling operations in the vicinity of the landfill in Waltham and in Newton to complete a

preliminary estimate of the approximate limit of landfilled waste at the Woerd Avenue Landfill.

- If necessary, preparation of a sampling and analysis plan for a field program on abutting properties to confirm the extent of landfilled waste.
- Collection of an additional round of groundwater samples from on-site monitoring wells and surface water samples for laboratory analysis.
- Analysis of landfill gas in existing wells located along the perimeter of the Woerd Avenue Landfill.
- Collection of ten sediment samples from locations within Cram's Cove immediately adjacent to the landfill for laboratory analysis.
- Preparation of a report summarizing the findings of the additional field investigations.

The tasks outlined in the scope of work have been completed. This letter report has been prepared to summarize the findings of the document reviews and the results of the additional field investigations.

Site Description

The Woerd Avenue Landfill, a property owned by the City of Waltham, is located in southern Waltham adjacent to the Waltham/Newton municipal boundary as shown on the Site Locus Plan provided as Figure 1. The landfill is located on a parcel of land surrounded by Rumford Avenue, Woerd Avenue, Crescent Street, and Moody Street. The site encompasses approximately 8.7 acres and abuts the former Rumford Avenue Incinerator site (currently an office building) to the south, Cram's Cove to the west, the industrial property formerly owned by Parker Hannifin to the north, Norumbega Terrace to the northeast, and the Moody Street Playground (also owned by the City) directly to the east.

The landfill is heavily wooded except for several paths and a small clearing near the center of the site. The landfill has fairly uniform slopes that range between 20 and 25 percent to grade. In proximity to the Woerd Avenue Landfill, there are two solid waste landfills in Newton: the Rumford Avenue and Pine Street landfills. The Pine Street Landfill ceased operation in the early 1960s and is not subject to the Solid Waste Management Regulations. The Rumford Avenue Landfill was capped by the City of Newton in 1997.

MassDEP File Review

CDM reviewed documents filed with MassDEP for properties located in the vicinity of the Woerd Avenue Landfill that are listed as confirmed disposal sites in accordance with the MCP. The intent of this work was to determine if abutting properties have been adequately evaluated and assessed and that any necessary remedial actions have been implemented. The sites reviewed included 48 Woerd Avenue, 74 Rumford Avenue, 77 Rumford Avenue, 845 Moody Street, and 945 Moody Street. According to MassDEP's files, the Release Tracking Numbers (RTNs) for the sites have been closed with the submittals of Response Action Outcomes (RAOs) at each of the sites with the exception of 74 Rumford Avenue. The locations of the sites reviewed are presented on Figure 2. As shown on the figure, three sites abut the Woerd Avenue Landfill; 48 Woerd Avenue to the northwest, 74 Rumford Avenue to the west and 945 Moody Street to the east. A description of the investigative and remedial activities conducted for these three sites is presented in detail below.

The summaries presented below are based solely on documents contained in the MassDEP's files.

48 Woerd Avenue

The former Parker Hannifin facility located at 48 Woerd Avenue abuts the Woerd Avenue Landfill to the north. The property consists of approximately 11.5 acres of land and is bound by residential properties to the north, Cram's Cove to the south, and Woerd Avenue to the southeast. The Charles River is located directly west of the site. A site plan of the property is presented as Figure 3.

From 1913 to 1984 the property was owned by the W.H. Nichols Company, a manufacturer of machine parts. The original manufacturing facility included the complex of buildings on the northeast portion of the property and two former buildings located south of Cove Street. The property was purchased in 1984 by the Parker Hannifin Corporation, a manufacturer of metal parts for commercial, computer, and aerospace industries. Currently, on-site buildings are used for light manufacturing and commercial office space.

Historic records indicate that the following materials were used in manufacturing operations and stored at the site: metals for etching; polychlorinated biphenyls (PCBs); anhydrous ammonia; hydrochloric acid; nitric acid; sodium hydroxide; mineral spirits; lubricating oils; No. 2 fuel oil; machine oil; waste oil; propane; miscellaneous cleaners; parts cleaning solvents; and water based coolants.

Oil and hazardous material were formerly stored in one aboveground storage tank (AST) and ten underground storage tanks (USTs). The AST was 500 gallons in size and contained anhydrous ammonia. The USTs contained the following materials: mineral spirits (one 1,000-gallon UST); No. 2 fuel oil (one 1,000-gallon UST, one 8,000-gallon UST, one 15,000-gallon UST); heating oil (two 10,000-gallon USTs); waste machine oil (two USTs of unknown quantity); water based coolants (one 1,000-gallon UST); and waste oil (one 3,000-gallon UST). According to the documents reviewed, all tanks were removed as of 1991.

