

9th Avenue Sewer Upgrade Environmental Investigation Summary

PREPARED FOR: Roger Beiler
PREPARED BY: Mario Lopez/CH2M HILL
Rachel Chang/CH2M HILL
DATE: May 19, 2008
PROJECT NUMBER: 350429.AU.18.03.02

Purpose and Background

This technical memorandum presents the results of the environmental investigation conducted by CH2M HILL in support of the proposed sewer upgrade located along the 9th Avenue corridor between Republican Street and Aloha Street in the South Lake Union area of Seattle, Washington. The objective of this environmental investigation was to evaluate whether there are areas of soil and groundwater contamination present within the proposed sewer alignment that have constituents that exceed cleanup criteria provided in the Washington State Model Toxics Control Act (MTCA) regulations, and to assist in the planning for management of potentially contaminated soil and/or groundwater during sewer upgrade activities.

This investigation was conducted in conjunction with the geotechnical investigation. The general project location is shown on Figure 1. A total of four borings were drilled as part of the overall investigation and environmental samples were collected from three of the four borings to evaluate whether contamination exceeding the MTCA cleanup levels (CUL) are present in the soil and groundwater.

Previous Investigations

In 1998 a Phase II investigation was conducted by Black & Veatch. The purpose of the investigation was to identify the presence or absence of contaminated soil and groundwater along Denny Way/Lake Union Combined Sewer Overflow (CSO). In that investigation, a total of 24 soil samples were collected from soil borings in the South Lake Union area along Valley Street and 8th Avenue North. Seventeen groundwater samples were also collected and submitted for analytical testing. All soil and groundwater samples were analysed for TPH using WTPH-HCID. Of all the soil samples collected, BB-14, located near the ConocoPhillip site contained heavy oil-range TPH above screening levels. Analytical results for groundwater indicated that volatile organic compounds (VOC) including Vinyl Chloride, 1,2-Dichloroethene, Trichloroethene (TCE) were detected at levels above MTCA Method A cleanup levels from wells BB-8, BB-12, and BB-13. These samples are located on Valley Street between 8th Avenue North and Westlake Avenue North.

Between 2006 and 2008, CH2M HILL conducted the following studies as part of the Phase III Mercer Corridor Improvements Project

- Hazardous Material Discipline Report (HMDR) (CH2M HILL, 2006)
- Phase I Environmental Site Assessments (ESA) (CH2M HILL, January 2008)
- Transaction Screening Reports (CH2M HILL, February 2008)
- Phase II Environmental Site Assessments (ESAs) (CH2M HILL, May 2008).

Based on the findings of the HMDR and the Phase I ESAs, soil and groundwater in the vicinity of the 9th Avenue is believed to be potentially impacted by total petroleum hydrocarbons (TPH) and VOCs. Possible sources of the TPH include historical releases from past site use as retail gas station, automotive dealership and maintenance and repair facility, and dry cleaner.

As part of the Phase II ESA conducted in February 2008 for the Phase III Mercer Corridor Improvement Project, soil and groundwater samples were collected from 800 Mercer Street, the property located west of 9th Avenue between Roy Street and Mercer. The soil samples were analyzed for TPH (gasoline-, diesel- and oil-range hydrocarbons including BTEX) and total metals. In addition, two samples (P24-B3-6.0-8.0 and P24-B3-21.0-23.0) were analyzed for VOCs and semi-volatile organic compounds (SVOCs). Petroleum hydrocarbons, metals, VOCs and SVOCs were either not detected or detected below cleanup levels.

Two groundwater samples and a duplicate sample collected at 800 Mercer Street were analyzed for TPH (gasoline-, diesel- and oil-range hydrocarbons including BTEX), total metals, and VOCs. Petroleum hydrocarbons, metals, and VOCs were either not detected or detected below cleanup levels with the following exception: at P24-B2, tetrachloroethene (PCE) was detected at 4.1 µg/L and TCE was detected at 0.8 µg/L, above the MTCA Method B cleanup level for PCE (0.081 µg/L) and TCE (0.11 µg/L).

Field Sampling and Analysis

During the week of April 14 through 18, 2008, soil borings were advanced at four locations (CHB-07 through CHB-10) along 9th Avenue between just north of Aloha Street and Republican Street (Figure 2). A total of five soil and three groundwater samples were collected at three boring locations (CHB-07, CHB-08, and CHB-09). Samples were not collected from CHB-10 because the potential for encountering contamination is considered to be lower the other three boring locations. Samples were obtained from soil cores using hollow stem auger sampling methods provided by Gregory Drilling located in Redmond, Washington.

Soil samples were collected and screened with a PID and X-Wand. The sample with the highest PID readings or other evidence of contamination (such as odors or staining) from each boring was analyzed for petroleum hydrocarbons using NWTPH-Gx and NWTPH-Dx, and for VOCs. If no PID readings above background were observed, one sample was collected from just below ground surface (~ 2-5 ft bgs) and a second soil sample was collected just above the water table. Table 1 shows the soil sample locations, their depths and analytical information collected at each interval. One groundwater sample was

collected from each boring location and analyzed for petroleum hydrocarbons using NWTPH-Gx and NWTPH-Dx, and for VOCs.

TABLE 1
Soil Sampling and Analytical Summary

Soil Boring	Location along 9 th Avenue	Depth Interval (feet)	Sample Date	NWTPH-Gx	NWTPH-Dx Extended	VOCs
CHB-07	North of Aloha (between Ward Street and Aloha)	5.0-7.0	April 14, 2008	X	X	
CHB-07	North of Aloha (between Ward Street and Aloha)	12.5-13.5	April 14, 2008	X	X	X
CHB-08	Between Aloha and Roy Street	15.0-16.0	April 15, 2008	X	X	X
CHB-09	Between Roy Street and Mercer Street	20-21.5	April 16, 2008	X	X	
CHB-09	Between Roy Street and Mercer Street	25.0-26.5	April 16, 2008	X	X	X

Notes:

NWTPH-Gx = Gasoline-ranged total petroleum hydrocarbons; NWTPH-Dx = Gasoline-ranged total petroleum hydrocarbons; NWTPH-Dx extended = Diesel and oil ranged TPH; VOC = volatile organic compound

Laboratory Analysis and QA/QC Review

All soil and groundwater samples were extracted and analyzed by Analytical Resources Inc. (ARI) (Tukwila, WA). The laboratory quality assurance quality control (QA/QC) measures performed by the laboratory included method blank and lab control blank. All QA/QC parameters for the data were within their respective laboratory-established control limits.

The sample results for all analyses are considered appropriate for their intended use. The analytical data reports are included as Attachment 1.

Sample Results

The detected analytes and their concentrations are presented in Tables 2 and 3. The results are compared to Model Toxics Control Act (MTCA) Methods A and B Cleanup Levels (CULs) for Unrestricted Land Uses.

Significant findings are as follows:

- Detected soil analytes include diesel- and oil- range TPH, benzene, and chlorinated compounds such as cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, and Vinyl Chloride. However, all the results were well below MTCA Method A and B cleanup levels.
- At boring locations CHB-07 and CHB-08, detected groundwater analytes include diesel and oil-range TPH, Benzene, Toluene, and chlorinated compounds such as 1,1-

Dichlorethane, 1,1-Dichloroethene, Tetrachloroethene (PCE), cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, and Vinyl Chloride.

- At CHB-07, MTCA Method B CULs for groundwater were exceeded for cis-1,2-Dichloroethene (480 µg/L), and Vinyl Chloride (220 µg/L). The MTCA Method B CULs are 0.073, 80, and 0.029 µg/L respectively. MTCA Method A CUL was also exceeded for Vinyl Chloride. MTCA Method B CUL is 0.029 µg/L.
- At CHB-09, MTCA Method B CUL for groundwater was exceeded for tetrachloroethene (0.2 µg/L). The detection concentration for oil-range TPH was 1,400 µg/L which exceeded MTCA Method A CUL of 500 µg/L.

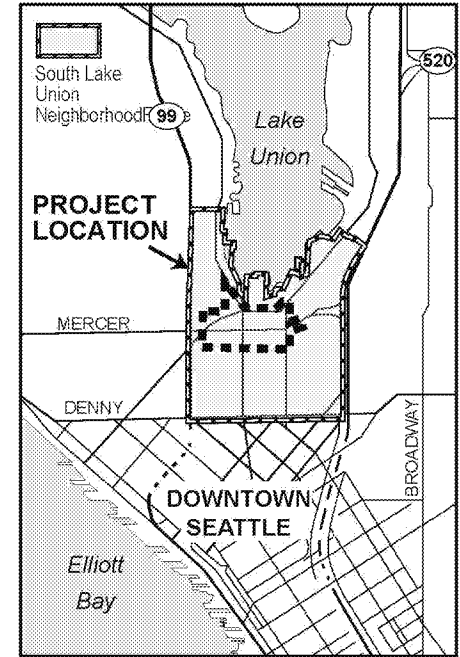
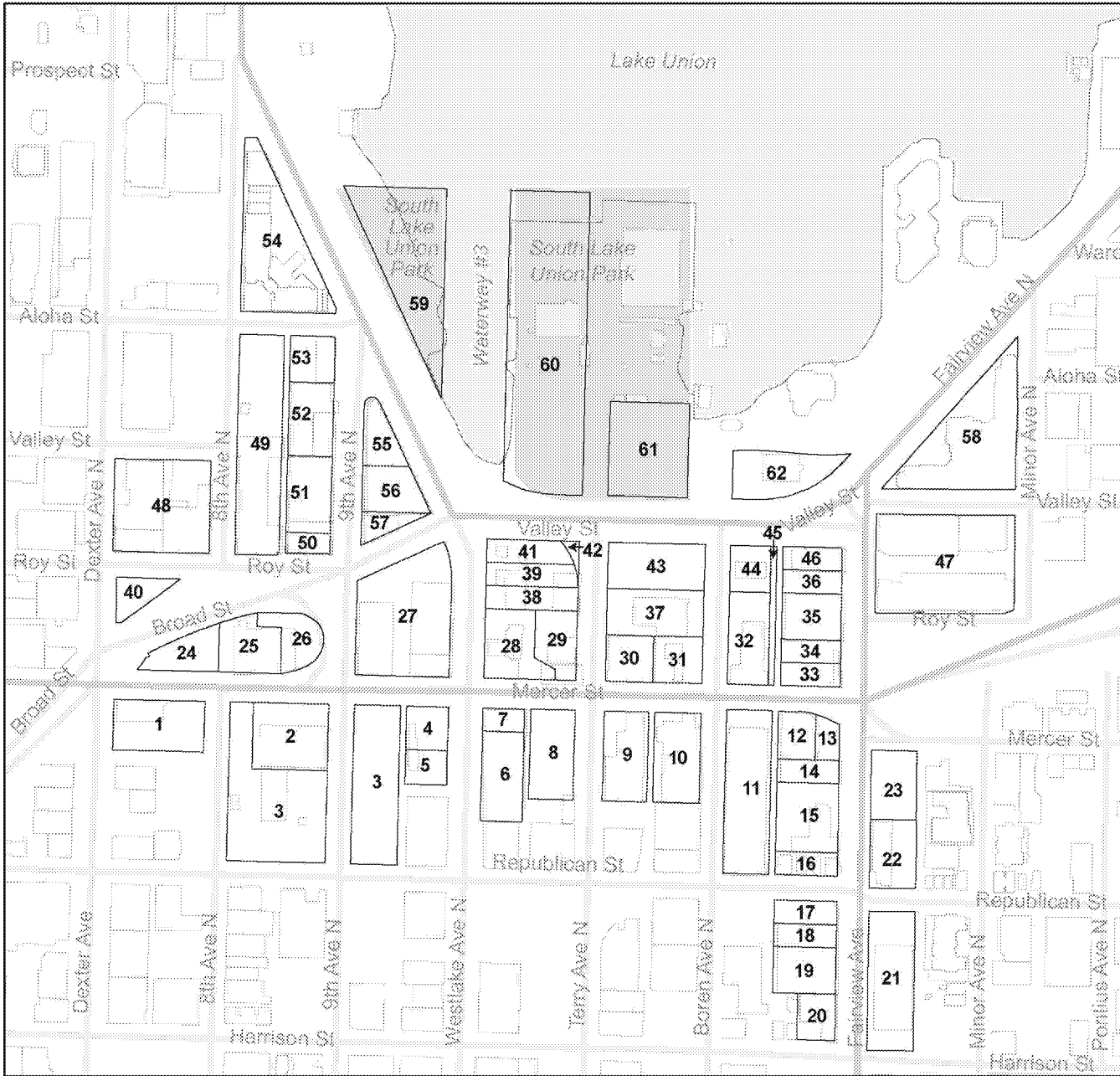
Conclusion and Recommendations

Based on findings from previous and current investigations, groundwater contaminated with VOCs and petroleum hydrocarbons is likely to be present along 9th Avenue between Ward Street and Aloha Street (as represented by CHB-07), and between Valley and Mercer Street (as represented by CHB-09). Groundwater results for CHB-07 shows exceedance of the MTCA CULs for Vinyl Chloride and cis-1,2-Dichloroethene with concentrations of 220 µg/L and 480 µg/L respectively. Groundwater results for CHB-09 showed exceedances for PCE and petroleum hydrocarbons in the Motor Oil range with a concentration of 0.2 µg/L and 1,400 µg/L respectively. The presence of these contaminants is likely due to off-site transport of contaminated groundwater from upgradient sources such as leaking underground storage tanks, automotive maintenance facilities and dry cleaners.

During construction activities, groundwater generated at these locations will need to be treated and disposed in accordance with applicable federal, state, and local regulations. The potential to alter groundwater pathways resulting in the spread of existing contaminants into previously uncontaminated areas will also need to be carefully evaluated and avoided.

References

- Black & Veatch. 1998. *Phase II Environmental Site Assessment, Denny Way/Lake Union CSO Project*. Prepared for King County Department of Natural Resources. October 1998.
- CH2M HILL. 2006. *Hazardous Materials Discipline Report, Mercer Corridor Improvements Project*. Prepared for Seattle Department of Transportation. November 2006.
- CH2M HILL. 2008. *Phase I Environmental Site Assessments, Phase III Mercer Corridor Improvements Project*. Prepared for Seattle Department of Transportation. January 2008.
- CH2M HILL. 2008. *Transaction Screening Reports, Phase III Mercer Corridor Improvements Project*. Prepared for Seattle Department of Transportation. February 2008.
- CH2M HILL. 2008. *Draft Phase II Environmental Site Investigation, Phase III Mercer Corridor Improvements Project*. Prepared for Seattle Department of Transportation. May 2008.



LEGEND

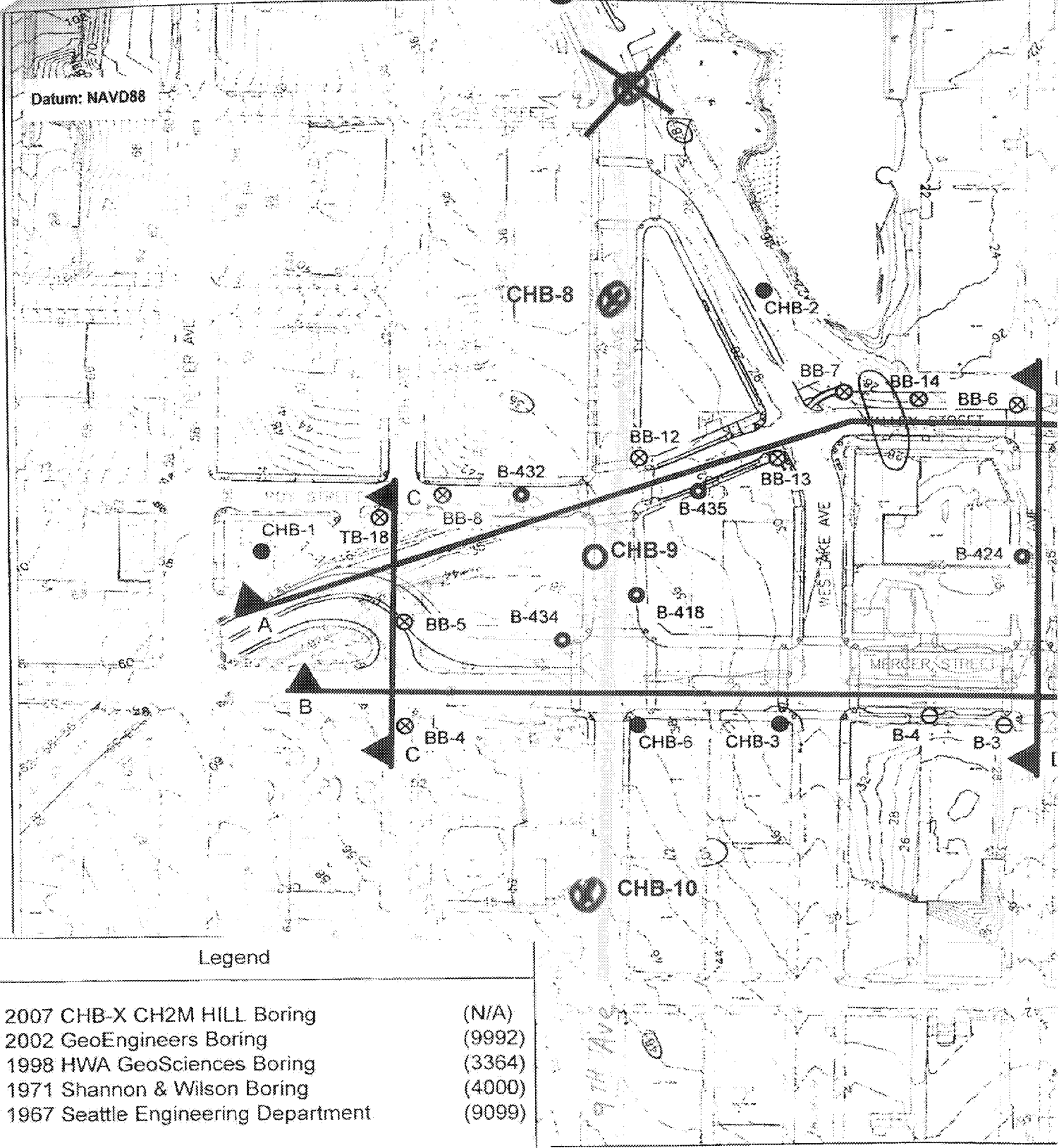
62 Parcel Numbers



Figure 1
Site Vicinity Map
 PHASE III MERCER CORRIDOR
 IMPROVEMENTS PROJECT

CHB-7

Datum: NAVD88



Legend

- 2007 CHB-X CH2M HILL Boring (N/A)
- ⊖ 2002 GeoEngineers Boring (9992)
- ⊗ 1998 HWA GeoSciences Boring (3364)
- 1971 Shannon & Wilson Boring (4000)
- ⊙ 1967 Seattle Engineering Department (9099)

Figure 2
Sampling Locations

TABLE 2

Detected Soil Analytical Results
9th Avenue Sewer Upgrade

Sample ID	CHB-07-5.0-7.0	CHB-07-12.5-13.5	CHB-08-15.0-16.0	CHB-09-20.0-21.5	CHB-09-25.0-26.5
Sample Type	N	N	N	N	N
Sample Date	4/14/2008	4/14/2008	4/15/2008	4/16/2008	4/16/2008
Sample Depth (ft)	5-7	12.5-13.5	15-16	20-21.5	25-26.5

Chemicals		Units	MTCA A	MTCA B					
I Group	Analyte								
VOC	Acetone	mg/kg	--	8,000	--	0.0096	0.0072	--	0.054
VOC	Benzene	mg/kg	0.03	18	--	0.0015	0.0008 U	--	0.0012 U
VOC	Carbon Disulfide	mg/kg	--	8,000	--	0.0011 U	0.0008 U	--	0.0026
VOC	cis-1,2-Dichloroethene	mg/kg	--	800	--	1.1	0.0008 U	--	0.0012 U
VOC	trans-1,2-Dichloroethene	mg/kg	--	1,600	--	0.0083	0.0008 U	--	0.0012 U
VOC	Vinyl Chloride	mg/kg	--	0.67	--	0.027	0.0008 U	--	0.0012 U
TPH	Diesel Range Hydrocarbons	mg/kg	2,000	--	5.9 U	6.5 U	5.9 U	11	36
TPH	Gasoline Range Hydrocarbons	mg/kg	100	--	5 U	7.2 U	5.6 U	6.2 U	6.1 U
TPH	Motor Oil	mg/kg	2,000	--	12 U	13 U	12 U	23	130

Notes:

TPH = total petroleum hydrocarbons

VOC = volatile organic carbons

mg/kg = milligrams per kilogram

N = normal environmental sample

U = exceeded screening level

MTCA A Gasoline Ranged Hydrocarbons value is without benzene present in soil.

TABLE 3

Detected Groundwater Analytical Results
9th Avenue Sewer Upgrade

Sample ID			CHB-07-W	CHB-08-W	CHB-09-W
Sample Date			4/14/2008	4/15/2008	4/16/2008
Chemical					
Group	Analyte	Units	MTCA A	MTCA B	
VOC	1,1-Dichloroethane	ug/L	--	800	0.2 U 0.2 U
VOC	1,1-Dichloroethene	ug/L	--	400	0.3 U 0.2 U
VOC	Benzene	ug/L	5	0.8	0.7 U 0.2 U 0.3
VOC	cis-1,2-Dichloroethene	ug/L	--	80	480 U 0.2 U 0.2 U
VOC	Tetrachloroethene	ug/L	5	0.081	0.2 U 0.2 U 0.2
VOC	Toluene	ug/L	1,000	640	0.2 U 0.2 U 0.3
VOC	trans-1,2-Dichloroethene	ug/L	--	160	1.8 U 0.2 U 0.2 U
VOC	Vinyl Chloride	ug/L	0.2	0.029	220 U 0.2 U 0.2 U
TPH	Diesel Range Hydrocarbons	ug/L	500	--	250 U 250 U 400
TPH	Gasoline Range Hydrocarbons	ug/L	1,000	--	250 U 250 U 250 U
TPH	Motor Oil	ug/L	500	--	500 U 500 U 1400

Notes:

TPH = total petroleum hydrocarbons IDW = Investigation Derived Waste
 VOC = volatile organic carbons = exceeded screening level
 ug/L = micrograms per liter

A duplicate sample was collected at CHB-09. The native sample were non-detect for TPH. Duplicate sample results were reported.
 MTCA A Gasoline Ranged Hydrocarbons value is without benzene present in soil.

ATTACHMENT 1

Laboratory Analytical Data



Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 28, 2008

Ms. Rachel Chang
CH2M Hill
1100 112th Avenue NE, Suite 400
Bellevue, WA 98004-4504

Client Project: 350429 / 9th Avenue SU project
ARI Job No: MS22

Dear Ms. Chang:

Please find enclosed sample custody records and final results for samples from the project referenced above. Analytical Resources, Inc accepted soil and water samples and a trip blank on April 14, 2008.

The samples were analyzed for NWTPH-Dx, NWTPH-Gx by WDOE methods, and Volatile Organics by EPA 8260B, as requested.

There were no anomalies associated with these samples.

Copies of the reports will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Kelly Bottem".

Kelly Bottem
Client Services Manager
206-695-6211
kellyb@arilabs.com

Enclosures

cc: File MS22

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: <i>MS22</i>	Turn-around Requested:	Page: <i>1</i> of <i>1</i>
ARI Client Company: <i>CH2M HILL</i>	Phone: <i>425-453-5000</i>	Date: <i>4/14/08</i> Ice Present? <i>Y</i>
Client Contact: <i>Nicole Baden, Rachel Chang</i>		No. of Coolers: <i>1</i> Cooler Temps: <i>4.4</i>



Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested				Notes/Comments
					<i>NUTPH-Px EPA5095</i>	<i>NUTPH-Px extended</i>	<i>VOCs EPA5095</i>	<i>VOCs EPA-SW8260B</i>	
<i>CHB-07-5.0-7.0</i>	<i>4/14/08</i>	<i>1040</i>	<i>soil</i>	<i>3</i>	<i>X</i>	<i>X</i>			
<i>CHB-07-12.5-13.5</i>	<i>4/14/08</i>	<i>1110</i>	<i>soil</i>	<i>6</i>	<i>X</i>	<i>X</i>	<i>X</i>		
<i>CHB-07-W</i>	<i>4/14/08</i>	<i>1225</i>	<i>water</i>	<i>7</i>	<i>X</i>	<i>X</i>	<i>X</i>		
Comments/Special Instructions	Relinquished by: (Signature) <i>Nicole Baden</i>		Received by: (Signature) <i>Brian Leavel</i>		Relinquished by: (Signature)		Received by: (Signature)		
	Printed Name: <i>NICOLE Baden</i>		Printed Name: <i>Brian Leavel</i>		Printed Name:		Printed Name:		
	Company: <i>CH2M HILL</i>		Company: <i>ARI</i>		Company:		Company:		
	Date & Time: <i>4/14/08 4:50 pm</i>		Date & Time: <i>4/14/08 1650</i>		Date & Time:		Date & Time:		

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client: CH2M Hill
COC No: _____
Assigned ARI Job No: MS22

Project Name: 9th Ave Sewer Upgrade
Delivered by: Hand
Tracking No: _____

Preliminary Examination Phase:

- Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO
- Were custody papers included with the cooler? YES NO
- Were custody papers properly filled out (ink, signed, etc.) YES NO
- Record cooler temperature (recommended 2.0-6.0 °C for chemistry) 4.4 °C

Cooler Accepted by: [Signature] Date: 4/14/02 Time: 1650
Complete custody forms and attach all shipping documents

Log-In Phase:

- Was a temperature blank included in the cooler? YES NO
- What kind of packing material was used? BW/SB
- Was sufficient ice used (if appropriate)? YES NO
- Were all bottles sealed in individual plastic bags? YES NO
- Did all bottle arrive in good condition (unbroken)? YES NO
- Were all bottle labels complete and legible? YES NO
- Did all bottle labels and tags agree with custody papers? YES NO
- Were all bottles used correct for the requested analyses? YES NO
- Do any of the analyses (bottles) require preservation? (attach preservation checklist) YES NO
- Were all VOC vials free of air bubbles? NA YES NO
- Was sufficient amount of sample sent in each bottle? YES NO

Samples Logged by: [Signature] Date: 4/14/02 Time: 1700
**** Notify Project Manager of discrepancies or concerns ****

Explain discrepancies or negative responses:
Pea bubbles in CHB-07-w & Trip Blanks

By: _____ Date: _____

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: CHB-07-12.5-13.5

Page 1 of 2

SAMPLE

Lab Sample ID: MS22B

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7781

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Data Release Authorized:

Date Sampled: 04/14/08

Reported: 04/22/08

Date Received: 04/14/08

Instrument/Analyst: FINNS/PAB

Sample Amount: 4.64 g-dry-wt

Date Analyzed: 04/15/08 15:09

Purge Volume: 5.0 mL

Moisture: 23.5%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.1	< 1.1	U
74-83-9	Bromomethane	1.1	< 1.1	U
75-01-4	Vinyl Chloride	1.1	27	
75-00-3	Chloroethane	1.1	< 1.1	U
75-09-2	Methylene Chloride	2.2	< 2.2	U
67-64-1	Acetone	5.4	9.6	
75-15-0	Carbon Disulfide	1.1	< 1.1	U
75-35-4	1,1-Dichloroethene	1.1	< 1.1	U
75-34-3	1,1-Dichloroethane	1.1	< 1.1	U
156-60-5	trans-1,2-Dichloroethene	1.1	8.3	
156-59-2	cis-1,2-Dichloroethene	1.1	250	E
67-66-3	Chloroform	1.1	< 1.1	U
107-06-2	1,2-Dichloroethane	1.1	< 1.1	U
78-93-3	2-Butanone	5.4	< 5.4	U
71-55-6	1,1,1-Trichloroethane	1.1	< 1.1	U
56-23-5	Carbon Tetrachloride	1.1	< 1.1	U
108-05-4	Vinyl Acetate	5.4	< 5.4	U
75-27-4	Bromodichloromethane	1.1	< 1.1	U
78-87-5	1,2-Dichloropropane	1.1	< 1.1	U
10061-01-5	cis-1,3-Dichloropropene	1.1	< 1.1	U
79-01-6	Trichloroethene	1.1	< 1.1	U
124-48-1	Dibromochloromethane	1.1	< 1.1	U
79-00-5	1,1,2-Trichloroethane	1.1	< 1.1	U
71-43-2	Benzene	1.1	1.5	
10061-02-6	trans-1,3-Dichloropropene	1.1	< 1.1	U
110-75-8	2-Chloroethylvinylether	5.4	< 5.4	U
75-25-2	Bromoform	1.1	< 1.1	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.4	< 5.4	U
591-78-6	2-Hexanone	5.4	< 5.4	U
127-18-4	Tetrachloroethene	1.1	< 1.1	U
79-34-5	1,1,2,2-Tetrachloroethane	1.1	< 1.1	U
108-88-3	Toluene	1.1	< 1.1	U
108-90-7	Chlorobenzene	1.1	< 1.1	U
100-41-4	Ethylbenzene	1.1	< 1.1	U
100-42-5	Styrene	1.1	< 1.1	U
75-69-4	Trichlorofluoromethane	1.1	< 1.1	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.2	< 2.2	U
1330-20-7	m,p-Xylene	1.1	< 1.1	U
95-47-6	o-Xylene	1.1	< 1.1	U
95-50-1	1,2-Dichlorobenzene	1.1	< 1.1	U
541-73-1	1,3-Dichlorobenzene	1.1	< 1.1	U
106-46-7	1,4-Dichlorobenzene	1.1	< 1.1	U
107-02-8	Acrolein	54	< 54	U
74-88-4	Methyl Iodide	1.1	< 1.1	U
74-96-4	Bromoethane	2.2	< 2.2	U
107-13-1	Acrylonitrile	5.4	< 5.4	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: CHB-07-12.5-13.5

Page 2 of 2

SAMPLE

Lab Sample ID: MS22B

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7781

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Date Analyzed: 04/15/08 15:09

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.1	< 1.1	U
74-95-3	Dibromomethane	1.1	< 1.1	U
630-20-6	1,1,1,2-Tetrachloroethane	1.1	< 1.1	U
96-12-8	1,2-Dibromo-3-chloropropane	5.4	< 5.4	U
96-18-4	1,2,3-Trichloropropane	2.2	< 2.2	U
110-57-6	trans-1,4-Dichloro-2-butene	5.4	< 5.4	U
108-67-8	1,3,5-Trimethylbenzene	1.1	< 1.1	U
95-63-6	1,2,4-Trimethylbenzene	1.1	< 1.1	U
87-68-3	Hexachlorobutadiene	5.4	< 5.4	U
106-93-4	Ethylene Dibromide	1.1	< 1.1	U
74-97-5	Bromochloromethane	1.1	< 1.1	U
594-20-7	2,2-Dichloropropane	1.1	< 1.1	U
142-28-9	1,3-Dichloropropane	1.1	< 1.1	U
98-82-8	Isopropylbenzene	1.1	< 1.1	U
103-65-1	n-Propylbenzene	1.1	< 1.1	U
108-86-1	Bromobenzene	1.1	< 1.1	U
95-49-8	2-Chlorotoluene	1.1	< 1.1	U
106-43-4	4-Chlorotoluene	1.1	< 1.1	U
98-06-6	tert-Butylbenzene	1.1	< 1.1	U
135-98-8	sec-Butylbenzene	1.1	< 1.1	U
99-87-6	4-Isopropyltoluene	1.1	< 1.1	U
104-51-8	n-Butylbenzene	1.1	< 1.1	U
120-82-1	1,2,4-Trichlorobenzene	5.4	< 5.4	U
91-20-3	Naphthalene	5.4	< 5.4	U
87-61-6	1,2,3-Trichlorobenzene	5.4	< 5.4	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	116%
d8-Toluene	94.9%
Bromofluorobenzene	85.2%
d4-1,2-Dichlorobenzene	105%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: CHB-07-12.5-13.5

Page 1 of 2

REANALYSIS

Lab Sample ID: MS22B

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7781

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Data Release Authorized:

Date Sampled: 04/14/08

Reported: 04/22/08

Date Received: 04/14/08

Instrument/Analyst: FINNS/PAB

Sample Amount: 65.7 mg-dry-wt

Date Analyzed: 04/15/08 15:36

Purge Volume: 5.0 mL

Moisture: 23.5%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	76	< 76	U
74-83-9	Bromomethane	76	< 76	U
75-01-4	Vinyl Chloride	76	< 76	U
75-00-3	Chloroethane	76	< 76	U
75-09-2	Methylene Chloride	150	< 150	U
67-64-1	Acetone	380	< 380	U
75-15-0	Carbon Disulfide	76	< 76	U
75-35-4	1,1-Dichloroethene	76	< 76	U
75-34-3	1,1-Dichloroethane	76	< 76	U
156-60-5	trans-1,2-Dichloroethene	76	< 76	U
156-59-2	cis-1,2-Dichloroethene	76	1,100	
67-66-3	Chloroform	76	< 76	U
107-06-2	1,2-Dichloroethane	76	< 76	U
78-93-3	2-Butanone	380	< 380	U
71-55-6	1,1,1-Trichloroethane	76	< 76	U
56-23-5	Carbon Tetrachloride	76	< 76	U
108-05-4	Vinyl Acetate	380	< 380	U
75-27-4	Bromodichloromethane	76	< 76	U
78-87-5	1,2-Dichloropropane	76	< 76	U
10061-01-5	cis-1,3-Dichloropropene	76	< 76	U
79-01-6	Trichloroethene	76	< 76	U
124-48-1	Dibromochloromethane	76	< 76	U
79-00-5	1,1,2-Trichloroethane	76	< 76	U
71-43-2	Benzene	76	< 76	U
10061-02-6	trans-1,3-Dichloropropene	76	< 76	U
110-75-8	2-Chloroethylvinylether	380	< 380	U
75-25-2	Bromoform	76	< 76	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	380	< 380	U
591-78-6	2-Hexanone	380	< 380	U
127-18-4	Tetrachloroethene	76	< 76	U
79-34-5	1,1,2,2-Tetrachloroethane	76	< 76	U
108-88-3	Toluene	76	< 76	U
108-90-7	Chlorobenzene	76	< 76	U
100-41-4	Ethylbenzene	76	< 76	U
100-42-5	Styrene	76	< 76	U
75-69-4	Trichlorofluoromethane	76	< 76	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	150	< 150	U
1330-20-7	m,p-Xylene	76	< 76	U
95-47-6	o-Xylene	76	< 76	U
95-50-1	1,2-Dichlorobenzene	76	< 76	U
541-73-1	1,3-Dichlorobenzene	76	< 76	U
106-46-7	1,4-Dichlorobenzene	76	< 76	U
107-02-8	Acrolein	3,800	< 3,800	U
74-88-4	Methyl Iodide	76	< 76	U
74-96-4	Bromoethane	150	< 150	U
107-13-1	Acrylonitrile	380	< 380	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 2 of 2



Sample ID: CHB-07-12.5-13.5

REANALYSIS

Lab Sample ID: MS22B

LIMS ID: 08-7781

Matrix: Soil

Date Analyzed: 04/15/08 15:36

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade
350429

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	76	< 76	U
74-95-3	Dibromomethane	76	< 76	U
630-20-6	1,1,1,2-Tetrachloroethane	76	< 76	U
96-12-8	1,2-Dibromo-3-chloropropane	380	< 380	U
96-18-4	1,2,3-Trichloropropane	150	< 150	U
110-57-6	trans-1,4-Dichloro-2-butene	380	< 380	U
108-67-8	1,3,5-Trimethylbenzene	76	< 76	U
95-63-6	1,2,4-Trimethylbenzene	76	< 76	U
87-68-3	Hexachlorobutadiene	380	< 380	U
106-93-4	Ethylene Dibromide	76	< 76	U
74-97-5	Bromochloromethane	76	< 76	U
594-20-7	2,2-Dichloropropane	76	< 76	U
142-28-9	1,3-Dichloropropane	76	< 76	U
98-82-8	Isopropylbenzene	76	< 76	U
103-65-1	n-Propylbenzene	76	< 76	U
108-86-1	Bromobenzene	76	< 76	U
95-49-8	2-Chlorotoluene	76	< 76	U
106-43-4	4-Chlorotoluene	76	< 76	U
98-06-6	tert-Butylbenzene	76	< 76	U
135-98-8	sec-Butylbenzene	76	< 76	U
99-87-6	4-Isopropyltoluene	76	< 76	U
104-51-8	n-Butylbenzene	76	< 76	U
120-82-1	1,2,4-Trichlorobenzene	380	< 380	U
91-20-3	Naphthalene	380	< 380	U
87-61-6	1,2,3-Trichlorobenzene	380	< 380	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	97.3%
Bromofluorobenzene	91.0%
d4-1,2-Dichlorobenzene	97.0%

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: MB-041508
METHOD BLANK

Lab Sample ID: MB-041508
LIMS ID: 08-7781
Matrix: Soil
Data Release Authorized:
Reported: 04/22/08

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN5/PAB
Date Analyzed: 04/15/08 13:12

Sample Amount: 5.00 g-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: MB-041508

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METHOD BLANK

Lab Sample ID: MB-041508

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7781

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Date Analyzed: 04/15/08 13:12

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.7%
d8-Toluene	98.0%
Bromofluorobenzene	93.6%
d4-1,2-Dichlorobenzene	97.6%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 1 of 2

Sample ID: MB-041508

METHOD BLANK



Lab Sample ID: MB-041508

LIMS ID: 08-8193

Matrix: Soil

Data Release Authorized: *JP*

Reported: 04/22/08

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade

350429

Date Sampled: NA

Date Received: NA

Instrument/Analyst: FINN5/PAB

Date Analyzed: 04/15/08 13:12

Sample Amount: 100 mg-dry-wt

Purge Volume: 5.0 mL

Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	50	< 50	U
74-83-9	Bromomethane	50	< 50	U
75-01-4	Vinyl Chloride	50	< 50	U
75-00-3	Chloroethane	50	< 50	U
75-09-2	Methylene Chloride	100	< 100	U
67-64-1	Acetone	250	< 250	U
75-15-0	Carbon Disulfide	50	< 50	U
75-35-4	1,1-Dichloroethene	50	< 50	U
75-34-3	1,1-Dichloroethane	50	< 50	U
156-60-5	trans-1,2-Dichloroethene	50	< 50	U
156-59-2	cis-1,2-Dichloroethene	50	< 50	U
67-66-3	Chloroform	50	< 50	U
107-06-2	1,2-Dichloroethane	50	< 50	U
78-93-3	2-Butanone	250	< 250	U
71-55-6	1,1,1-Trichloroethane	50	< 50	U
56-23-5	Carbon Tetrachloride	50	< 50	U
108-05-4	Vinyl Acetate	250	< 250	U
75-27-4	Bromodichloromethane	50	< 50	U
78-87-5	1,2-Dichloropropane	50	< 50	U
10061-01-5	cis-1,3-Dichloropropene	50	< 50	U
79-01-6	Trichloroethene	50	< 50	U
124-48-1	Dibromochloromethane	50	< 50	U
79-00-5	1,1,2-Trichloroethane	50	< 50	U
71-43-2	Benzene	50	< 50	U
10061-02-6	trans-1,3-Dichloropropene	50	< 50	U
110-75-8	2-Chloroethylvinylether	250	< 250	U
75-25-2	Bromoform	50	< 50	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	250	< 250	U
591-78-6	2-Hexanone	250	< 250	U
127-18-4	Tetrachloroethene	50	< 50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	< 50	U
108-88-3	Toluene	50	< 50	U
108-90-7	Chlorobenzene	50	< 50	U
100-41-4	Ethylbenzene	50	< 50	U
100-42-5	Styrene	50	< 50	U
75-69-4	Trichlorofluoromethane	50	< 50	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	100	< 100	U
1330-20-7	m,p-Xylene	50	< 50	U
95-47-6	o-Xylene	50	< 50	U
95-50-1	1,2-Dichlorobenzene	50	< 50	U
541-73-1	1,3-Dichlorobenzene	50	< 50	U
106-46-7	1,4-Dichlorobenzene	50	< 50	U
107-02-8	Acrolein	2,500	< 2,500	U
74-88-4	Methyl Iodide	50	< 50	U
74-96-4	Bromoethane	100	< 100	U
107-13-1	Acrylonitrile	250	< 250	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: MB-041508