The Parker Hannifin property was first identified by the MassDEP as a Location to be Investigated on July 12, 1990, based on the discovery of volatile organic compounds (VOCs), metals, and polycyclic aromatic hydrocarbons (PAHs) detected in soil and shallow groundwater. MassDEP Case Number 3-3260 was assigned. A Release Abatement Measure (RAM) was completed that consisted of the excavation and disposal of 40 cubic yards of total petroleum hydrocarbon-impacted soil.

A No. 2 fuel oil release was discovered during the removal of an UST in April 1994; RTN 3-10944 was assigned. Historic reports indicated that remedial actions were undertaken and a RAO statement for RTN 3-10944 was filed in August 1994. The nature of the remedial actions was not documented.

According to the MassDEP's Bureau of Waste Site Cleanup (BWSC) site list database, RTN 3-14572 was assigned in December 1996 for another release of hazardous material. Further description of the nature and extent of this release was not presented in any of the historic reports reviewed. In April 1996, Parker Hannifin filed a downgradient property status (DPS) for this RTN based on concentrations of dissolved silver in groundwater samples collected from monitoring wells located near the southeast property boundary that abuts the Woerd Avenue Landfill. A hydrogeologic study was conducted by TWM Northeast/Normandeau, Inc. (TWM) for Parker Hannifin in 1990 that determined that the Parker Hannifin property is located hydraulically downgradient of the Woerd Avenue Landfill.

In August 1996, a Class A-3 RAO was submitted to the MassDEP for Case Number 3-3260, along with an Activity and Use Limitation (AUL). The AUL was applied to two portions of the property, and prevents future site development for residential, outdoor recreational, child care, and other use restrictions.

On August 13, 1998, the MassDEP was notified of a release of 15 gallons of oil. RTN 3-17156 was assigned to this release. According to the MassDEP BWSC site list database, a RAO was

submitted for RTN 3-17156; however, the historic reports reviewed did not indicate the nature of the remedial actions.

In December 1998, RTN, 3-18026 was assigned to the site. Vinyl chloride was detected in on-site monitoring well MW-11 at a concentration of 424 ug/L during sampling conducted for a real estate transfer assessment. A confirmatory groundwater sample collected on December 29, 1998, contained vinyl chloride at a concentration of 2,640 ug/L which is above the Reportable Concentration of 2 ug/L. As shown on Figure 3, MW-11 is located in proximity to a former UST that contained mineral spirits. Vinyl chloride was not detected in groundwater samples collected from MW-11 prior to December 1998.

In 1999, a soil vapor extraction (SVE) and air sparge (AS) system was installed to prevent the volatilization and migration of vinyl chloride and associated compounds into the indoor air of the on-site buildings located on the northern portion of the property. The SVE/AS system was installed under a RAM and was also the remedy selected in the Phase III Remedial Action Plan. The system was started on April 19, 1999 and operated until December 6, 1999.

A Class A-2 RAO and Method 3 Risk Assessment were submitted for RTN 3-18026 in May 2000. The RAO and Risk Assessment concluded that the SVE/AS system was successful in reducing the concentrations of VOCs in groundwater. While the most recent groundwater data collected in 2000 indicated that vinyl chloride was present in excess of GW-2 standards, it did not exceed the MCP Upper Concentration Limits (UCLs) and data indicated a decreasing trend. Institutional controls that limit the use of impacted soil at the property have been established by the AUL that was implemented in 1996, restricting land use to industrial/commercial purposes. The Risk Assessment concluded that a condition of No Significant Risk was achieved for the site.

74 Rumford Avenue

The property located at 74 Rumford Avenue abuts the Woerd Avenue Landfill to the west. The site is approximately 1.3 acres and consists of a vacant three-story brick building and a small paved area to the north of the building. The remainder of the property is heavily vegetated. A site plan of 74 Rumford Avenue is presented as Figure 4. The site is abutted by a residence to the northwest, Cram's Cove to the northeast, Woerd Avenue Landfill to the east, and manufacturing companies to the southwest and southeast of the site.

The property has been developed for manufacturing purposes since 1897. O'Hara Waltham Dial Company, a manufacturer of dials and enameled novelties occupied the property from approximately 1903 to the 1950s. From the 1950s to the 1980s, the property was occupied by

R.W. LeBaron, Inc., manufacturers of traffic signal lights. Most recently the property was occupied by Pantos Corporation, manufacturers of canvas bags and other canvas products.

Bulk quantities of oil or hazardous materials are not currently used or stored at the site. Two USTs previously existed on the site, including one 3,000-gallon No. 2 fuel oil UST and one 2,000-gallon UST of unknown contents.

Two RTNs have been assigned to the site, RTN 3-15884 and 3-16699. On January 7, 1998, the MassDEP was notified of the detection of arsenic, lead, and antimony in soil above Reportable Concentrations during a subsurface investigation. RTN 3-15884 was assigned. On April 14, 1998, the MassDEP was notified of a release of petroleum hydrocarbons to soil and groundwater during the removal of the No. 2 fuel oil UST. Approximately 21 cubic yards of impacted soil were excavated and disposed of off site. RTN 3-16699 was assigned.

Two notices of non-compliance (NONs) were issued by MassDEP dated October 13, 1999 and October 28, 1999 for failure to meet MCP reporting requirements. According to the MassDEP file review, the violations were addressed. On April 21, 2000, MassDEP issued a Tier IB Permit for RTN 3-15884 based on a numerical ranking score of 490. The permit has an effective date of May 12, 2000 and expired on May 12, 2005. The site has also been designated as a Public Involvement Plan (PIP) site.

Phase I and Phase II investigations conducted at the site determined that metals and petroleum compounds were present in fill materials encountered throughout the site. The extent of petroleum impacts associated with the UST was confined to a limited area. Metals concentrations in groundwater were generally below applicable standards, with the exception of monitoring well MW-1, located closest to Cram's Cove, which exhibited a lead concentration above the GW-3 standard. Petroleum impacts to groundwater are limited to the former UST area. The area of the property located along Rumford Avenue has not been impacted by metals or petroleum compounds.

As part of Phase I and II investigations, eleven sediment samples were collected from the 74 Rumford Avenue property at the edge of Cram's Cove. A Method 3 Risk Assessment prepared for the site as part of the Phase II Investigation determined that metals concentrations in sediment on the 74 Rumford Avenue property are similar to upgradient samples within the cove and adjacent to the Woerd Avenue Landfill. Because metals concentrations in sediment on the 74 Rumford Avenue property are consistent with local conditions, further environmental risk characterization could not distinguish between impacts due to site contamination due to local conditions. Therefore the Risk Assessment

determined that remedial actions to address sediment and surface water were not required because the 74 Rumford Avenue property did not pose a discernible incremental increased risk. Sediment quality in Cram's Cove is discussed in further detail below under the heading Sediment Sampling.

During May, June, and August 2003 a supplemental site investigation was performed to further evaluate the extent of metals impacts including the advancement of three soil borings and excavation of one test pit within the footprint of the on-site building, and the excavation of ten test pits throughout the remainder of the property. Soil samples collected from the soil borings and test pits were analyzed for lead, arsenic, and antimony.

The results of the supplemental investigation combined with the results of the Phase I and Phase II investigations were used to define the nature and extent of contamination at the site. Impacts to soil at the site are limited to the fill material encountered throughout the property. Analytical results of soil samples collected from the naturally deposited soil encountered beneath the fill indicates that naturally deposited soils have not been impacted. Lead, arsenic, and antimony have been detected in soil samples collected from the fill material with the highest metals concentrations located adjacent to Cram's Cove, where concentrations exceeded UCLs. Lower concentrations of these metals, but typically in excess of the MCP Method 1 standards, were detected in soil samples collected from the central portions of the site, while soil samples collected from the southern portion of the site did not exceed MCP Method 1 standards.

The selected remedy for addressing the metals contaminants found in site soils was an engineered barrier with an AUL to ensure the continued integrity of the engineered barrier and pavement. The Phase IV report (McPhail Associates, Inc., draft August 2003) detailed the proposed installation of the selected remedy as shown on Figure 4. The engineered barrier was planned to be implemented as part of site redevelopment into a multi-residential community. At the time of the Phase IV submittal, redevelopment plans included renovation of the existing three-story building into a multi-unit residence and construction of two new multi-unit residences. Other areas of the site were proposed to be redeveloped to include a swimming pool and patio and paved parking areas. A one level, below grade parking garage was also proposed. CDM conducted a site visit on May 9, 2005. There were no indications that the engineered barrier had been installed or any redevelopment of the property had been completed.