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METHOD BLANK

Lab Sample ID: MB-041508

QC Report No: MS22-CH2M HILL

LIMS ID: 08-8193

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Date Analyzed: 04/15/08 13:12

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	50	< 50	U
74-95-3	Dibromomethane	50	< 50	U
630-20-6	1,1,1,2-Tetrachloroethane	50	< 50	U
96-12-8	1,2-Dibromo-3-chloropropane	250	< 250	U
96-18-4	1,2,3-Trichloropropane	100	< 100	U
110-57-6	trans-1,4-Dichloro-2-butene	250	< 250	U
108-67-8	1,3,5-Trimethylbenzene	50	< 50	U
95-63-6	1,2,4-Trimethylbenzene	50	< 50	U
87-68-3	Hexachlorobutadiene	250	< 250	U
106-93-4	Ethylene Dibromide	50	< 50	U
74-97-5	Bromochloromethane	50	< 50	U
594-20-7	2,2-Dichloropropane	50	< 50	U
142-28-9	1,3-Dichloropropane	50	< 50	U
98-82-8	Isopropylbenzene	50	< 50	U
103-65-1	n-Propylbenzene	50	< 50	U
108-86-1	Bromobenzene	50	< 50	U
95-49-8	2-Chlorotoluene	50	< 50	U
106-43-4	4-Chlorotoluene	50	< 50	U
98-06-6	tert-Butylbenzene	50	< 50	U
135-98-8	sec-Butylbenzene	50	< 50	U
99-87-6	4-Isopropyltoluene	50	< 50	U
104-51-8	n-Butylbenzene	50	< 50	U
120-82-1	1,2,4-Trichlorobenzene	250	< 250	U
91-20-3	Naphthalene	250	< 250	U
87-61-6	1,2,3-Trichlorobenzene	250	< 250	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.7%
d8-Toluene	98.0%
Bromofluorobenzene	93.6%
d4-1,2-Dichlorobenzene	97.6%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Soil

QC Report No: MS22-CH2M HILL
 Project: 9th Ave Sewer Upgrade
 350429

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-041508	Method Blank	Low	99.7%	98.0%	93.6%	97.6%	0
LCS-041508	Lab Control	Low	96.7%	101%	94.5%	101%	0
LCSD-041508	Lab Control Dup	Low	99.6%	98.0%	95.0%	102%	0
MS22B	CHB-07-12.5-13.5	Low	116%	94.9%	85.2%	105%	0
MS22BRE	CHB-07-12.5-13.5	Med	101%	97.3%	91.0%	97.0%	0
MB-041508	Method Blank	Med	99.7%	98.0%	93.6%	97.6%	0
LCS-041508	Lab Control	Med	96.7%	101%	94.5%	101%	0
LCSD-041508	Lab Control Dup	Med	99.6%	98.0%	95.0%	102%	0

SW8260B	LCS/MB LIMITS		QC LIMITS	
	Low	Med	Low	Med
(DCE) = d4-1,2-Dichloroethane	75-120	76-120	72-134	69-120
(TOL) = d8-Toluene	80-122	80-120	78-124	80-120
(BFB) = Bromofluorobenzene	79-120	80-120	66-120	76-128
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	79-120	80-120

Log Number Range: 08-7781 to 08-8193

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041508

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LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508

QC Report No: MS22-CH2M HILL

LIMS ID: 08-8193

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 04/22/08

Date Received: NA

Instrument/Analyst LCS: FINN5/PAB

Sample Amount LCS: 100 mg-dry-wt

LCSD: FINN5/PAB

LCSD: 100 mg-dry-wt

Date Analyzed LCS: 04/15/08 12:06

Purge Volume LCS: 5.0 mL

LCSD: 04/15/08 12:40

LCSD: 5.0 mL

Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	2050	2500	82.0%	2090	2500	83.6%	1.9%
Bromomethane	2810	2500	112%	2890	2500	116%	2.8%
Vinyl Chloride	2170	2500	86.8%	2200	2500	88.0%	1.4%
Chloroethane	2430	2500	97.2%	2500	2500	100%	2.8%
Methylene Chloride	2380	2500	95.2%	2400	2500	96.0%	0.8%
Acetone	9530	12500	76.2%	10300	12500	82.4%	7.8%
Carbon Disulfide	2360	2500	94.4%	2390	2500	95.6%	1.3%
1,1-Dichloroethene	2600	2500	104%	2740	2500	110%	5.2%
1,1-Dichloroethane	2360	2500	94.4%	2420	2500	96.8%	2.5%
trans-1,2-Dichloroethene	2520	2500	101%	2530	2500	101%	0.4%
cis-1,2-Dichloroethene	2470	2500	98.8%	2520	2500	101%	2.0%
Chloroform	2450	2500	98.0%	2460	2500	98.4%	0.4%
1,2-Dichloroethane	2230	2500	89.2%	2160	2500	86.4%	3.2%
2-Butanone	9840	12500	78.7%	10600	12500	84.8%	7.4%
1,1,1-Trichloroethane	2500	2500	100%	2550	2500	102%	2.0%
Carbon Tetrachloride	2410	2500	96.4%	2280	2500	91.2%	5.5%
Vinyl Acetate	2050	2500	82.0%	2150	2500	86.0%	4.8%
Bromodichloromethane	2380	2500	95.2%	2200	2500	88.0%	7.9%
1,2-Dichloropropane	2200	2500	88.0%	2200	2500	88.0%	0.0%
cis-1,3-Dichloropropene	2360	2500	94.4%	2260	2500	90.4%	4.3%
Trichloroethene	2500	2500	100%	2400	2500	96.0%	4.1%
Dibromochloromethane	2340	2500	93.6%	2390	2500	95.6%	2.1%
1,1,2-Trichloroethane	2320	2500	92.8%	2330	2500	93.2%	0.4%
Benzene	2470	2500	98.8%	2340	2500	93.6%	5.4%
trans-1,3-Dichloropropene	2210	2500	88.4%	2220	2500	88.8%	0.5%
2-Chloroethylvinylether	2240	2500	89.6%	2250	2500	90.0%	0.4%
Bromoform	2130	2500	85.2%	2200	2500	88.0%	3.2%
4-Methyl-2-Pentanone (MIBK)	10100	12500	80.8%	10500	12500	84.0%	3.9%
2-Hexanone	9420	12500	75.4%	10500	12500	84.0%	10.8%
Tetrachloroethene	2710	2500	108%	2610	2500	104%	3.8%
1,1,2,2-Tetrachloroethane	2230	2500	89.2%	2340	2500	93.6%	4.8%
Toluene	2470	2500	98.8%	2340	2500	93.6%	5.4%
Chlorobenzene	2520	2500	101%	2480	2500	99.2%	1.6%
Ethylbenzene	2460	2500	98.4%	2440	2500	97.6%	0.8%
Styrene	2480	2500	99.2%	2430	2500	97.2%	2.0%
Trichlorofluoromethane	2750	2500	110%	2790	2500	112%	1.4%
1,1,2-Trichloro-1,2,2-trifluoroethane	2820	2500	113%	2750	2500	110%	2.5%
m,p-Xylene	5080	5000	102%	4960	5000	99.2%	2.4%
o-Xylene	2500	2500	100%	2450	2500	98.0%	2.0%
1,2-Dichlorobenzene	2600	2500	104%	2510	2500	100%	3.5%
1,3-Dichlorobenzene	2680	2500	107%	2620	2500	105%	2.3%
1,4-Dichlorobenzene	2690	2500	108%	2580	2500	103%	4.2%
Acrolein	10800	12500	86.4%	11100	12500	88.8%	2.7%
Methyl Iodide	3080	2500	123%	3020	2500	121%	2.0%
Bromoethane	2830	2500	113%	2840	2500	114%	0.4%
Acrylonitrile	2300	2500	92.0%	2420	2500	96.8%	5.1%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041508

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LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508

QC Report No: MS22-CH2M HILL

LIMS ID: 08-8193

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	2390	2500	95.6%	2270	2500	90.8%	5.2%
Dibromomethane	2320	2500	92.8%	2310	2500	92.4%	0.4%
1,1,1,2-Tetrachloroethane	2460	2500	98.4%	2460	2500	98.4%	0.0%
1,2-Dibromo-3-chloropropane	1780	2500	71.2%	1880	2500	75.2%	5.5%
1,2,3-Trichloropropane	2400	2500	96.0%	2610	2500	104%	8.4%
trans-1,4-Dichloro-2-butene	2120	2500	84.8%	2180	2500	87.2%	2.8%
1,3,5-Trimethylbenzene	2700	2500	108%	2590	2500	104%	4.2%
1,2,4-Trimethylbenzene	2680	2500	107%	2590	2500	104%	3.4%
Hexachlorobutadiene	2680	2500	107%	2560	2500	102%	4.6%
Ethylene Dibromide	2360	2500	94.4%	2320	2500	92.8%	1.7%
Bromochloromethane	2690	2500	108%	2690	2500	108%	0.0%
2,2-Dichloropropane	2390	2500	95.6%	2470	2500	98.8%	3.3%
1,3-Dichloropropane	2340	2500	93.6%	2370	2500	94.8%	1.3%
Isopropylbenzene	2740	2500	110%	2670	2500	107%	2.6%
n-Propylbenzene	2640	2500	106%	2560	2500	102%	3.1%
Bromobenzene	2530	2500	101%	2490	2500	99.6%	1.6%
2-Chlorotoluene	2480	2500	99.2%	2410	2500	96.4%	2.9%
4-Chlorotoluene	2600	2500	104%	2600	2500	104%	0.0%
tert-Butylbenzene	2700	2500	108%	2630	2500	105%	2.6%
sec-Butylbenzene	2710	2500	108%	2620	2500	105%	3.4%
4-Isopropyltoluene	2760	2500	110%	2680	2500	107%	2.9%
n-Butylbenzene	2840	2500	114%	2670	2500	107%	6.2%
1,2,4-Trichlorobenzene	2870	2500	115%	2680	2500	107%	6.8%
Naphthalene	2220	2500	88.8%	2210	2500	88.4%	0.5%
1,2,3-Trichlorobenzene	2590	2500	104%	2470	2500	98.8%	4.7%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	96.7%	99.6%
d8-Toluene	101%	98.0%
Bromofluorobenzene	94.5%	95.0%
d4-1,2-Dichlorobenzene	101%	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 1 of 2



Sample ID: LCS-041508

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508

LIMS ID: 08-7781

Matrix: Soil

Data Release Authorized:

Reported: 04/22/08

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade

350429

Date Sampled: NA

Date Received: NA

Instrument/Analyst LCS: FINN5/PAB

LCSD: FINN5/PAB

Date Analyzed LCS: 04/15/08 12:06

LCSD: 04/15/08 12:40

Sample Amount LCS: 5.00 g-dry-wt

LCSD: 5.00 g-dry-wt

Purge Volume LCS: 5.0 mL

LCSD: 5.0 mL

Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	41.0	50.0	82.0%	41.8	50.0	83.6%	1.9%
Bromomethane	56.2	50.0	112%	57.9	50.0	116%	3.0%
Vinyl Chloride	43.4	50.0	86.8%	44.0	50.0	88.0%	1.4%
Chloroethane	48.6	50.0	97.2%	49.9	50.0	99.8%	2.6%
Methylene Chloride	47.6	50.0	95.2%	47.9	50.0	95.8%	0.6%
Acetone	191	250	76.4%	206	250	82.4%	7.6%
Carbon Disulfide	47.2	50.0	94.4%	47.8	50.0	95.6%	1.3%
1,1-Dichloroethene	52.0	50.0	104%	54.8	50.0	110%	5.2%
1,1-Dichloroethane	47.2	50.0	94.4%	48.4	50.0	96.8%	2.5%
trans-1,2-Dichloroethene	50.3	50.0	101%	50.5	50.0	101%	0.4%
cis-1,2-Dichloroethene	49.4	50.0	98.8%	50.5	50.0	101%	2.2%
Chloroform	49.0	50.0	98.0%	49.1	50.0	98.2%	0.2%
1,2-Dichloroethane	44.6	50.0	89.2%	43.2	50.0	86.4%	3.2%
2-Butanone	197	250	78.8%	211	250	84.4%	6.9%
1,1,1-Trichloroethane	49.9	50.0	99.8%	51.0	50.0	102%	2.2%
Carbon Tetrachloride	48.3	50.0	96.6%	45.7	50.0	91.4%	5.5%
Vinyl Acetate	41.0	50.0	82.0%	43.1	50.0	86.2%	5.0%
Bromodichloromethane	47.6	50.0	95.2%	44.0	50.0	88.0%	7.9%
1,2-Dichloropropane	44.1	50.0	88.2%	44.0	50.0	88.0%	0.2%
cis-1,3-Dichloropropene	47.2	50.0	94.4%	45.2	50.0	90.4%	4.3%
Trichloroethene	50.0	50.0	100%	48.0	50.0	96.0%	4.1%
Dibromochloromethane	46.8	50.0	93.6%	47.7	50.0	95.4%	1.9%
1,1,2-Trichloroethane	46.5	50.0	93.0%	46.6	50.0	93.2%	0.2%
Benzene	49.5	50.0	99.0%	46.8	50.0	93.6%	5.6%
trans-1,3-Dichloropropene	44.2	50.0	88.4%	44.4	50.0	88.8%	0.5%
2-Chloroethylvinylether	44.8	50.0	89.6%	44.9	50.0	89.8%	0.2%
Bromoform	42.6	50.0	85.2%	43.9	50.0	87.8%	3.0%
4-Methyl-2-Pentanone (MIBK)	201	250	80.4%	209	250	83.6%	3.9%
2-Hexanone	188	250	75.2%	210	250	84.0%	11.1%
Tetrachloroethene	54.2	50.0	108%	52.2	50.0	104%	3.8%
1,1,2,2-Tetrachloroethane	44.7	50.0	89.4%	46.8	50.0	93.6%	4.6%
Toluene	49.3	50.0	98.6%	46.9	50.0	93.8%	5.0%
Chlorobenzene	50.5	50.0	101%	49.6	50.0	99.2%	1.8%
Ethylbenzene	49.1	50.0	98.2%	48.8	50.0	97.6%	0.6%
Styrene	49.6	50.0	99.2%	48.5	50.0	97.0%	2.2%
Trichlorofluoromethane	55.0	50.0	110%	55.9	50.0	112%	1.6%
1,1,2-Trichloro-1,2,2-trifluoroethane	56.4	50.0	113%	54.9	50.0	110%	2.7%
m,p-Xylene	102	100	102%	99.3	100	99.3%	2.7%
o-Xylene	49.9	50.0	99.8%	49.1	50.0	98.2%	1.6%
1,2-Dichlorobenzene	52.0	50.0	104%	50.1	50.0	100%	3.7%
1,3-Dichlorobenzene	53.6	50.0	107%	52.3	50.0	105%	2.5%
1,4-Dichlorobenzene	53.7	50.0	107%	51.6	50.0	103%	4.0%
Acrolein	216	250	86.4%	222	250	88.8%	2.7%
Methyl Iodide	61.5	50.0	123%	60.5	50.0	121%	1.6%
Bromoethane	56.6	50.0	113%	56.9	50.0	114%	0.5%
Acrylonitrile	46.1	50.0	92.2%	48.5	50.0	97.0%	5.1%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041508

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LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7781

Project: 9th Ave Sewer Upgrade

Matrix: Soil

350429

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	47.8	50.0	95.6%	45.3	50.0	90.6%	5.4%
Dibromomethane	46.4	50.0	92.8%	46.3	50.0	92.6%	0.2%
1,1,1,2-Tetrachloroethane	49.2	50.0	98.4%	49.2	50.0	98.4%	0.0%
1,2-Dibromo-3-chloropropane	35.6	50.0	71.2%	37.5	50.0	75.0%	5.2%
1,2,3-Trichloropropane	48.0	50.0	96.0%	52.1	50.0	104%	8.2%
trans-1,4-Dichloro-2-butene	42.4	50.0	84.8%	43.5	50.0	87.0%	2.6%
1,3,5-Trimethylbenzene	53.9	50.0	108%	51.9	50.0	104%	3.8%
1,2,4-Trimethylbenzene	53.7	50.0	107%	51.9	50.0	104%	3.4%
Hexachlorobutadiene	53.7	50.0	107%	51.2	50.0	102%	4.8%
Ethylene Dibromide	47.2	50.0	94.4%	46.5	50.0	93.0%	1.5%
Bromochloromethane	53.8	50.0	108%	53.8	50.0	108%	0.0%
2,2-Dichloropropane	47.8	50.0	95.6%	49.5	50.0	99.0%	3.5%
1,3-Dichloropropane	46.9	50.0	93.8%	47.4	50.0	94.8%	1.1%
Isopropylbenzene	54.8	50.0	110%	53.4	50.0	107%	2.6%
n-Propylbenzene	52.7	50.0	105%	51.1	50.0	102%	3.1%
Bromobenzene	50.6	50.0	101%	49.8	50.0	99.6%	1.6%
2-Chlorotoluene	49.6	50.0	99.2%	48.1	50.0	96.2%	3.1%
4-Chlorotoluene	52.0	50.0	104%	52.0	50.0	104%	0.0%
tert-Butylbenzene	54.0	50.0	108%	52.6	50.0	105%	2.6%
sec-Butylbenzene	54.1	50.0	108%	52.5	50.0	105%	3.0%
4-Isopropyltoluene	55.2	50.0	110%	53.7	50.0	107%	2.8%
n-Butylbenzene	56.8	50.0	114%	53.4	50.0	107%	6.2%
1,2,4-Trichlorobenzene	57.3	50.0	115%	53.6	50.0	107%	6.7%
Naphthalene	44.4	50.0	88.8%	44.2	50.0	88.4%	0.5%
1,2,3-Trichlorobenzene	51.8	50.0	104%	49.5	50.0	99.0%	4.5%

Reported in µg/kg (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	96.7%	99.6%
d8-Toluene	101%	98.0%
Bromofluorobenzene	94.5%	95.0%
d4-1,2-Dichlorobenzene	101%	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: CHB-07-W

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SAMPLE

Lab Sample ID: MS22C

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7782

Project: 9th Ave Sewer Upgrade

Matrix: Water

350429

Data Release Authorized:

Date Sampled: 04/14/08

Reported: 04/16/08

Date Received: 04/14/08

Instrument/Analyst: NTS/JZ

Sample Amount: 20.0 mL

Date Analyzed: 04/15/08 21:15

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	140	E
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	0.3	
75-34-3	1,1-Dichloroethane	0.2	0.2	
156-60-5	trans-1,2-Dichloroethene	0.2	1.8	
156-59-2	cis-1,2-Dichloroethene	0.2	540	ES
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	0.7	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

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Sample ID: CHB-07-W

SAMPLE

Lab Sample ID: MS22C

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7782

Project: 9th Ave Sewer Upgrade

Matrix: Water

350429

Date Analyzed: 04/15/08 21:15

CAS Number	Analyte	RL	Result	Q
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.0%
d8-Toluene	102%
Bromofluorobenzene	87.2%
d4-1,2-Dichlorobenzene	110%

ORGANICS ANALYSIS DATA SHEET


Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: CHB-07-W
REANALYSIS

Lab Sample ID: MS22C

LIMS ID: 08-7782

Matrix: Water

Data Release Authorized: 