945 Moody Street

The property located at 945 Moody Street is currently occupied by Sun Auto Sales, Inc., West End Auto Body, and a towing operation. The property encompasses an area of approximately 65,580 square feet and consists of a 15,879 square foot commercial building/auto repair garage and associated paved and unpaved parking areas. A site plan is provided as Figure 5. Reports contained in the MassDEP file indicate that bulk storage of oil or hazardous materials at the site consisted of the following: two 330-gallon No. 2 fuel oil ASTs located in the basement of the site building, one 55-gallon drum of used antifreeze located within the garage, one 200-gallon used motor oil AST in the oil changing area, and one 350-gallon bulk motor oil AST. A 1,000-gallon No. 2 fuel oil UST was formerly located in the eastern portion of the site and a 1,000-gallon gasoline UST was located in the northern portion of the site. The No. 2 fuel oil UST was reportedly removed in 1996 and post-excavation soil samples did not contain total petroleum hydrocarbon (TPH) compounds above laboratory detection limits. The reports contained in the MassDEP file did not provide a date of the removal of the gasoline UST.

Phase I and supplemental soil investigations indicated that TPH concentrations in excess of the Reportable Concentration of 500 mg/kg are present in the vicinity of the former 1,000-gallon gasoline UST, in soils adjacent to a hydraulic lift located within the building, and in surficial soil located in the western automobile storage area. A Method I Risk Characterization prepared for the site concluded that the TPH concentrations pose No Significant Risk of harm to safety, public health and welfare, or the environment for current uses of the site. A Class B-2 RAO and an AUL were filed on February 12, 1997. The AUL prohibits the disturbance of TPH impacted soil at the site. No analytical data for groundwater was available in the MassDEP file.

Extent of Landfilled Waste

Woerd Avenue Landfill

A preliminary evaluation of the extent of landfilled waste was conducted by reviewing historic aerial photographs, historic United States Geologic Survey (USGS) quadrangle maps, and test pit and soil boring logs from the Woerd Avenue Landfill and surrounding properties. The Woerd Avenue Landfill originally began as a small dump for disposal of coal ash from home heating furnaces around 1912. By 1935, approximately 35,000 tons of ash were dumped there annually as well as old cars. When the Waltham incinerator opened in 1946, the Woerd Avenue Landfill began accepting incinerator residue and other non-combustible waste. In the early 1970s, the City began to receive complaints about the condition of the landfill including vector problems, inadequate daily cover, improper disposal of refuse, inadequate

maintenance, and general lack of cleanliness. On April 21, 1973, the City met the regulatory requirements in accordance with the State Department of Public Health and ceased operation of the landfill.

Historic USGS Quadrangle maps of the area of the Woerd Avenue Landfill were also reviewed. Two online images of historic maps were obtained from the University of New Hampshire's Dimond Library's Government Documents Department. Figure 6 is a portion of the 1903 Boston South Quadrangle and Figure 7 is a portion of the 1946 Newton Quadrangle. As shown on the maps, in 1903 the area immediately surrounding Cram's Cove to the north, east, and south is shown as wetlands. The current location of Norumbega Terrace appear to be in-place. The 1946 map illustrates that by this time, the area immediately to the northeast of Crams Cove is no longer designated as wetlands, indicating that the area had been filled. Note also that the area to the south of the Cove is still designated as wetlands and that the length of the Cove itself extends across the town boundary into the City of Newton; however, the width of the Cove appears smaller. Figure 8 presents a portion of the current (1987) USGS Boston South Quadrangle. This map illustrates that at the time this survey was conducted the overall size of the Cove is considerably smaller and the area immediately to the south of the Cove is no longer designated as wetlands. This map also illustrates contours designating the location of the landfill.

Review of the historic maps suggests that filling of the area immediately surrounding Cram's Cove likely occurred in the early 1900s. By 1946, the wetlands area to the northeast of the cove had been filled and by 1987 the area to the southwest and a portion of the Cove itself had been filled. Historic records indicate that the Woerd Avenue Landfill began accepting waste in 1912 though contour lines defining the edge of the landfill are not visible on the 1946 USGS quadrangle. The 1987 survey presents the limits of the landfill as they are currently observed.

Aerial photographs for the Woerd Avenue Landfill and surrounding area were reviewed for the years 1954, 1969, 1987, and 1995. As discussed, the landfill received waste from 1912 until the early 1970s. Although aerial photographs prior to the 1950s were not available, the landfill appears to retain the same general footprint throughout the years reviewed. The aerial photographs are included as Attachment A for reference.