Reported: 04/16/08

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade
350429

Date Sampled: 04/14/08

Date Received: 04/14/08

Instrument/Analyst: NT3/AAR

Date Analyzed: 04/16/08 13:18

Sample Amount: 0.500 mL

Purge Volume: 5.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	10	< 10	U
74-83-9	Bromomethane	10	< 10	U
75-01-4	Vinyl Chloride	10	220	
75-00-3	Chloroethane	10	< 10	U
75-09-2	Methylene Chloride	20	< 20	U
67-64-1	Acetone	50	< 50	U
75-15-0	Carbon Disulfide	10	< 10	U
75-35-4	1,1-Dichloroethene	10	< 10	U
75-34-3	1,1-Dichloroethane	10	< 10	U
156-60-5	trans-1,2-Dichloroethene	10	< 10	U
156-59-2	cis-1,2-Dichloroethene	10	480	
67-66-3	Chloroform	10	< 10	U
107-06-2	1,2-Dichloroethane	10	< 10	U
78-93-3	2-Butanone	50	< 50	U
71-55-6	1,1,1-Trichloroethane	10	< 10	U
56-23-5	Carbon Tetrachloride	10	< 10	U
108-05-4	Vinyl Acetate	50	< 50	U
75-27-4	Bromodichloromethane	10	< 10	U
78-87-5	1,2-Dichloropropane	10	< 10	U
10061-01-5	cis-1,3-Dichloropropene	10	< 10	U
79-01-6	Trichloroethene	10	< 10	U
124-48-1	Dibromochloromethane	10	< 10	U
79-00-5	1,1,2-Trichloroethane	10	< 10	U
71-43-2	Benzene	10	< 10	U
10061-02-6	trans-1,3-Dichloropropene	10	< 10	U
110-75-8	2-Chloroethylvinylether	50	< 50	U
75-25-2	Bromoform	10	< 10	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50	< 50	U
591-78-6	2-Hexanone	50	< 50	U
127-18-4	Tetrachloroethene	10	< 10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	< 10	U
108-88-3	Toluene	10	< 10	U
108-90-7	Chlorobenzene	10	< 10	U
100-41-4	Ethylbenzene	10	< 10	U
100-42-5	Styrene	10	< 10	U
75-69-4	Trichlorofluoromethane	10	< 10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	20	< 20	U
1330-20-7	m,p-Xylene	10	< 10	U
95-47-6	o-Xylene	10	< 10	U
95-50-1	1,2-Dichlorobenzene	10	< 10	U
541-73-1	1,3-Dichlorobenzene	10	< 10	U
106-46-7	1,4-Dichlorobenzene	10	< 10	U
107-02-8	Acrolein	500	< 500	U
74-88-4	Methyl Iodide	10	< 10	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: CHB-07-W
REANALYSIS

Lab Sample ID: MS22C
LIMS ID: 08-7782
Matrix: Water
Date Analyzed: 04/16/08 13:18

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429

CAS Number	Analyte	RL	Result	Q
74-96-4	Bromoethane	20	< 20	U
107-13-1	Acrylonitrile	50	< 50	U
563-58-6	1,1-Dichloropropene	10	< 10	U
74-95-3	Dibromomethane	10	< 10	U
630-20-6	1,1,1,2-Tetrachloroethane	10	< 10	U
96-12-8	1,2-Dibromo-3-chloropropane	50	< 50	U
96-18-4	1,2,3-Trichloropropane	20	< 20	U
110-57-6	trans-1,4-Dichloro-2-butene	50	< 50	U
108-67-8	1,3,5-Trimethylbenzene	10	< 10	U
95-63-6	1,2,4-Trimethylbenzene	10	< 10	U
87-68-3	Hexachlorobutadiene	50	< 50	U
106-93-4	Ethylene Dibromide	10	< 10	U
74-97-5	Bromochloromethane	10	< 10	U
594-20-7	2,2-Dichloropropane	10	< 10	U
142-28-9	1,3-Dichloropropane	10	< 10	U
98-82-8	Isopropylbenzene	10	< 10	U
103-65-1	n-Propylbenzene	10	< 10	U
108-86-1	Bromobenzene	10	< 10	U
95-49-8	2-Chlorotoluene	10	< 10	U
106-43-4	4-Chlorotoluene	10	< 10	U
98-06-6	tert-Butylbenzene	10	< 10	U
135-98-8	sec-Butylbenzene	10	< 10	U
99-87-6	4-Isopropyltoluene	10	< 10	U
104-51-8	n-Butylbenzene	10	< 10	U
120-82-1	1,2,4-Trichlorobenzene	50	< 50	U
91-20-3	Naphthalene	50	< 50	U
87-61-6	1,2,3-Trichlorobenzene	50	< 50	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	108%
d8-Toluene	99.5%
Bromofluorobenzene	96.7%
d4-1,2-Dichlorobenzene	102%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: MB-041508

Page 1 of 2

METHOD BLANK

Lab Sample ID: MB-041508

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7782

Project: 9th Ave Sewer Upgrade

Matrix: Water

350429

Data Release Authorized:

Date Sampled: NA

Reported: 04/16/08

Date Received: NA

Instrument/Analyst: NT5/JZ

Sample Amount: 20.0 mL

Date Analyzed: 04/15/08 14:47

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 2 of 2

Sample ID: MB-041508

METHOD BLANK



Lab Sample ID: MB-041508

LIMS ID: 08-7782

Matrix: Water

Date Analyzed: 04/15/08 14:47

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade

350429

CAS Number	Analyte	RL	Result	Q
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.0%
d8-Toluene	103%
Bromofluorobenzene	99.8%
d4-1,2-Dichlorobenzene	105%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2Sample ID: TRIP BLANK
SAMPLEANALYTICAL
RESOURCES
INCORPORATED 

Lab Sample ID: MS22D

LIMS ID: 08-7783

Matrix: Water

Data Release Authorized:

Reported: 04/16/08

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade
350429

Date Sampled: 04/14/08

Date Received: 04/14/08

Instrument/Analyst: NT5/JZ

Date Analyzed: 04/15/08 20:49

Sample Amount: 20.0 mL

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	0.2	
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	0.8	
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	0.9	
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: TRIP BLANK
SAMPLE

Lab Sample ID: MS22D
LIMS ID: 08-7783
Matrix: Water
Date Analyzed: 04/15/08 20:49

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429

CAS Number	Analyte	RL	Result	Q
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	107%
Bromofluorobenzene	90.5%
d4-1,2-Dichlorobenzene	108%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: MB-041608


METHOD BLANK

ANALYTICAL
RESOURCES
INCORPORATED 

Lab Sample ID: MB-041608

LIMS ID: 08-7783

Matrix: Water

Data Release Authorized: 

Reported: 04/16/08

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade
350429

Date Sampled: NA

Date Received: NA

Instrument/Analyst: NT3/AAR

Date Analyzed: 04/16/08 11:37

Sample Amount: 5.00 mL

Purge Volume: 5.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: MB-041608

METHOD BLANK

ANALYTICAL
RESOURCES
INCORPORATED 

Lab Sample ID: MB-041608

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7783

Project: 9th Ave Sewer Upgrade

Matrix: Water

350429

Date Analyzed: 04/16/08 11:37

CAS Number	Analyte	RL	Result	Q
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	100%
Bromofluorobenzene	98.8%
d4-1,2-Dichlorobenzene	102%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: MS22-CH2M HILL
 Project: 9th Ave Sewer Upgrade
 350429

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-041508	Method Blank	20	92.0%	103%	99.8%	105%	0
LCS-041508	Lab Control	20	92.8%	100%	107%	97.8%	0
LCSD-041508	Lab Control Dup	20	87.8%	98.2%	105%	98.8%	0
MS22C	CHB-07-W	20	97.0%	102%	87.2%	110%	0
MS22D	TRIP BLANK	20	109%	107%	90.5%	108%	0

LCS/MB LIMITS

QC LIMITS

SW8260B

(DCE) = d4-1,2-Dichloroethane	70-131	64-146
(TOL) = d8-Toluene	80-120	78-125
(BFB) = Bromofluorobenzene	74-121	71-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-121

Prep Method: SW5030B
 Log Number Range: 08-7782 to 08-7783

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MS22CDL	CHB-07-W	5	108%	99.5%	96.7%	102%	0
MB-041608	Method Blank	5	106%	100%	98.8%	102%	0
LCS-041608	Lab Control	5	103%	101%	101%	100%	0

LCS/MB LIMITS

QC LIMITS

SW8260B

(DCE) = d4-1,2-Dichloroethane	79-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	72-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-124

Prep Method: SW5030B
Log Number Range: 08-7782 to 08-7783

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041508

Page 1 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508

QC Report No: MS22-CH2M HILL

LIMS ID: 08-7782

Project: 9th Ave Sewer Upgrade

Matrix: Water

350429

Data Release Authorized:

Date Sampled: NA

Reported: 04/16/08

Date Received: NA

Instrument/Analyst LCS: NT5/JZ

Sample Amount LCS: 20.0 mL

LCSD: NT5/JZ

LCSD: 20.0 mL

Date Analyzed LCS: 04/15/08 13:42

Purge Volume LCS: 20.0 mL

LCSD: 04/15/08 14:20

LCSD: 20.0 mL

Analyte	LCS			LCSD			RPD
	LCS	Spike Added-LCS	Recovery	LCSD	Spike Added-LCSD	Recovery	
Chloromethane	3.9	4.0	97.5%	3.3	4.0	82.5%	16.7%
Bromomethane	3.7	4.0	92.5%	3.4	4.0	85.0%	8.5%
Vinyl Chloride	4.4	4.0	110%	3.8	4.0	95.0%	14.6%
Chloroethane	4.1	4.0	102%	3.6	4.0	90.0%	13.0%
Methylene Chloride	4.7	4.0	118%	4.2	4.0	105%	11.2%
Acetone	23.4	20.0	117%	20.1	20.0	100%	15.2%
Carbon Disulfide	4.1	4.0	102%	3.7	4.0	92.5%	10.3%
1,1-Dichloroethene	4.2	4.0	105%	3.8	4.0	95.0%	10.0%
1,1-Dichloroethane	4.3	4.0	108%	3.8	4.0	95.0%	12.3%
trans-1,2-Dichloroethene	4.2	4.0	105%	3.8	4.0	95.0%	10.0%
cis-1,2-Dichloroethene	4.6	4.0	115%	4.1	4.0	102%	11.5%
Chloroform	4.2	4.0	105%	3.6	4.0	90.0%	15.4%
1,2-Dichloroethane	4.3	4.0	108%	3.8	4.0	95.0%	12.3%
2-Butanone	23.1	20.0	116%	20.9	20.0	104%	10.0%
1,1,1-Trichloroethane	4.2	4.0	105%	3.7	4.0	92.5%	12.7%
Carbon Tetrachloride	4.0	4.0	100%	3.8	4.0	95.0%	5.1%
Vinyl Acetate	5.2	4.0	130%	4.4	4.0	110%	16.7%
Bromodichloromethane	4.2	4.0	105%	3.9	4.0	97.5%	7.4%
1,2-Dichloropropane	4.4	4.0	110%	4.0	4.0	100%	9.5%
cis-1,3-Dichloropropene	4.8	4.0	120%	4.2	4.0	105%	13.3%
Trichloroethene	4.3	4.0	108%	3.9	4.0	97.5%	9.8%
Dibromochloromethane	4.4	4.0	110%	4.0	4.0	100%	9.5%
1,1,2-Trichloroethane	4.1	4.0	102%	3.9	4.0	97.5%	5.0%
Benzene	4.6	4.0	115%	4.1	4.0	102%	11.5%
trans-1,3-Dichloropropene	4.8	4.0	120%	4.3	4.0	108%	11.0%
2-Chloroethylvinylether	5.3	4.0	132%	4.5	4.0	112%	16.3%
Bromoform	4.2	4.0	105%	4.0	4.0	100%	4.9%
4-Methyl-2-Pentanone (MIBK)	24.2	20.0	121%	22.0	20.0	110%	9.5%
2-Hexanone	25.7	20.0	128%	23.2	20.0	116%	10.2%
Tetrachloroethene	4.1	4.0	102%	3.9	4.0	97.5%	5.0%
1,1,2,2-Tetrachloroethane	4.3	4.0	108%	3.9	4.0	97.5%	9.8%
Toluene	4.4	4.0	110%	4.0	4.0	100%	9.5%
Chlorobenzene	4.3	4.0	108%	4.0	4.0	100%	7.2%
Ethylbenzene	4.8	4.0	120%	4.1	4.0	102%	15.7%
Styrene	4.1	4.0	102%	3.8	4.0	95.0%	7.6%
Trichlorofluoromethane	4.1	4.0	102%	3.6	4.0	90.0%	13.0%
1,1,2-Trichloro-1,2,2-trifluoroetha	3.9	4.0	97.5%	3.7	4.0	92.5%	5.3%
m,p-Xylene	8.3	8.0	104%	7.6	8.0	95.0%	8.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: LCS-041508
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508
LIMS ID: 08-7782
Matrix: Water

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	4.1	4.0	102%	3.7	4.0	92.5%	10.3%
1,2-Dichlorobenzene	4.3	4.0	108%	4.1	4.0	102%	4.8%
1,3-Dichlorobenzene	4.5	4.0	112%	4.2	4.0	105%	6.9%
1,4-Dichlorobenzene	4.3	4.0	108%	4.1	4.0	102%	4.8%
Acrolein	22.0	20.0	110%	19.0	20.0	95.0%	14.6%
Methyl Iodide	4.4	4.0	110%	3.8	4.0	95.0%	14.6%
Bromoethane	4.3	4.0	108%	3.9	4.0	97.5%	9.8%
Acrylonitrile	4.9	4.0	122%	4.2	4.0	105%	15.4%
1,1-Dichloropropene	4.8	4.0	120%	4.3	4.0	108%	11.0%
Dibromomethane	4.2	4.0	105%	3.9	4.0	97.5%	7.4%
1,1,1,2-Tetrachloroethane	4.2	4.0	105%	3.9	4.0	97.5%	7.4%
1,2-Dibromo-3-chloropropane	4.5	4.0	112%	4.2	4.0	105%	6.9%
1,2,3-Trichloropropane	4.5	4.0	112%	4.2	4.0	105%	6.9%
trans-1,4-Dichloro-2-butene	5.2	4.0	130%	4.4	4.0	110%	16.7%
1,3,5-Trimethylbenzene	4.5	4.0	112%	4.2	4.0	105%	6.9%
1,2,4-Trimethylbenzene	4.5	4.0	112%	4.2	4.0	105%	6.9%
Hexachlorobutadiene	4.0	4.0	100%	3.7	4.0	92.5%	7.8%
Ethylene Dibromide	4.4	4.0	110%	4.1	4.0	102%	7.1%
Bromochloromethane	4.3	4.0	108%	3.8	4.0	95.0%	12.3%
2,2-Dichloropropane	4.3	4.0	108%	3.7	4.0	92.5%	15.0%
1,3-Dichloropropane	4.5	4.0	112%	4.1	4.0	102%	9.3%
Isopropylbenzene	4.5	4.0	112%	4.1	4.0	102%	9.3%
n-Propylbenzene	5.0	4.0	125%	4.6	4.0	115%	8.3%
Bromobenzene	4.4	4.0	110%	4.1	4.0	102%	7.1%
2-Chlorotoluene	4.8	4.0	120%	4.4	4.0	110%	8.7%
4-Chlorotoluene	5.0	4.0	125%	4.5	4.0	112%	10.5%
tert-Butylbenzene	4.4	4.0	110%	4.1	4.0	102%	7.1%
sec-Butylbenzene	4.6	4.0	115%	4.2	4.0	105%	9.1%
4-Isopropyltoluene	4.4	4.0	110%	4.0	4.0	100%	9.5%
n-Butylbenzene	4.7	4.0	118%	4.2	4.0	105%	11.2%
1,2,4-Trichlorobenzene	4.0	4.0	100%	3.7	4.0	92.5%	7.8%
Naphthalene	4.7	4.0	118%	4.5	4.0	112%	4.3%
1,2,3-Trichlorobenzene	4.5	4.0	112%	4.4	4.0	110%	2.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	92.8%	87.8%
d8-Toluene	100%	98.2%
Bromofluorobenzene	107%	105%
d4-1,2-Dichlorobenzene	97.8%	98.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041608

Page 1 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608


QC Report No: MS22-CH2M HILL

LIMS ID: 08-7783

Project: 9th Ave Sewer Upgrade

Matrix: Water

350429

Data Release Authorized: 

Date Sampled: NA

Reported: 04/16/08

Date Received: NA

Instrument/Analyst LCS: NT3/AAR

Sample Amount LCS: 5.00 mL

Date Analyzed LCS: 04/16/08 11:06

Purge Volume LCS: 5.0 mL

Analyte	LCS	Spike Added	Recovery
Chloromethane	48.8	50.0	97.6%
Bromomethane	50.7	50.0	101%
Vinyl Chloride	50.2	50.0	100%
Chloroethane	51.6	50.0	103%
Methylene Chloride	52.1	50.0	104%
Acetone	264	250	106%
Carbon Disulfide	49.0	50.0	98.0%
1,1-Dichloroethene	44.4	50.0	88.8%
1,1-Dichloroethane	52.0	50.0	104%
trans-1,2-Dichloroethene	51.6	50.0	103%
cis-1,2-Dichloroethene	52.4	50.0	105%
Chloroform	52.3	50.0	105%
1,2-Dichloroethane	51.3	50.0	103%
2-Butanone	266	250	106%
1,1,1-Trichloroethane	53.2	50.0	106%
Carbon Tetrachloride	52.7	50.0	105%
Vinyl Acetate	54.8	50.0	110%
Bromodichloromethane	53.2	50.0	106%
1,2-Dichloropropane	51.7	50.0	103%
cis-1,3-Dichloropropene	48.4	50.0	96.8%
Trichloroethene	51.8	50.0	104%
Dibromochloromethane	53.7	50.0	107%
1,1,2-Trichloroethane	51.4	50.0	103%
Benzene	51.8	50.0	104%
trans-1,3-Dichloropropene	57.4	50.0	115%
2-Chloroethylvinylether	47.5	50.0	95.0%
Bromoform	46.4	50.0	92.8%
4-Methyl-2-Pentanone (MIBK)	278	250	111%
2-Hexanone	255	250	102%
Tetrachloroethene	50.6	50.0	101%
1,1,2,2-Tetrachloroethane	51.6	50.0	103%
Toluene	51.7	50.0	103%
Chlorobenzene	51.3	50.0	103%
Ethylbenzene	53.0	50.0	106%
Styrene	56.3	50.0	113%
Trichlorofluoromethane	51.7	50.0	103%
1,1,2-Trichloro-1,2,2-trifluoroethane	48.4	50.0	96.8%
m,p-Xylene	107	100	107%
o-Xylene	54.4	50.0	109%
1,2-Dichlorobenzene	50.0	50.0	100%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041608

Page 2 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608
LIMS ID: 08-7783
Matrix: Water

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429

Analyte	LCS	Spike Added	Recovery
1,3-Dichlorobenzene	50.4	50.0	101%
1,4-Dichlorobenzene	50.3	50.0	101%
Acrolein	314	250	126%
Methyl Iodide	58.8	50.0	118%
Bromoethane	45.4	50.0	90.8%
Acrylonitrile	51.4	50.0	103%
1,1-Dichloropropene	53.0	50.0	106%
Dibromomethane	51.8	50.0	104%
1,1,1,2-Tetrachloroethane	53.2	50.0	106%
1,2-Dibromo-3-chloropropane	53.3	50.0	107%
1,2,3-Trichloropropane	51.2	50.0	102%
trans-1,4-Dichloro-2-butene	53.0	50.0	106%
1,3,5-Trimethylbenzene	55.7	50.0	111%
1,2,4-Trimethylbenzene	55.9	50.0	112%
Hexachlorobutadiene	49.9	50.0	99.8%
Ethylene Dibromide	52.8	50.0	106%
Bromochloromethane	52.1	50.0	104%
2,2-Dichloropropane	54.9	50.0	110%
1,3-Dichloropropane	51.8	50.0	104%
Isopropylbenzene	55.6	50.0	111%
n-Propylbenzene	54.7	50.0	109%
Bromobenzene	51.5	50.0	103%
2-Chlorotoluene	53.0	50.0	106%
4-Chlorotoluene	53.2	50.0	106%
tert-Butylbenzene	54.7	50.0	109%
sec-Butylbenzene	55.3	50.0	111%
4-Isopropyltoluene	56.8	50.0	114%
n-Butylbenzene	57.7	50.0	115%
1,2,4-Trichlorobenzene	50.5	50.0	101%
Naphthalene	54.6	50.0	109%
1,2,3-Trichlorobenzene	49.6	50.0	99.2%

Reported in $\mu\text{g/L}$ (ppb)


NA-No recovery due to high concentration of analyte in original sample, calculated negative recovery, or undetected spike.