In May 1998, CDM excavated a total of 23 test pits (TP-1 through TP-23) to determine the horizontal and vertical extent of landfilled waste. The locations of the test pits are shown on Figure 9. The test pits were excavated to depths ranging from 4 to 12 feet below ground surface (bgs) at approximately 100 foot intervals along the perimeter of the site. The extent of waste could not be determined. The test pits were performed as close to the property line as

access would allow through the dense vegetation and steep slopes in this area. Heavy vegetation in the area surrounding the landfill perimeter precluded the excavation of additional test pits. The material encountered during the test pit excavations consisted of scrap metal, wood, asphalt, brick, concrete, ash, burned materials, and miscellaneous debris.

74 Rumford Avenue
Soil boring and test pits logs generated for the 74 Rumford Avenue property show fill materials consistent with the types of historic manufacturing operations conducted in the area. A total of 30 soil borings (B-1 through B-27 and B-A1, B-A3 and B-A4) and ten test pit (TP-1 through TP-10) logs were reviewed. The locations of the soil borings are shown on Figure 10 and the locations of the test pits are shown on Figure 11. The soil boring and test pit logs are included as Attachment B to this letter report. The soil boring logs describe the greatest thickness of fill as being observed in soil borings located on the eastern portion of the property, closest to the landfill. Fill material was described as glass, rubber, pottery, ash, enamel, and clinkers to a depth of 10 feet bgs.

Three soil borings (B-A1, B-A3, and B-A4) and one test pit (HTP-2) were advanced within the building footprint as shown on Figure 11. The fill material varies in thickness from approximately 4 feet beneath the basement floor in B-A1 to approximately 12 feet in thickness within the areas of the building that do not contain a basement. Within the building footprint, the fill materially was typically described as containing varying amounts of silt, ash, and cinders. According to historic records, a portion of the existing building has been located on the site since at least 1897. Subsequent additions to the building were constructed between 1903 and 1918. Based on the age of the building located at 74 Rumford Avenue, fill materials located beneath this building are likely a result of historic filling of the area for development and not encroachment of waste from the Woerd Avenue Landfill which began as a small dump in 1912. The 1903 USGS quadrangle confirms that the area surrounding the 74 Rumford Avenue property had been developed prior to the construction of the Woerd Avenue Landfill.

As discussed previously, the selected remedial action for addressing elevated concentrations of metals in site soils is an engineered barrier with an AUL. The location of the engineered barrier, shown on Figure 4, corresponds to the area with the greatest fill layer, located adjacent to the Cove that would remain as accessible soil following development. The majority of fill located beneath the building will be removed or become inaccessible during development. Fill materials and metals-impacted soil at the 74 Rumford Avenue property are adequately regulated under the MCP and will be addressed with the installation of the engineered barrier. Therefore, additional sampling and analysis at the 74 Rumford Avenue property is not proposed.

48 Woerd Avenue

The MassDEP file for 48 Woerd Avenue did not contain a complete record of soil boring logs for the property. Logs were only available for soil borings advanced in the northern portion of the property in the vicinity of the SVE/AS system and are attached to this letter report. Several logs indicate the presence of ash at thicknesses up to 8 feet. However, the absence of waste materials such as brick, glass, or metal suggests that the ash is related to historic filling activities rather than an extension of landfilled waste. The historic USGS quadrangles indicate that this area was originally designated as wetlands before it was developed. During a site visit conducted by CDM, the parking area on the southern portion of the property that is located adjacent to the landfill was observed to be in poor condition with numerous cracks in the pavement that appeared to be a result of settled, heterogeneous, subsurface material. No logs for soil borings or monitoring wells advanced in this area were available in the MassDEP file; however, the condition of the pavement and a review of aerial photographs suggest that it might be overlying waste material. This portion of the parking lot was completed at a grade approximately 5 feet higher than the remainder of the property which also suggests that waste material may have been used to build up the area. The approximate extent of waste based on field observations is shown on Figure 12. As discussed previously, an AUL was placed on two portions of the property that prevents future site development for residential, outdoor recreational, child care, and other use restrictions. Therefore, the 48 Woerd Avenue property is adequately regulated under the MCP and additional sampling and analysis is not proposed.

945 Moody Street

Although no borings were available in the documents contained in the 945 Moody Street file, a description of soils encountered during subsurface investigations described fill materials to contain glass, brick, asphalt, concrete, metal, coal, and wood. An AUL was placed on the site in 1997. Therefore the 945 Moody Street property is adequately regulated under the MCP and no additional sampling and analysis is proposed.

Water Quality Sampling

Groundwater samples were collected from on-site monitoring wells CDM-1A, CDM-2, CDM-2A, CDM-3A, and CDM-4 on November 11, 2004. The locations of the monitoring wells are shown on Figure 9. One duplicate sample was also collected. Monitoring wells CDM-1 and CDM-3 were not sampled because gauging of the wells determined that they were dry. Prior to purging, groundwater elevations were measured and recorded. Three well volumes were then purged from each well using a whale pump to provide a representative sample of the surrounding aquifer. Upon completion of purging, field measurements including

temperature, dissolved oxygen, and specific conductance were measured and recorded. Table 1 presents a summary of groundwater elevations and water quality parameters. Metals samples were field filtered.

Two surface water samples were collected from locations around the landfill site identified as Cove-1 and Cove-2 as shown on Figure 9. Cove-1 is located at the edge of water at the southeast edge of Cram's Cove. Cove-2 is located approximately 100 feet north of Cove-1 also within Cram's Cove.

Groundwater and surface water samples were submitted to the laboratory for analysis for the following parameters:

- VOCs by EPA Method 8260 including 2-butanone (MEK), 4-methyl-2-pentanone (MIBK), acetone, and total xylenes.
- Dissolved Metals by RCRA 8 plus copper, iron, manganese, and zinc
- Chloride
- Alkalinity
- Sulfate
- Total Dissolved Solids (TDS)
- Nitrate as Nitrogen
- Total Cyanide
- Chemical Oxygen Demand

The analytical results for samples collected during the monitoring event are provided in Tables 2 and 3. Analytical results are compared to Environmental Protection Agency (EPA) and MassDEP primary drinking water standards known as Maximum Contaminant Levels (MCLs) and secondary standards known as Secondary Maximum Contaminant Levels (SMCLs). Primary standards are based on concentrations which are known to cause human health effects and secondary standards are based on aesthetic qualities such as color, odor, and taste of a public water supply. Any parameter that exceeds the value of a primary standard has been shaded for distinction.

VOCs

VOCs were not detected in any of the groundwater samples or surface water samples above the laboratory detection limits.

Metals

Several metals were detected above the laboratory detection limits in the groundwater and surface water samples including arsenic, barium, copper, iron, manganese, and zinc. Of the metals detected, only iron and manganese were detected above drinking water standards. Iron was detected above the SMCL of 300 ug/L in groundwater samples collected from three of the monitoring wells at concentrations ranging from 897 ug/L (CDM-3A) to 34,300 ug/L (CDM-4), and in the surface water samples at 28,100 ug/L (Cove-1) and 15,700 ug/L (Cove-2). Manganese was detected above the SMCL of 50 ug/L in groundwater samples collected from each of the monitoring wells at concentrations ranging from 87.5 ug/L (CDM-2A) to 3,920 ug/L (CDM-4A) and in the surface water samples at 650 ug/L (Cove-1) and 463 ug/L (Cove-2).

Conventional Parameters

The SMCL of 500 mg/L for TDS was exceeded in groundwater samples collected from CDM-2 (692 mg/L), CDM-4 (633/613 mg/L, duplicate pair) and CDM-4A (871 mg/L) and in surface water samples Cove-1 (1,061 mg/L) and Cove-2 (1,150 mg/L). Chloride was also detected above the SMCL of 250 mg/L in the groundwater sample collected from CDM-4A at a concentration of 350 mg/L and in surface water sample Cove-1 at a concentration of 362 mg/L. The standards for nitrate-nitrogen, cyanide, and sulfate were not exceeded in any of the groundwater or surface water samples.

The analytical results of the November 2004 water quality sampling are consistent with previous sampling rounds. During the CSA, three rounds of water quality sampling were conducted in May, August, and December 1998. The complete results of the sampling are presented in the CSA.

Landfill Gas Sampling

Landfill gas screening was conducted on November 16, 2004 and April 16, 2005. During each of the sampling rounds, landfill gas samples were screened for methane (CH_4), carbon dioxide (CO_2), oxygen (O_2), Lower Explosive Limit (LEL), hydrogen sulfide (H_2S), and total VOCs. A Landtec GEM 500 Gas Analyzer was used to detect CH_4, CO_2, O_2, and LEL; a Bacharach "Sentinel 44" was used to monitor H2S; and an organic vapor monitor (OVM) was

used to measure concentrations of total VOCs. The results of the November 2004 and April 2005 landfill gas screening are presented below.