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	101%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	100%

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
 NWTPHD by GC/FID
 Page 1 of 1
 Matrix: Soil

QC Report No: MS22-CH2M HILL
 Project: 9th Ave Sewer Upgrade
 350429
 Date Received: 04/14/08

Data Release Authorized:
 Reported: 04/23/08 

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-041808 08-7780	Method Blank HC ID: ---	04/18/08	04/21/08 FID3A	1.00 1.0	Diesel Motor Oil o-Terphenyl	5.0 10	< 5.0 U < 10 U 69.1%
MS22A 08-7780	CHB-07-5.0-7.0 HC ID: ---	04/18/08	04/21/08 FID3A	1.00 1.0	Diesel Motor Oil o-Terphenyl	5.9 12	< 5.9 U < 12 U 86.7%
MS22B 08-7781	CHB-07-12.5-13.5 HC ID: ---	04/18/08	04/21/08 FID3A	1.00 1.0	Diesel Motor Oil o-Terphenyl	6.5 13	< 6.5 U < 13 U 80.4%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
 DL-Dilution of extract prior to analysis.
 RL-Reporting limit.

Diesel quantitation on total peaks in the range from C12 to C24.
 Motor Oil quantitation on total peaks in the range from C24 to C38.
 HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
041808MBS	69.1%	0
041808LCS	82.4%	0
041808LCSD	87.3%	0
CHB-07-5.0-7.0	86.7%	0
CHB-07-12.5-13.5	80.4%	0

(OTER) = o-Terphenyl

LCS/MB LIMITS QC LIMITS

(52-121)

(48-119)

Prep Method: SW3550B
Log Number Range: 08-7780 to 08-7781

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-041808
LCS/LCSD

Lab Sample ID: LCS-041808
LIMS ID: 08-7780
Matrix: Soil
Data Release Authorized:
Reported: 04/23/08

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 04/18/08

Sample Amount LCS: 10.0 g
LCSD: 10.0 g

Date Analyzed LCS: 04/21/08 21:33
LCSD: 04/21/08 21:49

Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Instrument/Analyst LCS: FID3A/MS
LCSD: FID3A/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	Spike		LCS		Spike		LCSD	RPD
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery		
Diesel	105	150	70.0%	109	150	72.7%	3.7%	

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	82.4%	87.3%

Results reported in mg/kg
RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT


Matrix: Soil
Date Received: 04/14/08

ARI Job: MS22
Project: 9th Ave Sewer Upgrade
350429

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
08-7780-041808MB1	Method Blank	10.0 g	1.00 mL	-	04/18/08
08-7780-041808LCS1	Lab Control	10.0 g	1.00 mL	-	04/18/08
08-7780-041808LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	04/18/08
08-7780-MS22A	CHB-07-5.0-7.0	8.50 g	1.00 mL	D	04/18/08
08-7781-MS22B	CHB-07-12.5-13.5	7.67 g	1.00 mL	D	04/18/08

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Water

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429
Date Received: 04/14/08

Data Release Authorized: 
Reported: 04/28/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-041708	Method Blank	04/17/08	04/25/08	1.00	Diesel	0.25	< 0.25 U
08-7782	HC ID: ---		FID3A	1.0	Motor Oil o-Terphenyl	0.50	< 0.50 U 84.7%
MS22C	CHB-07-W	04/17/08	04/25/08	1.00	Diesel	0.25	< 0.25 U
08-7782	HC ID: ---		FID3A	1.0	Motor Oil o-Terphenyl	0.50	< 0.50 U 75.8%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
350429

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-041708	84.7%	0
LCS-041708	91.8%	0
LCSD-041708	90.4%	0
CHB-07-W	75.8%	0

(OTER) = o-Terphenyl

LCS/MB LIMITS	QC LIMITS
(63-115)	(64-111)

Prep Method: SW3510C
Log Number Range: 08-7782 to 08-7782

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1

Sample ID: LCS-041708

LCS/LCSD

Lab Sample ID: LCS-041708

LIMS ID: 08-7782

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 04/28/08

QC Report No: MS22-CH2M HILL

Project: 9th Ave Sewer Upgrade

350429

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 04/17/08

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 04/25/08 06:56

Final Extract Volume LCS: 1.0 mL

LCSD: 04/25/08 07:11

LCSD: 1.0 mL

Instrument/Analyst LCS: FID3A/MS

Dilution Factor LCS: 1.00

LCSD: FID3A/MS

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.32	3.00	77.3%	2.31	3.00	77.0%	0.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.8%	90.4%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 04/14/08

ARI Job: MS22
Project: 9th Ave Sewer Upgrade
350429

<u>ARI ID</u>	<u>Client ID</u>	<u>Samp Amt</u>	<u>Final Vol</u>	<u>Prep Date</u>
08-7782-041708MB1	Method Blank	500 mL	1.00 mL	04/17/08
08-7782-041708LCS1	Lab Control	500 mL	1.00 mL	04/17/08
08-7782-041708LCSD1	Lab Control Dup	500 mL	1.00 mL	04/17/08
08-7782-MS22C	CHB-07-W	500 mL	1.00 mL	04/17/08

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Soil

Data Release Authorized:
Reported: 04/22/08



QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
Event: 350429
Date Sampled: 04/14/08
Date Received: 04/14/08



ARI ID	Client ID	Analysis Date	Basis	Range	Result
MB-041508 08-7780	Method Blank	04/15/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 101% 106%
MS22A 08-7780	CHB-07-5.0-7.0	04/15/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 104% 106%
MS22B 08-7781	CHB-07-12.5-13.5	04/15/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 7.2 U --- 94.7% 99.5%

Gasoline values reported in mg/kg (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: MS22
Matrix: Soil


QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
Event: 350429

<u>Client ID</u>	<u>BFB</u>	<u>TFT</u>	<u>BBZ</u>	<u>TOT OUT</u>
MB-041508	NA	101%	106%	0
LCS-041508	NA	95.7%	100%	0
LCSD-041508	NA	99.5%	104%	0
CHB-07-5.0-7.0	NA	104%	106%	0
CHB-07-12.5-13.5	NA	94.7%	99.5%	0

	<u>LCS/MB LIMITS</u>	<u>QC LIMITS</u>
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(65-137)
(BBZ) = Bromobenzene	(80-120)	(54-144)

Log Number Range: 08-7780 to 08-7781

Sample ID: LCS-041508
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508
LIMS ID: 08-7780
Matrix: Soil
Data Release Authorized:
Reported: 04/22/08 

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
Event: 350429
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 04/15/08 09:46
LCSD: 04/15/08 10:11
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	53.4	50.0	107%	50.3	50.0	101%	6.0%

Reported in mg/kg (ppm)


RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	95.7%	99.5%
Bromobenzene	100%	104%

ORGANICS ANALYSIS DATA SHEET
 TPHG by Method NWTPHG
 Matrix: Water

QC Report No: MS22-CH2M HILL
 Project: 9th Ave Sewer Upgrade
 Event: 350429
 Date Sampled: 04/14/08
 Date Received: 04/14/08

Data Release Authorized: 
 Reported: 04/15/08

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-041508 08-7782	Method Blank	04/15/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 101% 106%
MS22C 08-7782	CHB-07-W	04/15/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 105% 106%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: MS22
Matrix: Water

QC Report No: MS22-CH2M HILL
Project: 9th Ave Sewer Upgrade
Event: 350429

<u>Client ID</u>	<u>TFT</u>	<u>BBZ</u>	<u>TOT OUT</u>
MB-041508	101%	106%	0
LCS-041508	95.7%	100%	0
LCSD-041508	99.5%	104%	0
CHB-07-W	105%	106%	0

	<u>LCS/MB LIMITS</u>	<u>QC LIMITS</u>
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 08-7782 to 08-7782

ORGANICS ANALYSIS DATA SHEET
 TPHG by Method NWTPHG
 Page 1 of 1

Sample ID: LCS-041508
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-041508
 LIMS ID: 08-7782
 Matrix: Water
 Data Release Authorized: *[Signature]*
 Reported: 04/15/08

QC Report No: MS22-CH2M HILL
 Project: 9th Ave Sewer Upgrade
 Event: 350429
 Date Sampled: NA
 Date Received: NA

Date Analyzed LCS: 04/15/08 09:46
 LCSD: 04/15/08 10:11
 Instrument/Analyst LCS: PID3/PKC
 LCSD: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
 LCSD: 1.0

Analyte	LCS	Spike	LCS	LCS	Spike	LCS	RPD
		Added-LCS	Recovery		Added-LCSD	Recovery	
Gasoline Range Hydrocarbons	1.07	1.00	107%	1.01	1.00	101%	5.8%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	95.7%	99.5%
Bromobenzene	100%	104%



Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 15, 2008

Ms. Rachel Chang
CH2M Hill
1100 112th Avenue NE, Suite 400
Bellevue, WA 98004-4504

Client Project: 350429 / 9th Avenue SU project
ARI Job No: MS40

Dear Ms. Chang:

Please find enclosed sample custody records and final results for samples from the project referenced above. Analytical Resources, Inc accepted soil and water samples and a trip blank on April 15, 2008.

The samples were analyzed for NWT PH-Dx, NWT PH-Gx by WDOE methods, and Volatile Organics by EPA 8260B, as requested.

There were no anomalies associated with these samples.

Copies of the reports will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink, appearing to read "Kelly Bottem".

Kelly Bottem
Client Services Manager
206-695-6211
kellyb@arilabs.com

Enclosures

cc: File MS40

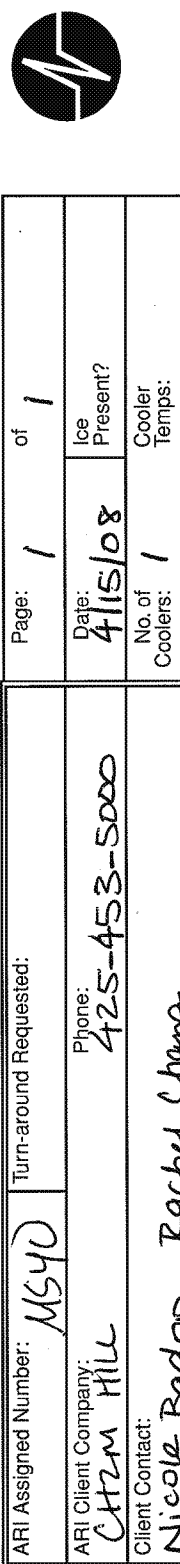
Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: **MS40**
 Turn-around Requested: **1** of **1**
 ARI Client Company: **CH2M HILL**
 Phone: **425-453-5000**
 Client Contact: **Nicole Bador, Rachel Chang**
 Client Project Name: **9th Avenue SU project**
 Client Project #: **350429**

No. of Coolers: **1**
 Cooler Temps:
 Ice Present? **4/15/08**
 Date: **4/15/08**

Sampler: **N. Bador**
 Date: **4/15/08**
 Time: **0935**
 Matrix: **soil**
 No. Containers: **6**

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested				Notes/Comments
					NUMPH-6X EPA3035	NUMPH-IX extended	VOCs EPA3035	VOCs EPA3035	
CHB-08-15.0-16.0	4/15/08	0935	soil	6	X	X	X	X	
CHB-08-W	4/15/08	1024	water	7	X	X	X	X	
Comments/Special Instructions	Relinquished by: <i>Nicole Bador</i> (Signature) Printed Name: NICOLE BADOR Company: CH2M HILL Date & Time: 4/15/08 1521				Relinquished by: <i>Nicole Bador</i> (Signature) Printed Name: NICOLE BADOR Company: CH2M HILL Date & Time: 4/15/08 1521				Received by: <i>Nicole Bador</i> (Signature) Printed Name: NICOLE BADOR Company: CH2M HILL Date & Time: 4/15/08 1521



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client: Atam Hill
COC No: _____
Assigned ARI Job No: MS40

Project Name: 9th Avenue SW Project
Delivered by: Hand-delivered
Tracking No: _____

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO
Were custody papers included with the cooler? YES NO
Were custody papers properly filled out (ink, signed, etc.) YES NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry 4.0 °C

Cooler Accepted by: arl Date: 4/15/08 Time: 1521

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
What kind of packing material was used? ICE
Was sufficient ice used (if appropriate)? YES NO
Were all bottles sealed in individual plastic bags? YES NO
Did all bottle arrive in good condition (unbroken)? YES NO
Were all bottle labels complete and legible? YES NO
Did all bottle labels and tags agree with custody papers? YES NO
Were all bottles used correct for the requested analyses? YES NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist) YES NO
Were all VOC vials free of air bubbles? NA YES NO
Was sufficient amount of sample sent in each bottle? YES NO

Samples Logged by: arl Date: 4/15/08 Time: 1750

**** Notify Project Manager of discrepancies or concerns ****

Explain discrepancies or negative responses:

Two trip blanks provided, not included on COC.

By: arl

Date: 4/15/08

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2Sample ID: CHB-08-W
SAMPLE

Lab Sample ID: MS40B

LIMS ID: 08-7862

Matrix: Water

Data Release Authorized: *AB*

Reported: 04/17/08

QC Report No: MS40-CH2M Hill, Incorporated

Project: 9th Avenue SU Project

350429

Date Sampled: 04/15/08

Date Received: 04/15/08

Instrument/Analyst: NT5/JZ

Date Analyzed: 04/16/08 20:57

Sample Amount: 20.0 mL

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: CHB-08-W
SAMPLE

Lab Sample ID: MS40B

QC Report No: MS40-CH2M Hill, Incorporated

LIMS ID: 08-7862

Project: 9th Avenue SU Project

Matrix: Water

350429

Date Analyzed: 04/16/08 20:57

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	106%
Bromofluorobenzene	89.0%
d4-1,2-Dichlorobenzene	110%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: Trip Blanks
SAMPLE

Lab Sample ID: MS40C

LIMS ID: 08-7863

Matrix: Water

Data Release Authorized:

Reported: 04/28/08

QC Report No: MS40-CH2M Hill, Incorporated

Project: 9th Avenue SU Project

350429

Date Sampled: 04/15/08

Date Received: 04/15/08

Instrument/Analyst: NT5/JZ

Date Analyzed: 04/16/08 20:04

Sample Amount: 20.0 mL

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	0.3	
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	0.4	
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoro	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: Trip Blanks
SAMPLE

Lab Sample ID: MS40C

LIMS ID: 08-7863

Matrix: Water

Date Analyzed: 04/16/08 20:04

QC Report No: MS40-CH2M Hill, Incorporated

Project: 9th Avenue SU Project

350429

CAS Number	Analyte	RL	Result	Q
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	108%
Bromofluorobenzene	91.0%
d4-1,2-Dichlorobenzene	111%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: MB-041608

Page 1 of 2

METHOD BLANK

Lab Sample ID: MB-041608

QC Report No: MS40-CH2M Hill, Incorporated

LIMS ID: 08-7862

Project: 9th Avenue SU Project

Matrix: Water

350429

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 04/17/08

Date Received: NA

Instrument/Analyst: NT5/JZ

Sample Amount: 20.0 mL

Date Analyzed: 04/16/08 15:38

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: MB-041608
METHOD BLANK

Lab Sample ID: MB-041608
LIMS ID: 08-7862
Matrix: Water
Date Analyzed: 04/16/08 15:38

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	103%
Bromofluorobenzene	89.8%
d4-1,2-Dichlorobenzene	109%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: MS40-CH2M Hill, Incorporated
 Project: 9th Avenue SU Project
 350429

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-041608	Method Blank	20	104%	103%	89.8%	109%	0
LCS-041608	Lab Control	20	99.0%	100%	105%	97.8%	0
LCSD-041608	Lab Control Dup	20	94.8%	99.5%	104%	98.2%	0
MS40B	CHB-08-W	20	109%	106%	89.0%	110%	0
MS40C	Trip Blanks	20	110%	108%	91.0%	111%	0

LCS/MB LIMITS

QC LIMITS

SW8260B

(DCE) = d4-1,2-Dichloroethane
 (TOL) = d8-Toluene
 (BFB) = Bromofluorobenzene
 (DCB) = d4-1,2-Dichlorobenzene

70-131
 80-120
 74-121
 80-120

64-146
 78-125
 71-120
 80-121

Prep Method: SW5030B
 Log Number Range: 08-7862 to 08-7863

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: LCS-041608
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608
LIMS ID: 08-7862
Matrix: Water
Data Release Authorized:
Reported: 04/17/08

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT5/JZ
LCSD: NT5/JZ
Date Analyzed LCS: 04/16/08 14:42
LCSD: 04/16/08 15:12

Sample Amount LCS: 20.0 mL
LCSD: 20.0 mL
Purge Volume LCS: 20.0 mL
LCSD: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	3.9	4.0	97.5%	3.7	4.0	92.5%	5.3%
Bromomethane	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
Vinyl Chloride	4.2	4.0	105%	4.0	4.0	100%	4.9%
Chloroethane	4.0	4.0	100%	3.8	4.0	95.0%	5.1%
Methylene Chloride	4.6	4.0	115%	4.5	4.0	112%	2.2%
Acetone	22.4	20.0	112%	22.4	20.0	112%	0.0%
Carbon Disulfide	4.1	4.0	102%	3.9	4.0	97.5%	5.0%
1,1-Dichloroethene	4.1	4.0	102%	4.0	4.0	100%	2.5%
1,1-Dichloroethane	4.2	4.0	105%	4.0	4.0	100%	4.9%
trans-1,2-Dichloroethene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
cis-1,2-Dichloroethene	4.2	4.0	105%	4.0	4.0	100%	4.9%
Chloroform	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,2-Dichloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
2-Butanone	22.1	20.0	110%	21.1	20.0	106%	4.6%
1,1,1-Trichloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
Carbon Tetrachloride	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
Vinyl Acetate	4.2	4.0	105%	4.1	4.0	102%	2.4%
Bromodichloromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,2-Dichloropropane	4.1	4.0	102%	4.0	4.0	100%	2.5%
cis-1,3-Dichloropropene	4.2	4.0	105%	4.2	4.0	105%	0.0%
Trichloroethene	4.1	4.0	102%	4.0	4.0	100%	2.5%
Dibromochloromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,1,2-Trichloroethane	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
Benzene	4.2	4.0	105%	4.1	4.0	102%	2.4%
trans-1,3-Dichloropropene	4.3	4.0	108%	4.4	4.0	110%	2.3%
2-Chloroethylvinylether	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
Bromoform	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%
4-Methyl-2-Pentanone (MIBK)	21.1	20.0	106%	21.4	20.0	107%	1.4%
2-Hexanone	21.8	20.0	109%	21.0	20.0	105%	3.7%
Tetrachloroethene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
1,1,2,2-Tetrachloroethane	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
Toluene	4.1	4.0	102%	4.0	4.0	100%	2.5%
Chlorobenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
Ethylbenzene	4.4	4.0	110%	4.4	4.0	110%	0.0%
Styrene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%
Trichlorofluoromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,1,2-Trichloro-1,2,2-trifluoroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
m,p-Xylene	7.7	8.0	96.2%	7.5	8.0	93.8%	2.6%
o-Xylene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%
1,2-Dichlorobenzene	3.8	4.0	95.0%	3.9	4.0	97.5%	2.6%
1,3-Dichlorobenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
1,4-Dichlorobenzene	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
Acrolein	21.8	20.0	109%	20.7	20.0	104%	5.2%
Methyl Iodide	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
Bromoethane	4.2	4.0	105%	4.0	4.0	100%	4.9%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041608

Page 2 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608

QC Report No: MS40-CH2M Hill, Incorporated

LIMS ID: 08-7862

Project: 9th Avenue SU Project

Matrix: Water

350429

Analyte	LCS	Spike		LCSD	Spike		RPD
		Added-LCS	Recovery		Added-LCSD	Recovery	
Acrylonitrile	4.4	4.0	110%	4.2	4.0	105%	4.7%
1,1-Dichloropropene	4.2	4.0	105%	4.2	4.0	105%	0.0%
Dibromomethane	3.8	4.0	95.0%	3.9	4.0	97.5%	2.6%
1,1,1,2-Tetrachloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,2-Dibromo-3-chloropropane	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,2,3-Trichloropropane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
trans-1,4-Dichloro-2-butene	4.0	4.0	100%	4.2	4.0	105%	4.9%
1,3,5-Trimethylbenzene	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,2,4-Trimethylbenzene	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
Hexachlorobutadiene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Ethylene Dibromide	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
Bromochloromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
2,2-Dichloropropane	4.2	4.0	105%	4.1	4.0	102%	2.4%
1,3-Dichloropropane	4.1	4.0	102%	3.9	4.0	97.5%	5.0%
Isopropylbenzene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
n-Propylbenzene	4.3	4.0	108%	4.3	4.0	108%	0.0%
Bromobenzene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
2-Chlorotoluene	4.2	4.0	105%	4.2	4.0	105%	0.0%
4-Chlorotoluene	4.3	4.0	108%	4.3	4.0	108%	0.0%
tert-Butylbenzene	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
sec-Butylbenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
4-Isopropyltoluene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
n-Butylbenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
1,2,4-Trichlorobenzene	3.4	4.0	85.0%	3.4	4.0	85.0%	0.0%
Naphthalene	3.6	4.0	90.0%	3.7	4.0	92.5%	2.7%
1,2,3-Trichlorobenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	99.0%	94.8%
d8-Toluene	100%	99.5%
Bromofluorobenzene	105%	104%
d4-1,2-Dichlorobenzene	97.8%	98.2%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2Sample ID: CHB-08-15.0-16.0
SAMPLE

Lab Sample ID: MS40A

LIMS ID: 08-7861

Matrix: Soil

Data Release Authorized:

Reported: 04/22/08

QC Report No: MS40-CH2M Hill, Incorporated

Project: 9th Avenue SU Project

350429

Date Sampled: 04/15/08

Date Received: 04/15/08

Instrument/Analyst: FINN5/PAB

Date Analyzed: 04/16/08 15:52

Sample Amount: 6.13 g-dry-wt

Purge Volume: 5.0 mL

Moisture: 15.5%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.8	< 0.8	U
74-83-9	Bromomethane	0.8	< 0.8	U
75-01-4	Vinyl Chloride	0.8	< 0.8	U
75-00-3	Chloroethane	0.8	< 0.8	U
75-09-2	Methylene Chloride	1.6	< 1.6	U
67-64-1	Acetone	4.1	7.2	
75-15-0	Carbon Disulfide	0.8	< 0.8	U
75-35-4	1,1-Dichloroethene	0.8	< 0.8	U
75-34-3	1,1-Dichloroethane	0.8	< 0.8	U
156-60-5	trans-1,2-Dichloroethene	0.8	< 0.8	U
156-59-2	cis-1,2-Dichloroethene	0.8	< 0.8	U
67-66-3	Chloroform	0.8	< 0.8	U
107-06-2	1,2-Dichloroethane	0.8	< 0.8	U
78-93-3	2-Butanone	4.1	< 4.1	U
71-55-6	1,1,1-Trichloroethane	0.8	< 0.8	U
56-23-5	Carbon Tetrachloride	0.8	< 0.8	U
108-05-4	Vinyl Acetate	4.1	< 4.1	U
75-27-4	Bromodichloromethane	0.8	< 0.8	U
78-87-5	1,2-Dichloropropane	0.8	< 0.8	U
10061-01-5	cis-1,3-Dichloropropene	0.8	< 0.8	U
79-01-6	Trichloroethene	0.8	< 0.8	U
124-48-1	Dibromochloromethane	0.8	< 0.8	U
79-00-5	1,1,2-Trichloroethane	0.8	< 0.8	U
71-43-2	Benzene	0.8	< 0.8	U
10061-02-6	trans-1,3-Dichloropropene	0.8	< 0.8	U
110-75-8	2-Chloroethylvinylether	4.1	< 4.1	U
75-25-2	Bromoform	0.8	< 0.8	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	4.1	< 4.1	U
591-78-6	2-Hexanone	4.1	< 4.1	U
127-18-4	Trachloroethene	0.8	< 0.8	U
79-34-5	1,1,2,2-Tetrachloroethane	0.8	< 0.8	U
108-88-3	Toluene	0.8	< 0.8	U
108-90-7	Chlorobenzene	0.8	< 0.8	U
100-41-4	Ethylbenzene	0.8	< 0.8	U
100-42-5	Styrene	0.8	< 0.8	U
75-69-4	Trichlorofluoromethane	0.8	< 0.8	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.6	< 1.6	U
1330-20-7	m,p-Xylene	0.8	< 0.8	U
95-47-6	o-Xylene	0.8	< 0.8	U
95-50-1	1,2-Dichlorobenzene	0.8	< 0.8	U
541-73-1	1,3-Dichlorobenzene	0.8	< 0.8	U
106-46-7	1,4-Dichlorobenzene	0.8	< 0.8	U
107-02-8	Acrolein	41	< 41	U
74-88-4	Methyl Iodide	0.8	< 0.8	U
74-96-4	Bromoethane	1.6	< 1.6	U
107-13-1	Acrylonitrile	4.1	< 4.1	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: CHB-08-15.0-16.0
SAMPLE

Lab Sample ID: MS40A

LIMS ID: 08-7861

Matrix: Soil

Date Analyzed: 04/16/08 15:52

QC Report No: MS40-CH2M Hill, Incorporated

Project: 9th Avenue SU Project

350429

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	0.8	< 0.8	U
74-95-3	Dibromomethane	0.8	< 0.8	U
630-20-6	1,1,1,2-Tetrachloroethane	0.8	< 0.8	U
96-12-8	1,2-Dibromo-3-chloropropane	4.1	< 4.1	U
96-18-4	1,2,3-Trichloropropane	1.6	< 1.6	U
110-57-6	trans-1,4-Dichloro-2-butene	4.1	< 4.1	U
108-67-8	1,3,5-Trimethylbenzene	0.8	< 0.8	U
95-63-6	1,2,4-Trimethylbenzene	0.8	< 0.8	U
87-68-3	Hexachlorobutadiene	4.1	< 4.1	U
106-93-4	Ethylene Dibromide	0.8	< 0.8	U
74-97-5	Bromochloromethane	0.8	< 0.8	U
594-20-7	2,2-Dichloropropane	0.8	< 0.8	U
142-28-9	1,3-Dichloropropane	0.8	< 0.8	U
98-82-8	Isopropylbenzene	0.8	< 0.8	U
103-65-1	n-Propylbenzene	0.8	< 0.8	U
108-86-1	Bromobenzene	0.8	< 0.8	U
95-49-8	2-Chlorotoluene	0.8	< 0.8	U
106-43-4	4-Chlorotoluene	0.8	< 0.8	U
98-06-6	tert-Butylbenzene	0.8	< 0.8	U
135-98-8	sec-Butylbenzene	0.8	< 0.8	U
99-87-6	4-Isopropyltoluene	0.8	< 0.8	U
104-51-8	n-Butylbenzene	0.8	< 0.8	U
120-82-1	1,2,4-Trichlorobenzene	4.1	< 4.1	U
91-20-3	Naphthalene	4.1	< 4.1	U
87-61-6	1,2,3-Trichlorobenzene	4.1	< 4.1	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	114%
d8-Toluene	99.9%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: MB-041608
METHOD BLANK

Lab Sample ID: MB-041608
LIMS ID: 08-7861
Matrix: Soil
Data Release Authorized:
Reported: 04/22/08

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429
Date Sampled: NA
Date Received: NA

Instrument/Analyst: FINN5/PAB
Date Analyzed: 04/16/08 12:30

Sample Amount: 5.00 g-dry-wt
Purge Volume: 5.0 mL
Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: MB-041608
METHOD BLANK

Lab Sample ID: MB-041608
LIMS ID: 08-7861
Matrix: Soil
Date Analyzed: 04/16/08 12:30

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	99.5%
Bromofluorobenzene	97.7%
d4-1,2-Dichlorobenzene	98.8%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Soil

QC Report No: MS40-CH2M Hill, Incorporated
 Project: 9th Avenue SU Project
 350429

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-041608	Method Blank	Low	103%	99.5%	97.7%	98.8%	0
LCS-041608	Lab Control	Low	102%	99.7%	97.8%	100%	0
LCSD-041608	Lab Control Dup	Low	104%	102%	98.2%	102%	0
MS40A	CHB-08-15.0-16.0	Low	114%	99.9%	96.5%	101%	0

SW8260B	LCS/MB LIMITS		QC LIMITS	
	Low	Med	Low	Med
(DCE) = d4-1,2-Dichloroethane	75-120	76-120	72-134	69-120
(TOL) = d8-Toluene	80-122	80-120	78-124	80-120
(BFB) = Bromofluorobenzene	79-120	80-120	66-120	76-128
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	79-120	80-120

Log Number Range: 08-7861 to 08-7861

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041608

Page 1 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608

QC Report No: MS40-CH2M Hill, Incorporated

LIMS ID: 08-7861

Project: 9th Avenue SU Project

Matrix: Soil

350429

Data Release Authorized:

Date Sampled: NA

Reported: 04/22/08

Date Received: NA

Instrument/Analyst LCS: FINN5/PAB

Sample Amount LCS: 5.00 g-dry-wt

LCSD: FINN5/PAB

LCSD: 5.00 g-dry-wt

Date Analyzed LCS: 04/16/08 11:29

Purge Volume LCS: 5.0 mL

LCSD: 04/16/08 12:03

LCSD: 5.0 mL

Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	42.9	50.0	85.8%	42.4	50.0	84.8%	1.2%
Bromomethane	59.5	50.0	119%	58.3	50.0	117%	2.0%
Vinyl Chloride	45.9	50.0	91.8%	46.2	50.0	92.4%	0.7%
Chloroethane	52.2	50.0	104%	52.3	50.0	105%	0.2%
Methylene Chloride	49.3	50.0	98.6%	49.2	50.0	98.4%	0.2%
Acetone	198	250	79.2%	213	250	85.2%	7.3%
Carbon Disulfide	49.4	50.0	98.8%	48.5	50.0	97.0%	1.8%
1,1-Dichloroethene	55.1	50.0	110%	54.4	50.0	109%	1.3%
1,1-Dichloroethane	49.5	50.0	99.0%	49.8	50.0	99.6%	0.6%
trans-1,2-Dichloroethene	52.2	50.0	104%	51.5	50.0	103%	1.4%
cis-1,2-Dichloroethene	51.1	50.0	102%	49.4	50.0	98.8%	3.4%
Chloroform	50.4	50.0	101%	49.9	50.0	99.8%	1.0%
1,2-Dichloroethane	44.8	50.0	89.6%	44.5	50.0	89.0%	0.7%
2-Butanone	204	250	81.6%	217	250	86.8%	6.2%
1,1,1-Trichloroethane	51.2	50.0	102%	50.9	50.0	102%	0.6%
Carbon Tetrachloride	47.9	50.0	95.8%	47.4	50.0	94.8%	1.0%
Vinyl Acetate	43.6	50.0	87.2%	44.8	50.0	89.6%	2.7%
Bromodichloromethane	46.0	50.0	92.0%	47.5	50.0	95.0%	3.2%
1,2-Dichloropropane	45.8	50.0	91.6%	44.1	50.0	88.2%	3.8%
cis-1,3-Dichloropropene	46.3	50.0	92.6%	47.2	50.0	94.4%	1.9%
Trichloroethene	49.0	50.0	98.0%	47.9	50.0	95.8%	2.3%
Dibromochloromethane	48.8	50.0	97.6%	48.6	50.0	97.2%	0.4%
1,1,2-Trichloroethane	46.6	50.0	93.2%	46.9	50.0	93.8%	0.6%
Benzene	48.7	50.0	97.4%	48.5	50.0	97.0%	0.4%
trans-1,3-Dichloropropene	44.6	50.0	89.2%	45.4	50.0	90.8%	1.8%
2-Chloroethylvinylether	45.1	50.0	90.2%	46.9	50.0	93.8%	3.9%
Bromoform	44.2	50.0	88.4%	44.5	50.0	89.0%	0.7%
4-Methyl-2-Pentanone (MIBK)	206	250	82.4%	223	250	89.2%	7.9%
2-Hexanone	202	250	80.8%	208	250	83.2%	2.9%
Tetrachloroethene	54.5	50.0	109%	52.3	50.0	105%	4.1%
1,1,2,2-Tetrachloroethane	46.8	50.0	93.6%	46.7	50.0	93.4%	0.2%
Toluene	48.0	50.0	96.0%	47.6	50.0	95.2%	0.8%
Chlorobenzene	51.6	50.0	103%	49.6	50.0	99.2%	4.0%
Ethylbenzene	51.1	50.0	102%	49.4	50.0	98.8%	3.4%
Styrene	50.4	50.0	101%	48.6	50.0	97.2%	3.6%
Trichlorofluoromethane	58.7	50.0	117%	56.2	50.0	112%	4.4%
1,1,2-Trichloro-1,2,2-trifluoroethane	58.9	50.0	118%	56.9	50.0	114%	3.5%
m,p-Xylene	104	100	104%	98.8	100	98.8%	5.1%
o-Xylene	51.2	50.0	102%	49.5	50.0	99.0%	3.4%
1,2-Dichlorobenzene	53.6	50.0	107%	51.2	50.0	102%	4.6%
1,3-Dichlorobenzene	54.5	50.0	109%	52.4	50.0	105%	3.9%
1,4-Dichlorobenzene	55.4	50.0	111%	52.1	50.0	104%	6.1%
Acrolein	230	250	92.0%	236	250	94.4%	2.6%
Methyl Iodide	64.6	50.0	129%	62.2	50.0	124%	3.8%
Bromoethane	58.6	50.0	117%	58.4	50.0	117%	0.3%
Acrylonitrile	47.0	50.0	94.0%	50.1	50.0	100%	6.4%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041608

Page 2 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608

QC Report No: MS40-CH2M Hill, Incorporated

LIMS ID: 08-7861

Project: 9th Avenue SU Project

Matrix: Soil

350429

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	49.1	50.0	98.2%	48.3	50.0	96.6%	1.6%
Dibromomethane	48.4	50.0	96.8%	47.5	50.0	95.0%	1.9%
1,1,1,2-Tetrachloroethane	50.7	50.0	101%	49.3	50.0	98.6%	2.8%
1,2-Dibromo-3-chloropropane	39.3	50.0	78.6%	38.6	50.0	77.2%	1.8%
1,2,3-Trichloropropane	50.0	50.0	100%	51.1	50.0	102%	2.2%
trans-1,4-Dichloro-2-butene	43.6	50.0	87.2%	45.3	50.0	90.6%	3.8%
1,3,5-Trimethylbenzene	53.4	50.0	107%	52.8	50.0	106%	1.1%
1,2,4-Trimethylbenzene	54.5	50.0	109%	52.6	50.0	105%	3.5%
Hexachlorobutadiene	54.3	50.0	109%	52.0	50.0	104%	4.3%
Ethylene Dibromide	46.5	50.0	93.0%	49.0	50.0	98.0%	5.2%
Bromochloromethane	54.4	50.0	109%	54.0	50.0	108%	0.7%
2,2-Dichloropropane	49.4	50.0	98.8%	48.8	50.0	97.6%	1.2%
1,3-Dichloropropane	48.4	50.0	96.8%	48.0	50.0	96.0%	0.8%
Isopropylbenzene	55.2	50.0	110%	53.7	50.0	107%	2.8%
n-Propylbenzene	53.8	50.0	108%	51.9	50.0	104%	3.6%
Bromobenzene	51.6	50.0	103%	50.4	50.0	101%	2.4%
2-Chlorotoluene	49.6	50.0	99.2%	49.2	50.0	98.4%	0.8%
4-Chlorotoluene	55.8	50.0	112%	50.8	50.0	102%	9.4%
tert-Butylbenzene	54.5	50.0	109%	52.2	50.0	104%	4.3%
sec-Butylbenzene	56.0	50.0	112%	53.1	50.0	106%	5.3%
4-Isopropyltoluene	56.5	50.0	113%	54.2	50.0	108%	4.2%
n-Butylbenzene	57.3	50.0	115%	54.5	50.0	109%	5.0%
1,2,4-Trichlorobenzene	57.5	50.0	115%	54.2	50.0	108%	5.9%
Naphthalene	45.4	50.0	90.8%	44.6	50.0	89.2%	1.8%
1,2,3-Trichlorobenzene	51.8	50.0	104%	50.6	50.0	101%	2.3%

Reported in $\mu\text{g}/\text{kg}$ (ppb)


RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	102%	104%
d8-Toluene	99.7%	102%
Bromofluorobenzene	97.8%	98.2%
d4-1,2-Dichlorobenzene	100%	102%

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Soil

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429
Date Received: 04/15/08

Data Release Authorized:
Reported: 04/24/08 

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-041808	Method Blank	04/18/08	04/21/08	1.00	Diesel	5.0	< 5.0 U
08-7861	HC ID: ---		FID3A	1.0	Motor Oil o-Terphenyl	10	< 10 U 69.1%
MS40A	CHB-08-15.0-16.0	04/18/08	04/21/08	1.00	Diesel	5.9	< 5.9 U
08-7861	HC ID: ---		FID3A	1.0	Motor Oil o-Terphenyl	12	< 12 U 87.1%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429

Client ID	OTER	TOT OUT
041808MBS	69.1%	0
041808LCS	82.4%	0
041808LCSD	87.3%	0
CHB-08-15.0-16.0	87.1%	0

(OTER) = o-Terphenyl

LCS/MB LIMITS QC LIMITS
(52-121) (48-119)

Prep Method: SW3550B
Log Number Range: 08-7861 to 08-7861

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1


Sample ID: LCS-041808

LCS/LCSD

Lab Sample ID: LCS-041808

LIMS ID: 08-7861

Matrix: Soil

Data Release Authorized: 

Reported: 04/24/08

QC Report No: MS40-CH2M Hill, Incorporated

Project: 9th Avenue SU Project

350429

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 04/18/08

Sample Amount LCS: 10.0 g

LCSD: 10.0 g

Date Analyzed LCS: 04/21/08 21:33

Final Extract Volume LCS: 1.0 mL

LCSD: 04/21/08 21:49

LCSD: 1.0 mL

Instrument/Analyst LCS: FID3A/MS

Dilution Factor LCS: 1.00

LCSD: FID3A/MS

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	105	150	70.0%	109	150	72.7%	3.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	82.4%	87.3%

Results reported in mg/kg

RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 04/15/08

ARI Job: MS40
Project: 9th Avenue SU Project
350429

<u>ARI ID</u>	<u>Client ID</u>	<u>Client Amt</u>	<u>Final Vol</u>	<u>Basis</u>	<u>Prep Date</u>
08-7861-041808MB1	Method Blank	10.0 g	1.00 mL	-	04/18/08
08-7861-041808LCS1	Lab Control	10.0 g	1.00 mL	-	04/18/08
08-7861-041808LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	04/18/08
08-7861-MS40A	CHB-08-15.0-16.0	8.47 g	1.00 mL	D	04/18/08

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Water



QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429
Date Received: 04/15/08

Data Release Authorized:
Reported: 04/28/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-041708	Method Blank	04/17/08	04/25/08	1.00	Diesel	0.25	< 0.25 U
08-7862	HC ID: ---		FID3A	1.0	Motor Oil o-Terphenyl	0.50	< 0.50 U 84.7%
MS40B	CHB-08-W	04/17/08	04/25/08	1.00	Diesel	0.25	< 0.25 U
08-7862	HC ID: ---		FID3A	1.0	Motor Oil o-Terphenyl	0.50	< 0.50 U 93.3%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-041708	84.7%	0
LCS-041708	91.8%	0
LCSD-041708	90.4%	0
CHB-08-W	93.3%	0


(OTER) = o-Terphenyl

LCS/MB LIMITS QC LIMITS
(63-115) (64-111)

Prep Method: SW3510C
Log Number Range: 08-7862 to 08-7862

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-041708
LCS/LCSD

Lab Sample ID: LCS-041708
LIMS ID: 08-7862
Matrix: Water
Data Release Authorized: 
Reported: 04/28/08

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
350429
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 04/17/08

Sample Amount LCS: 500 mL
LCSD: 500 mL

Date Analyzed LCS: 04/25/08 06:56
LCSD: 04/25/08 07:11

Final Extract Volume LCS: 1.0 mL
LCSD: 1.0 mL

Instrument/Analyst LCS: FID3A/MS
LCSD: FID3A/MS

Dilution Factor LCS: 1.00
LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.32	3.00	77.3%	2.31	3.00	77.0%	0.4%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	91.8%	90.4%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 04/15/08
ARI Job: MS40
Project: 9th Avenue SU Project
350429