On November 16, 2004, landfill gas was screened at the three permanent landfill gas monitoring wells (LFG-1 through LFG-3). The results of the monitoring are presented in Table 4. As shown in the table, CH_4 was detected in landfill gas monitoring location LFG-1 at a concentration of 3.0 percent by volume of methane. This corresponds to a LEL of 60 percent, over the regulatory limit of 25 percent of the LEL. CO2 was detected at each of the gas monitoring locations at concentrations ranging from 11.8 percent to 18.0 percent by volume carbon dioxide. H_2S was not detected in any landfill gas monitoring locations during the November 2004 sampling round. VOCs were detected in landfill gas monitoring locations LFG-2 and LFG-3 at concentrations of 0.9 ppmv and 6.5 ppmv, respectively.

On April 16, 2005, landfill gas screening was performed at the three permanent gas monitoring wells LFG-1, LFG-2, and LFG-3. Based on the historic presence of methane in LFG-1, ten temporary gas probes were also installed and monitored. The locations of the gas wells and the temporary gas probes are shown on Figure 9. The permanent gas wells and temporary probes were field screened for concentrations of CH_4, CO_2, O_2, H_2S, and VOCs. The results of the April 2005 landfill gas monitoring are presented in Table 5.

CH_4 was detected in landfill gas monitoring location LFG-1 at a concentration of 2.7 percent by volume of methane. This corresponds to an LEL of 54 percent, over the regulatory limit of 25 percent of the LEL. CH_4 was detected in temporary gas probe locations GP-1 through GP-4 at concentrations ranging from 0.1 percent to 3.8 percent. The highest CH_4 concentrations were observed in GP-1 (3.8 percent) and GP-2 (3.4 percent) which were advanced 25 feet and 50 feet east of LFG-1, respectively. CH_4 was not detected in permanent landfill gas wells LFG-2 or LFG-3.

O_2 was detected in the landfill gas monitoring locations at concentrations ranging from 0.2 percent (LFG-1) to 20.3 percent (GP-5). In general, O_2 concentrations increased with distance from the landfill.

CO_2 was detected in the permanent landfill gas monitoring locations at concentrations ranging from 0.4 percent (GP-6) to 13.7 percent (LFG-1) by volume carbon dioxide. In general CO_2 concentrations decreased with distance from the landfill.

H_2S and VOCs were not detected in any permanent landfill gas monitoring locations or in any of the temporary gas monitoring locations during this sampling round.

Sediment Sampling

Several sediment samples have been collected from Cram's Cove and submitted for total lead analysis. The results of the sampling are presented in Table 6. This table, obtained from the MassDEP file for the 74 Rumford Avenue property, includes data collected by CDM for the Woerd Avenue Landfill, Nelson and Klein for the Charles River Lakes District, and by various consultants for the 74 Rumford Avenue property.

During the CSA, two rounds of sediment samples were collected in August and December 1998. In August 1998, sediment samples were collected from two locations within Cram's Cove (Cove-1 and Cove-2), a stream located to the southeast of the landfill (Stream-1) and a drainage swale located at the southern corner of the site (Swale-1). Sediment samples were collected at a depth interval of zero to six inches and submitted for laboratory analysis for total metals, pesticides, PCBs, VOCs, PAHs, and TPH. The sediment sampling locations are shown on Figure 9. The complete results of this sampling are presented in the CSA Report and are described in detail therein; however, the sampling results indicated that elevated concentrations of metals were present in the sediment samples. In the samples collected from Cram's Cove, total lead was measured at a concentration of 1,000 mg/kg in sediment sample Cove-1 and 110,000 mg/kg in sediment sample Cove-2. Due to the unusually high lead concentrations measured in sediment sample Cove-2, this location was re-sampled in December 1998 to confirm the elevated lead concentration. The confirmatory sample was collected as a composite of three locations spaced at five foot horizontal increments around the Cove-2 location. Total lead was detected at a concentration of 490 mg/kg in the confirmatory sample. The initial Cove-2 sample was determined to be an anomaly and not representative of the overall sediment quality in the Cove.

While the confirmatory sample detected lead at a substantially lower concentration, additional evaluation of sediment quality in Cram's Cove was warranted. On November 16, 2004, ten sediment samples were collected from Cram's Cove immediately adjacent to the landfill as shown on Figure 9. The sediment samples were submitted for laboratory analysis for total lead. The analytical results are summarized in Table 7 and are compared to the MassDEP Threshold Effects Concentration (TEC) for lead. Total lead exceeded the TEC of 35.8 mg/kg in all samples at concentrations ranging from 102 mg/kg (SED-10) to 673 mg/kg (SED-6).

As shown in the tables, elevated concentrations of arsenic and lead are present in sediments located throughout Cram's Cove. Concentrations of metals detected in samples collected immediately adjacent to the Woerd Avenue Landfill are no higher than those collected from

the opposite side of the cove along the 74 Rumford Avenue property. In general, the concentrations of lead observed in samples collected by CDM from portions of Cram's Cove closest to the Woerd Avenue Landfill are lower compared to historical samples collected by others.

Conclusions and Recommendations

The purpose of the supplemental CSA was to further evaluate the extent of landfilled waste at the Woerd Avenue landfill. The following tasks were performed to accomplish this objective:

- Review of documents filed with the MassDEP under the Massachusetts Contingency Plan (MCP) for nearby parcels.
- Review of historical plans, aerial photographs, and interviews related to the historic filling operations in the vicinity of the landfill in Waltham and in Newton to complete a preliminary estimate of the approximate limit of landfilled waste at the Woerd Avenue Landfill.
- Collection of groundwater samples from on-site monitoring wells and surface water samples for laboratory analysis.
- Analysis of landfill gas in existing wells located along the perimeter of the Woerd Avenue Landfill.
- Collection of ten sediment samples from locations within Cram's Cove immediately adjacent to the landfill for laboratory analysis.

Upon completion of the activities listed above, CDM has concluded the following:

- • Properties immediately surrounding the Woerd Avenue Landfill are adequately regulated under the MCP. According to the MassDEP file review, the RTNs for the properties, with the exception of one RTN for 74 Rumford Avenue, have been addressed by the completion of a RAO and/or an AUL. The proposed remedy for the 74 Rumford Avenue includes the implementation of an AUL for the property.
- Review of historic USGS quadrangle maps indicated that filling of wetlands immediately surrounding Cram's Coves as well as portions of the cove itself occurred in the early 1900s. Soil boring logs from 74 Rumford Avenue and 48 Woerd Avenue indicate that the majority of fill materials are a result of historic filling of the area for development and not

encroachment of waste from the Woerd Avenue Landfill. While test pits excavated along the perimeter of the Woerd Avenue Landfill did not delineate the extent of landfilled waste, available information reviewed indicates that waste materials may extend onto the southeastern portion of 48 Woerd Avenue. As discussed, the estimated extent of waste at 48 Woerd Avenue is covered by pavement.

- Groundwater and surface water samples collected from locations along the perimeter of the Woerd Avenue Landfill did not contain VOCs above the laboratory detection limits. Several metals were detected above the laboratory detection limits in the groundwater and surface water samples including arsenic, barium, copper, iron, manganese, and zinc. Of the metals detected, only iron and manganese were detected above drinking water standards. The analytical results of the November 2004 water quality sampling are consistent with previous sampling rounds.

- Landfill gas screening indicated that elevated concentrations of CH4 were present in landfill gas well LFG-1 and temporary soil gas probes.

- Elevated concentrations of arsenic and lead are present in sediments located throughout Cram's Cove. However, concentrations of metals detected in samples collected immediately adjacent to the Woerd Avenue Landfill are no higher than those collected from the opposite side of the Cove along the 74 Rumford Avenue property. In general, the concentrations of lead observed in samples collected by CDM in November 2004 from portions of Cram's Cove closest to the Woerd Avenue Landfill are lower compared to the results of historical samples collected by others.

Historic documents for the area indicate that this area has been utilized for light manufacturing since the early 1900s. Subsurface investigations conducted at the landfill and surrounding properties shows extensive filling for development purposes with materials consistent with the type of manufacturing operations that occurred in the area. Concentrations of metals, specifically lead, are elevated in samples of sediment collected from the Cove. Given the past land uses in this area; it is not likely that a source of the elevated concentrations can be definitively identified.

If you have any questions on this matter please do not hesitate to contact met at 617-452-6541.

Very truly yours,

Bruce W. Haskell, P.E.
Camp Dresser & McKee Inc.

cc: Ronald Vokey, Waltham
Ted Fields, Waltham
Carole Kaslick, CDM
Mary Barry, CDM

Attachments
Figures
Tables
Attachment A – Aerial Photographs
Attachment B – Historic Soil Boring and Test Pit Logs