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
08-7862-041708MB1	Method Blank	500 mL	1.00 mL	04/17/08
08-7862-041708LCS1	Lab Control	500 mL	1.00 mL	04/17/08
08-7862-041708LCSD1	Lab Control Dup	500 mL	1.00 mL	04/17/08
08-7862-MS40B	CHB-08-W	500 mL	1.00 mL	04/17/08

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Soil



QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
Event: 350429

Data Release Authorized:
Reported: 04/22/08

Date Sampled: 04/15/08
Date Received: 04/15/08

ARI ID	Client ID	Analysis Date	Basis	Range	Result
MB-041708 08-7861	Method Blank	04/17/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 100% 104%
MS40A 08-7861	CHB-08-15.0-16.0	04/17/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.6 U --- 108% 110%

Gasoline values reported in mg/kg (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: MS40
Matrix: Soil

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
Event: 350429

Client ID	BFB	TFT	BBZ	TOT OUT
MB-041708	NA	100%	104%	0
LCS-041708	NA	97.8%	101%	0
LCSD-041708	NA	96.9%	100%	0
CHB-08-15.0-16.0	NA	108%	110%	0

	LCS/MB LIMITS	QC LIMITS
(BFB) = Bromofluorobenzene	(70-130)	(70-130)
(TFT) = Trifluorotoluene	(80-120)	(65-137)
(BBZ) = Bromobenzene	(80-120)	(54-144)

Log Number Range: 08-7861 to 08-7861

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-041708
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041708
LIMS ID: 08-7861
Matrix: Soil
Data Release Authorized: *AB*
Reported: 04/22/08

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
Event: 350429
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 04/17/08 11:23
LCSD: 04/17/08 11:47
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	50.2	50.0	100%	51.2	50.0	102%	2.0%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.8%	96.9%
Bromobenzene	101%	100%

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 04/21/08



QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
Event: 350429
Date Sampled: 04/15/08
Date Received: 04/15/08



ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-041708 08-7862	Method Blank	04/17/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 100% 104%
MS40B 08-7862	CHB-08-W	04/17/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 103% 105%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: MS40
Matrix: Water

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
Event: 350429

<u>Client ID</u>	<u>TFT</u>	<u>BBZ</u>	<u>TOT OUT</u>
MB-041708	100%	104%	0
LCS-041708	97.8%	101%	0
LCSD-041708	96.9%	100%	0
CHB-08-W	103%	105%	0

	<u>LCS/MB LIMITS</u>	<u>QC LIMITS</u>
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 08-7862 to 08-7862

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-041708
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041708
LIMS ID: 08-7862
Matrix: Water
Data Release Authorized: *[Signature]*
Reported: 04/21/08

QC Report No: MS40-CH2M Hill, Incorporated
Project: 9th Avenue SU Project
Event: 350429
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 04/17/08 11:23
LCS: 04/17/08 11:47
Instrument/Analyst LCS: PID3/PKC
LCS: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCS: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCS	LCS	Spike Added-LCS	LCS Recovery	RPD
Gasoline Range Hydrocarbons	1.00	1.00	100%	1.02	1.00	102%	2.0%	

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCS
Trifluorotoluene	97.8%	96.9%
Bromobenzene	101%	100%



Analytical Resources, Incorporated

Analytical Chemists and Consultants

April 29, 2008

Ms. Rachel Chang
CH2M Hill
1100 112th Avenue NE, Suite 400
Bellevue, WA 98004-4504

Client Project: 350429 / 9th Avenue SU project
ARI Job No: MS68

Dear Ms. Chang:

Please find enclosed sample custody records and final results for samples from the project referenced above. Analytical Resources, Inc accepted soil and water samples and a trip blank on April 16, 2008.

The samples were analyzed for NWTPH-Dx, NWTPH-Gx by WDOE methods, and Volatile Organics by EPA 8260B, as requested.

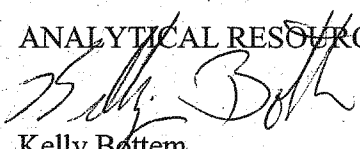
The surrogate o-Terphenyl is out of control low for sample **IDW-0809-041608** due to matrix effects for the NWTPH-Dx. All other QC is in control.

There were no other anomalies associated with these samples.

Copies of the reports will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.


Kelly Bottem
Client Services Manager
206-695-6211
kellyb@arilabs.com

Enclosures

cc: File MS68

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: MS68 Turn-around Requested: _____
 ARI Client Company: CH2M HILL Phone: 425-453-5000
 Client Contact: Nicola Badon, Rachel Chang
 Client Project Name: 9th Avenue SU Project
 Client Project #: 350429 Samplers: N. Badon

Page: 1 of 1
 Date: 4/16/08 Ice Present? Y
 No. of Coolers: 1 Cooler Temps: 5.6

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)



Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested				Notes/Comments
					NUTFH-GY EPA 5035	NUTFH-IX extended	VOCs EPA 5035	VOCs EPA 5035 EPA 520B	
CHB-09-20.0-21.5	4/16/08	0950	soil	3	X	X			
CHB-09-25.0-26.5	4/16/08	1005	soil	6	X	X	X		
CHB-09-W	4/16/08	1050	water	7	X	X	X		
CHB-50-W	4/16/08	1120	water	7	X	X	X		
FDW-0809-04608	4/16/08	1315	water	7	X	X	X		bubbles in VOCs and GPC Unavoidable, sample contains soap water
Comments/Special Instructions	Relinquished by: <u>Nicola Badon</u> (Signature) Printed Name: <u>Nicola Badon</u> Company: <u>CH2M HILL</u>				Relinquished by: _____ (Signature) Printed Name: _____ Company: _____				Received by: _____ (Signature) Printed Name: _____ Company: _____
	Date & Time: <u>4/16/08 15:32</u>				Date & Time: <u>4/16/08 1532</u>				Date & Time: _____

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Cooler Receipt Form

ARI Client: Cham Hill
COC No: _____
Assigned ARI Job No: MS68

Project Name: 9th Avenue SO Project
Delivered by: Hand
Tracking No: _____

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO
Were custody papers included with the cooler? YES NO
Were custody papers properly filled out (ink, signed, etc.) YES NO
Record cooler temperature (recommended 2.0-6.0 °C for chemistry) 5.6 °C

Cooler Accepted by: [Signature] Date: 4/16/08 Time: 1532

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
What kind of packing material was used? SB/16
Was sufficient ice used (if appropriate)? YES NO
Were all bottles sealed in individual plastic bags? YES NO
Did all bottle arrive in good condition (unbroken)? YES NO
Were all bottle labels complete and legible? YES NO
Did all bottle labels and tags agree with custody papers? YES NO
Were all bottles used correct for the requested analyses? YES NO
Do any of the analyses (bottles) require preservation? (attach preservation checklist) YES NO
Were all VOC vials free of air bubbles? NA YES NO
Was sufficient amount of sample sent in each bottle? YES NO

Samples Logged by: ad Date: 4/16/08 Time: 1600

**** Notify Project Manager of discrepancies or concerns ****

Explain discrepancies or negative responses:

SEE COC FOR VOA DISCREPANCY.

By: ad Date: 4/16/08

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2Sample ID: CHB-09-W
SAMPLE

Lab Sample ID: MS68C

LIMS ID: 08-7985

Matrix: Water

Data Release Authorized:

Reported: 04/22/08

QC Report No: MS68-CH2M HILL

Project: 9th Avenue SU Project

350429

Date Sampled: 04/16/08

Date Received: 04/16/08

Instrument/Analyst: NT5/JZ

Date Analyzed: 04/16/08 23:34

Sample Amount: 20.0 mL

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: CHB-09-W
SAMPLE

Lab Sample ID: MS68C
LIMS ID: 08-7985
Matrix: Water
Date Analyzed: 04/16/08 23:34

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	106%
Bromofluorobenzene	87.8%
d4-1,2-Dichlorobenzene	117%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: CHB-50-W
SAMPLE

Lab Sample ID: MS68D

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7986

Project: 9th Avenue SU Project

Matrix: Water

350429

Data Release Authorized:

Date Sampled: 04/16/08

Reported: 04/22/08

Date Received: 04/16/08

Instrument/Analyst: NT5/JZ

Sample Amount: 20.0 mL

Date Analyzed: 04/17/08 00:00

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	0.3	
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	0.2	
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	0.3	
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: CHB-50-W

Page 2 of 2

SAMPLE

Lab Sample ID: MS68D

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7986

Project: 9th Avenue SU Project

Matrix: Water

350429

Date Analyzed: 04/17/08 00:00

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	118%
d8-Toluene	109%
Bromofluorobenzene	92.2%
d4-1,2-Dichlorobenzene	113%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: IDW-0809-041608

Page 1 of 2

SAMPLE

Lab Sample ID: MS68E

LIMS ID: 08-7987

Matrix: Water

Data Release Authorized:

Reported: 04/22/08

QC Report No: MS68-CH2M HILL

Project: 9th Avenue SU Project

350429

Date Sampled: 04/16/08

Date Received: 04/16/08

Instrument/Analyst: NT3/AAR

Date Analyzed: 04/17/08 20:38

Sample Amount: 0.500 mL

Purge Volume: 5.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	10	< 10	U
74-83-9	Bromomethane	10	< 10	U
75-01-4	Vinyl Chloride	10	< 10	U
75-00-3	Chloroethane	10	< 10	U
75-09-2	Methylene Chloride	20	< 20	U
67-64-1	Acetone	50	< 50	U
75-15-0	Carbon Disulfide	10	< 10	U
75-35-4	1,1-Dichloroethene	10	< 10	U
75-34-3	1,1-Dichloroethane	10	< 10	U
156-60-5	trans-1,2-Dichloroethene	10	< 10	U
156-59-2	cis-1,2-Dichloroethene	10	< 10	U
67-66-3	Chloroform	10	< 10	U
107-06-2	1,2-Dichloroethane	10	< 10	U
78-93-3	2-Butanone	50	< 50	U
71-55-6	1,1,1-Trichloroethane	10	< 10	U
56-23-5	Carbon Tetrachloride	10	< 10	U
108-05-4	Vinyl Acetate	50	< 50	U
75-27-4	Bromodichloromethane	10	< 10	U
78-87-5	1,2-Dichloropropane	10	< 10	U
10061-01-5	cis-1,3-Dichloropropene	10	< 10	U
79-01-6	Trichloroethene	10	< 10	U
124-48-1	Dibromochloromethane	10	< 10	U
79-00-5	1,1,2-Trichloroethane	10	< 10	U
71-43-2	Benzene	10	< 10	U
10061-02-6	trans-1,3-Dichloropropene	10	< 10	U
110-75-8	2-Chloroethylvinylether	50	< 50	U
75-25-2	Bromoform	10	< 10	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	50	< 50	U
591-78-6	2-Hexanone	50	< 50	U
127-18-4	Tetrachloroethene	10	< 10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	< 10	U
108-88-3	Toluene	10	< 10	U
108-90-7	Chlorobenzene	10	< 10	U
100-41-4	Ethylbenzene	10	< 10	U
100-42-5	Styrene	10	< 10	U
75-69-4	Trichlorofluoromethane	10	< 10	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	20	< 20	U
1330-20-7	m,p-Xylene	10	< 10	U
95-47-6	o-Xylene	10	< 10	U
95-50-1	1,2-Dichlorobenzene	10	< 10	U
541-73-1	1,3-Dichlorobenzene	10	< 10	U
106-46-7	1,4-Dichlorobenzene	10	< 10	U
107-02-8	Acrolein	500	< 500	U
74-88-4	Methyl Iodide	10	< 10	U
74-96-4	Bromoethane	20	< 20	U
107-13-1	Acrylonitrile	50	< 50	U
563-58-6	1,1-Dichloropropene	10	< 10	U
74-95-3	Dibromomethane	10	< 10	U
630-20-6	1,1,1,2-Tetrachloroethane	10	< 10	U
96-12-8	1,2-Dibromo-3-chloropropane	50	< 50	U
96-18-4	1,2,3-Trichloropropane	20	< 20	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: IDW-0809-041608

Page 2 of 2

SAMPLE

Lab Sample ID: MS68E

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7987

Project: 9th Avenue SU Project

Matrix: Water

350429

Date Analyzed: 04/17/08 20:38

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	50	< 50	U
108-67-8	1,3,5-Trimethylbenzene	10	< 10	U
95-63-6	1,2,4-Trimethylbenzene	10	< 10	U
87-68-3	Hexachlorobutadiene	50	< 50	U
106-93-4	Ethylene Dibromide	10	< 10	U
74-97-5	Bromochloromethane	10	< 10	U
594-20-7	2,2-Dichloropropane	10	< 10	U
142-28-9	1,3-Dichloropropane	10	< 10	U
98-82-8	Isopropylbenzene	10	< 10	U
103-65-1	n-Propylbenzene	10	< 10	U
108-86-1	Bromobenzene	10	< 10	U
95-49-8	2-Chlorotoluene	10	< 10	U
106-43-4	4-Chlorotoluene	10	< 10	U
98-06-6	tert-Butylbenzene	10	< 10	U
135-98-8	sec-Butylbenzene	10	< 10	U
99-87-6	4-Isopropyltoluene	10	< 10	U
104-51-8	n-Butylbenzene	10	< 10	U
120-82-1	1,2,4-Trichlorobenzene	50	< 50	U
91-20-3	Naphthalene	50	< 50	U
87-61-6	1,2,3-Trichlorobenzene	50	< 50	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	100%
Bromofluorobenzene	97.6%
d4-1,2-Dichlorobenzene	103%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: MB-041608

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METHOD BLANK

Lab Sample ID: MB-041608

LIMS ID: 08-7985

Matrix: Water

Data Release Authorized: *AB*

Reported: 04/22/08

QC Report No: MS68-CH2M HILL

Project: 9th Avenue SU Project

350429

Date Sampled: NA

Date Received: NA

Instrument/Analyst: NT5/JZ

Date Analyzed: 04/16/08 15:38

Sample Amount: 20.0 mL

Purge Volume: 20.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.2	< 0.2	U
74-83-9	Bromomethane	0.5	< 0.5	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	3.0	< 3.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	2.5	< 2.5	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	2.5	< 2.5	U
591-78-6	2-Hexanone	2.5	< 2.5	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2	< 0.2	U
1330-20-7	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: MB-041608

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METHOD BLANK

Lab Sample ID: MB-041608

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7985

Project: 9th Avenue SU Project

Matrix: Water

350429

Date Analyzed: 04/16/08 15:38

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	103%
Bromofluorobenzene	89.8%
d4-1,2-Dichlorobenzene	109%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

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ANALYTICAL
RESOURCES
INCORPORATED

Sample ID: MB-041708

METHOD BLANK

Lab Sample ID: MB-041708

LIMS ID: 08-7987

Matrix: Water

Data Release Authorized:

Reported: 04/22/08

QC Report No: MS68-CH2M HILL

Project: 9th Avenue SU Project

350429

Date Sampled: NA

Date Received: NA

Instrument/Analyst: NT3/AAR

Date Analyzed: 04/17/08 19:01

Sample Amount: 5.00 mL

Purge Volume: 5.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

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Sample ID: MB-041708

METHOD BLANK

Lab Sample ID: MB-041708

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7987

Project: 9th Avenue SU Project

Matrix: Water

350429

Date Analyzed: 04/17/08 19:01

CAS Number	Analyte	RL	Result	Q
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in $\mu\text{g/L}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	99.7%
Bromofluorobenzene	99.3%
d4-1,2-Dichlorobenzene	101%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: MS68-CH2M HILL
 Project: 9th Avenue SU Project
 350429

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-041608	Method Blank	20	104%	103%	89.8%	109%	0
LCS-041608	Lab Control	20	99.0%	100%	105%	97.8%	0
LCSD-041608	Lab Control Dup	20	94.8%	99.5%	104%	98.2%	0
MS68C	CHB-09-W	20	107%	106%	87.8%	117%	0
MS68D	CHB-50-W	20	118%	109%	92.2%	113%	0

LCS/MB LIMITS

QC LIMITS

SW8260B

(DCE) = d4-1,2-Dichloroethane
 (TOL) = d8-Toluene
 (BFB) = Bromofluorobenzene
 (DCB) = d4-1,2-Dichlorobenzene

70-131
 80-120
 74-121
 80-120

64-146
 78-125
 71-120
 80-121

Prep Method: SW5030B
 Log Number Range: 08-7985 to 08-7987

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: MS68-CH2M HILL
 Project: 9th Avenue SU Project
 350429

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-041708	Method Blank	5	110%	99.7%	99.3%	101%	0
LCS-041708	Lab Control	5	108%	101%	100%	101%	0
LCSD-041708	Lab Control Dup	5	106%	101%	101%	100%	0
MS68E	IDW-0809-041608	5	110%	100%	97.6%	103%	0

LCS/MB LIMITS

QC LIMITS


SW8260B		
(DCE) = d4-1,2-Dichloroethane	79-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	72-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-124

Prep Method: SW5030B
 Log Number Range: 08-7985 to 08-7987

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
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Sample ID: LCS-041608
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608
LIMS ID: 08-7985
Matrix: Water
Data Release Authorized: 
Reported: 04/22/08

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT5/JZ
LCS: NT5/JZ
Date Analyzed LCS: 04/16/08 14:42
LCS: 04/16/08 15:12

Sample Amount LCS: 20.0 mL
LCS: 20.0 mL
Purge Volume LCS: 20.0 mL
LCS: 20.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCS	LCS	Spike Added-LCS	LCS Recovery	RPD
Chloromethane	3.9	4.0	97.5%	3.7	4.0	92.5%	5.3%	
Bromomethane	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%	
Vinyl Chloride	4.2	4.0	105%	4.0	4.0	100%	4.9%	
Chloroethane	4.0	4.0	100%	3.8	4.0	95.0%	5.1%	
Methylene Chloride	4.6	4.0	115%	4.5	4.0	112%	2.2%	
Acetone	22.4	20.0	112%	22.4	20.0	112%	0.0%	
Carbon Disulfide	4.1	4.0	102%	3.9	4.0	97.5%	5.0%	
1,1-Dichloroethene	4.1	4.0	102%	4.0	4.0	100%	2.5%	
1,1-Dichloroethane	4.2	4.0	105%	4.0	4.0	100%	4.9%	
trans-1,2-Dichloroethene	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
cis-1,2-Dichloroethene	4.2	4.0	105%	4.0	4.0	100%	4.9%	
Chloroform	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
1,2-Dichloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
2-Butanone	22.1	20.0	110%	21.1	20.0	106%	4.6%	
1,1,1-Trichloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
Carbon Tetrachloride	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%	
Vinyl Acetate	4.2	4.0	105%	4.1	4.0	102%	2.4%	
Bromodichloromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
1,2-Dichloropropane	4.1	4.0	102%	4.0	4.0	100%	2.5%	
cis-1,3-Dichloropropene	4.2	4.0	105%	4.2	4.0	105%	0.0%	
Trichloroethene	4.1	4.0	102%	4.0	4.0	100%	2.5%	
Dibromochloromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
1,1,2-Trichloroethane	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%	
Benzene	4.2	4.0	105%	4.1	4.0	102%	2.4%	
trans-1,3-Dichloropropene	4.3	4.0	108%	4.4	4.0	110%	2.3%	
2-Chloroethylvinylether	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
Bromoform	3.9	4.0	97.5%	3.8	4.0	95.0%	2.6%	
4-Methyl-2-Pentanone (MIBK)	21.1	20.0	106%	21.4	20.0	107%	1.4%	
2-Hexanone	21.8	20.0	109%	21.0	20.0	105%	3.7%	
Tetrachloroethene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%	
1,1,2,2-Tetrachloroethane	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%	
Toluene	4.1	4.0	102%	4.0	4.0	100%	2.5%	
Chlorobenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%	
Ethylbenzene	4.4	4.0	110%	4.4	4.0	110%	0.0%	
Styrene	3.8	4.0	95.0%	3.6	4.0	90.0%	5.4%	
Trichlorofluoromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
1,1,2-Trichloro-1,2,2-trifluoroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
m,p-Xylene	7.7	8.0	96.2%	7.5	8.0	93.8%	2.6%	
o-Xylene	3.5	4.0	87.5%	3.5	4.0	87.5%	0.0%	
1,2-Dichlorobenzene	3.8	4.0	95.0%	3.9	4.0	97.5%	2.6%	
1,3-Dichlorobenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%	
1,4-Dichlorobenzene	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%	
Acrolein	21.8	20.0	109%	20.7	20.0	104%	5.2%	
Methyl Iodide	4.0	4.0	100%	3.9	4.0	97.5%	2.5%	
Bromoethane	4.2	4.0	105%	4.0	4.0	100%	4.9%	

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041608

Page 2 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-041608

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7985

Project: 9th Avenue SU Project

Matrix: Water

350429

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	4.4	4.0	110%	4.2	4.0	105%	4.7%
1,1-Dichloropropene	4.2	4.0	105%	4.2	4.0	105%	0.0%
Dibromomethane	3.8	4.0	95.0%	3.9	4.0	97.5%	2.6%
1,1,1,2-Tetrachloroethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
1,2-Dibromo-3-chloropropane	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,2,3-Trichloropropane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
trans-1,4-Dichloro-2-butene	4.0	4.0	100%	4.2	4.0	105%	4.9%
1,3,5-Trimethylbenzene	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
1,2,4-Trimethylbenzene	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
Hexachlorobutadiene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
Ethylene Dibromide	3.9	4.0	97.5%	3.9	4.0	97.5%	0.0%
Bromochloromethane	4.0	4.0	100%	3.9	4.0	97.5%	2.5%
2,2-Dichloropropane	4.2	4.0	105%	4.1	4.0	102%	2.4%
1,3-Dichloropropane	4.1	4.0	102%	3.9	4.0	97.5%	5.0%
Isopropylbenzene	3.8	4.0	95.0%	3.8	4.0	95.0%	0.0%
n-Propylbenzene	4.3	4.0	108%	4.3	4.0	108%	0.0%
Bromobenzene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
2-Chlorotoluene	4.2	4.0	105%	4.2	4.0	105%	0.0%
4-Chlorotoluene	4.3	4.0	108%	4.3	4.0	108%	0.0%
tert-Butylbenzene	3.7	4.0	92.5%	3.7	4.0	92.5%	0.0%
sec-Butylbenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
4-Isopropyltoluene	3.7	4.0	92.5%	3.8	4.0	95.0%	2.7%
n-Butylbenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%
1,2,4-Trichlorobenzene	3.4	4.0	85.0%	3.4	4.0	85.0%	0.0%
Naphthalene	3.6	4.0	90.0%	3.7	4.0	92.5%	2.7%
1,2,3-Trichlorobenzene	4.0	4.0	100%	4.0	4.0	100%	0.0%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	99.0%	94.8%
d8-Toluene	100%	99.5%
Bromofluorobenzene	105%	104%
d4-1,2-Dichlorobenzene	97.8%	98.2%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: LCS-041708
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041708
LIMS ID: 08-7987
Matrix: Water
Data Release Authorized: *[Signature]*
Reported: 04/22/08

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/AAR
LCSD: NT3/AAR
Date Analyzed LCS: 04/17/08 18:01
LCSD: 04/17/08 18:36

Sample Amount LCS: 5.00 mL
LCSD: 5.00 mL
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	60.1	50.0	120%	55.1	50.0	110%	8.7%
Bromomethane	57.2	50.0	114%	54.6	50.0	109%	4.7%
Vinyl Chloride	57.0	50.0	114%	55.9	50.0	112%	1.9%
Chloroethane	56.6	50.0	113%	51.2	50.0	102%	10.0%
Methylene Chloride	56.3	50.0	113%	49.3	50.0	98.6%	13.3%
Acetone	297	250	119%	314	250	126%	5.6%
Carbon Disulfide	50.3	50.0	101%	58.1	50.0	116%	14.4%
1,1-Dichloroethene	49.2	50.0	98.4%	56.2	50.0	112%	13.3%
1,1-Dichloroethane	57.1	50.0	114%	55.6	50.0	111%	2.7%
trans-1,2-Dichloroethene	55.6	50.0	111%	58.4	50.0	117%	4.9%
cis-1,2-Dichloroethene	56.5	50.0	113%	55.7	50.0	111%	1.4%
Chloroform	56.6	50.0	113%	55.5	50.0	111%	2.0%
1,2-Dichloroethane	54.7	50.0	109%	54.7	50.0	109%	0.0%
2-Butanone	298	250	119%	299	250	120%	0.3%
1,1,1-Trichloroethane	56.6	50.0	113%	55.4	50.0	111%	2.1%
Carbon Tetrachloride	52.2	50.0	104%	51.9	50.0	104%	0.6%
Vinyl Acetate	59.8	50.0	120%	59.4	50.0	119%	0.7%
Bromodichloromethane	54.8	50.0	110%	54.0	50.0	108%	1.5%
1,2-Dichloropropane	55.0	50.0	110%	54.5	50.0	109%	0.9%
cis-1,3-Dichloropropene	49.0	50.0	98.0%	49.6	50.0	99.2%	1.2%
Trichloroethene	53.4	50.0	107%	54.2	50.0	108%	1.5%
Dibromochloromethane	54.4	50.0	109%	53.3	50.0	107%	2.0%
1,1,2-Trichloroethane	53.8	50.0	108%	53.5	50.0	107%	0.6%
Benzene	55.2	50.0	110%	54.3	50.0	109%	1.6%
trans-1,3-Dichloropropene	56.9	50.0	114%	57.0	50.0	114%	0.2%
2-Chloroethylvinylether	49.3	50.0	98.6%	49.4	50.0	98.8%	0.2%
Bromoform	46.4	50.0	92.8%	45.2	50.0	90.4%	2.6%
4-Methyl-2-Pentanone (MIBK)	303	250	121%	307	250	123%	1.3%
2-Hexanone	284	250	114%	286	250	114%	0.7%
Tetrachloroethene	51.5	50.0	103%	52.0	50.0	104%	1.0%
1,1,2,2-Tetrachloroethane	56.6	50.0	113%	55.6	50.0	111%	1.8%
Toluene	53.7	50.0	107%	53.5	50.0	107%	0.4%
Chlorobenzene	53.4	50.0	107%	53.1	50.0	106%	0.6%
Ethylbenzene	55.4	50.0	111%	56.1	50.0	112%	1.3%
Styrene	58.0	50.0	116%	58.5	50.0	117%	0.9%
Trichlorofluoromethane	55.8	50.0	112%	43.6	50.0	87.2%	24.5%
1,1,2-Trichloro-1,2,2-trifluoroethane	49.8	50.0	99.6%	57.4	50.0	115%	14.2%
m,p-Xylene	111	100	111%	111	100	111%	0.0%
o-Xylene	56.6	50.0	113%	56.4	50.0	113%	0.4%
1,2-Dichlorobenzene	52.2	50.0	104%	51.6	50.0	103%	1.2%
1,3-Dichlorobenzene	52.7	50.0	105%	52.7	50.0	105%	0.0%
1,4-Dichlorobenzene	52.2	50.0	104%	52.1	50.0	104%	0.2%
Acrolein	363	250	145%	404	250	162%	10.7%
Methyl Iodide	63.4	50.0	127%	56.4	50.0	113%	11.7%
Bromoethane	57.0	50.0	114%	54.1	50.0	108%	5.2%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: LCS-041708

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LAB CONTROL SAMPLE

Lab Sample ID: LCS-041708

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7987

Project: 9th Avenue SU Project

Matrix: Water

350429

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	57.9	50.0	116%	57.6	50.0	115%	0.5%
1,1-Dichloropropene	55.7	50.0	111%	56.0	50.0	112%	0.5%
Dibromomethane	54.2	50.0	108%	54.3	50.0	109%	0.2%
1,1,1,2-Tetrachloroethane	53.3	50.0	107%	52.7	50.0	105%	1.1%
1,2-Dibromo-3-chloropropane	56.3	50.0	113%	56.7	50.0	113%	0.7%
1,2,3-Trichloropropane	55.3	50.0	111%	54.8	50.0	110%	0.9%
trans-1,4-Dichloro-2-butene	56.2	50.0	112%	57.7	50.0	115%	2.6%
1,3,5-Trimethylbenzene	58.2	50.0	116%	58.2	50.0	116%	0.0%
1,2,4-Trimethylbenzene	58.9	50.0	118%	58.5	50.0	117%	0.7%
Hexachlorobutadiene	51.3	50.0	103%	53.2	50.0	106%	3.6%
Ethylene Dibromide	55.2	50.0	110%	54.4	50.0	109%	1.5%
Bromochloromethane	55.9	50.0	112%	54.2	50.0	108%	3.1%
2,2-Dichloropropane	55.9	50.0	112%	57.5	50.0	115%	2.8%
1,3-Dichloropropane	55.4	50.0	111%	54.8	50.0	110%	1.1%
Isopropylbenzene	58.7	50.0	117%	58.1	50.0	116%	1.0%
n-Propylbenzene	57.4	50.0	115%	57.3	50.0	115%	0.2%
Bromobenzene	53.3	50.0	107%	52.7	50.0	105%	1.1%
2-Chlorotoluene	56.5	50.0	113%	55.8	50.0	112%	1.2%
4-Chlorotoluene	56.3	50.0	113%	56.3	50.0	113%	0.0%
tert-Butylbenzene	57.5	50.0	115%	57.3	50.0	115%	0.3%
sec-Butylbenzene	58.0	50.0	116%	58.1	50.0	116%	0.2%
4-Isopropyltoluene	58.7	50.0	117%	59.4	50.0	119%	1.2%
n-Butylbenzene	59.1	50.0	118%	61.3	50.0	123%	3.7%
1,2,4-Trichlorobenzene	52.8	50.0	106%	53.0	50.0	106%	0.4%
Naphthalene	60.9	50.0	122%	61.6	50.0	123%	1.1%
1,2,3-Trichlorobenzene	52.0	50.0	104%	52.7	50.0	105%	1.3%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	108%	106%
d8-Toluene	101%	101%
Bromofluorobenzene	100%	101%
d4-1,2-Dichlorobenzene	101%	100%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: CHB-09-25.0-26.5

Page 1 of 2

SAMPLE

Lab Sample ID: MS68B

LIMS ID: 08-7984

Matrix: Soil

Data Release Authorized:

Reported: 04/23/08

QC Report No: MS68-CH2M HILL

Project: 9th Avenue SU Project

350429

Date Sampled: 04/16/08

Date Received: 04/16/08

Instrument/Analyst: FINN5/PAB

Date Analyzed: 04/22/08 12:48

Sample Amount: 4.18 g-dry-wt

Purge Volume: 5.0 mL

Moisture: 22.8%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.2	< 1.2	U
74-83-9	Bromomethane	1.2	< 1.2	U
75-01-4	Vinyl Chloride	1.2	< 1.2	U
75-00-3	Chloroethane	1.2	< 1.2	U
75-09-2	Methylene Chloride	2.4	< 2.4	U
67-64-1	Acetone	6.0	54	
75-15-0	Carbon Disulfide	1.2	2.6	
75-35-4	1,1-Dichloroethene	1.2	< 1.2	U
75-34-3	1,1-Dichloroethane	1.2	< 1.2	U
156-60-5	trans-1,2-Dichloroethene	1.2	< 1.2	U
156-59-2	cis-1,2-Dichloroethene	1.2	< 1.2	U
67-66-3	Chloroform	1.2	< 1.2	U
107-06-2	1,2-Dichloroethane	1.2	< 1.2	U
78-93-3	2-Butanone	6.0	< 6.0	U
71-55-6	1,1,1-Trichloroethane	1.2	< 1.2	U
56-23-5	Carbon Tetrachloride	1.2	< 1.2	U
108-05-4	Vinyl Acetate	6.0	< 6.0	U
75-27-4	Bromodichloromethane	1.2	< 1.2	U
78-87-5	1,2-Dichloropropane	1.2	< 1.2	U
10061-01-5	cis-1,3-Dichloropropene	1.2	< 1.2	U
79-01-6	Trichloroethene	1.2	< 1.2	U
124-48-1	Dibromochloromethane	1.2	< 1.2	U
79-00-5	1,1,2-Trichloroethane	1.2	< 1.2	U
71-43-2	Benzene	1.2	< 1.2	U
10061-02-6	trans-1,3-Dichloropropene	1.2	< 1.2	U
110-75-8	2-Chloroethylvinylether	6.0	< 6.0	U
75-25-2	Bromoform	1.2	< 1.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	6.0	< 6.0	U
591-78-6	2-Hexanone	6.0	< 6.0	U
127-18-4	Tetrachloroethene	1.2	< 1.2	U
79-34-5	1,1,2,2-Tetrachloroethane	1.2	< 1.2	U
108-88-3	Toluene	1.2	< 1.2	U
108-90-7	Chlorobenzene	1.2	< 1.2	U
100-41-4	Ethylbenzene	1.2	< 1.2	U
100-42-5	Styrene	1.2	< 1.2	U
75-69-4	Trichlorofluoromethane	1.2	< 1.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.4	< 2.4	U
1330-20-7	m,p-Xylene	1.2	< 1.2	U
95-47-6	o-Xylene	1.2	< 1.2	U
95-50-1	1,2-Dichlorobenzene	1.2	< 1.2	U
541-73-1	1,3-Dichlorobenzene	1.2	< 1.2	U
106-46-7	1,4-Dichlorobenzene	1.2	< 1.2	U
107-02-8	Acrolein	60	< 60	U
74-88-4	Methyl Iodide	1.2	< 1.2	U
74-96-4	Bromoethane	2.4	< 2.4	U
107-13-1	Acrylonitrile	6.0	< 6.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: CHB-09-25.0-26.5
SAMPLE

Lab Sample ID: MS68B

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7984

Project: 9th Avenue SU Project

Matrix: Soil

350429

Date Analyzed: 04/22/08 12:48

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.2	< 1.2	U
74-95-3	Dibromomethane	1.2	< 1.2	U
630-20-6	1,1,1,2-Tetrachloroethane	1.2	< 1.2	U
96-12-8	1,2-Dibromo-3-chloropropane	6.0	< 6.0	U
96-18-4	1,2,3-Trichloropropane	2.4	< 2.4	U
110-57-6	trans-1,4-Dichloro-2-butene	6.0	< 6.0	U
108-67-8	1,3,5-Trimethylbenzene	1.2	< 1.2	U
95-63-6	1,2,4-Trimethylbenzene	1.2	< 1.2	U
87-68-3	Hexachlorobutadiene	6.0	< 6.0	U
106-93-4	Ethylene Dibromide	1.2	< 1.2	U
74-97-5	Bromochloromethane	1.2	< 1.2	U
594-20-7	2,2-Dichloropropane	1.2	< 1.2	U
142-28-9	1,3-Dichloropropane	1.2	< 1.2	U
98-82-8	Isopropylbenzene	1.2	< 1.2	U
103-65-1	n-Propylbenzene	1.2	< 1.2	U
108-86-1	Bromobenzene	1.2	< 1.2	U
95-49-8	2-Chlorotoluene	1.2	< 1.2	U
106-43-4	4-Chlorotoluene	1.2	< 1.2	U
98-06-6	tert-Butylbenzene	1.2	< 1.2	U
135-98-8	sec-Butylbenzene	1.2	< 1.2	U
99-87-6	4-Isopropyltoluene	1.2	< 1.2	U
104-51-8	n-Butylbenzene	1.2	< 1.2	U
120-82-1	1,2,4-Trichlorobenzene	6.0	< 6.0	U
91-20-3	Naphthalene	6.0	< 6.0	U
87-61-6	1,2,3-Trichlorobenzene	6.0	< 6.0	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	98.2%
Bromofluorobenzene	83.8%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: MB-042208
METHOD BLANK

Lab Sample ID: MB-042208

LIMS ID: 08-7984

Matrix: Soil

Data Release Authorized:

Reported: 04/23/08

QC Report No: MS68-CH2M HILL

Project: 9th Avenue SU Project

350429

Date Sampled: NA

Date Received: NA

Instrument/Analyst: FINN5/PAB

Date Analyzed: 04/22/08 12:23

Sample Amount: 5.00 g-dry-wt

Purge Volume: 5.0 mL

Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
1330-20-7	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 2 of 2

Sample ID: MB-042208

METHOD BLANK

Lab Sample ID: MB-042208

QC Report No: MS68-CH2M HILL

LIMS ID: 08-7984

Project: 9th Avenue SU Project

Matrix: Soil

350429

Date Analyzed: 04/22/08 12:23

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in $\mu\text{g}/\text{kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	112%
d8-Toluene	102%
Bromofluorobenzene	98.1%
d4-1,2-Dichlorobenzene	99.4%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Soil

QC Report No: MS68-CH2M HILL
 Project: 9th Avenue SU Project
 350429

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-042208	Method Blank	Low	112%	102%	98.1%	99.4%	0
LCS-042208	Lab Control	Low	102%	101%	98.9%	102%	0
LCSD-042208	Lab Control Dup	Low	104%	102%	100%	101%	0
MS68B	CHB-09-25.0-26.5	Low	110%	98.2%	83.8%	101%	0

SW8260B	LCS/MB LIMITS		QC LIMITS	
	Low	Med	Low	Med
(DCE) = d4-1,2-Dichloroethane	75-120	76-120	72-134	69-120
(TOL) = d8-Toluene	80-122	80-120	78-124	80-120
(BFB) = Bromofluorobenzene	79-120	80-120	66-120	76-128
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	79-120	80-120

Log Number Range: 08-7984 to 08-7984

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: LCS-042208
LAB CONTROL SAMPLE

Lab Sample ID: LCS-042208
LIMS ID: 08-7984
Matrix: Soil
Data Release Authorized: *AMB*
Reported: 04/23/08

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: FINN5/PAB
LCSD: FINN5/PAB
Date Analyzed LCS: 04/22/08 11:33
LCSD: 04/22/08 11:55

Sample Amount LCS: 5.00 g-dry-wt
LCSD: 5.00 g-dry-wt
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL
Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	42.3	50.0	84.6%	43.3	50.0	86.6%	2.3%
Bromomethane	52.7	50.0	105%	54.1	50.0	108%	2.6%
Vinyl Chloride	44.0	50.0	88.0%	39.8	50.0	79.6%	10.0%
Chloroethane	52.6	50.0	105%	54.0	50.0	108%	2.6%
Methylene Chloride	49.8	50.0	99.6%	51.3	50.0	103%	3.0%
Acetone	209	250	83.6%	224	250	89.6%	6.9%
Carbon Disulfide	48.5	50.0	97.0%	48.9	50.0	97.8%	0.8%
1,1-Dichloroethene	53.2	50.0	106%	56.2	50.0	112%	5.5%
1,1-Dichloroethane	50.3	50.0	101%	51.4	50.0	103%	2.2%
trans-1,2-Dichloroethene	53.4	50.0	107%	53.6	50.0	107%	0.4%
cis-1,2-Dichloroethene	52.2	50.0	104%	53.3	50.0	107%	2.1%
Chloroform	51.8	50.0	104%	53.4	50.0	107%	3.0%
1,2-Dichloroethane	46.1	50.0	92.2%	47.6	50.0	95.2%	3.2%
2-Butanone	199	250	79.6%	224	250	89.6%	11.8%
1,1,1-Trichloroethane	54.2	50.0	108%	53.9	50.0	108%	0.6%
Carbon Tetrachloride	48.4	50.0	96.8%	52.2	50.0	104%	7.6%
Vinyl Acetate	43.0	50.0	86.0%	46.0	50.0	92.0%	6.7%
Bromodichloromethane	47.2	50.0	94.4%	49.7	50.0	99.4%	5.2%
1,2-Dichloropropane	45.5	50.0	91.0%	47.6	50.0	95.2%	4.5%
cis-1,3-Dichloropropene	45.9	50.0	91.8%	48.6	50.0	97.2%	5.7%
Trichloroethene	51.2	50.0	102%	52.3	50.0	105%	2.1%
Dibromochloromethane	48.4	50.0	96.8%	51.5	50.0	103%	6.2%
1,1,2-Trichloroethane	47.0	50.0	94.0%	50.1	50.0	100%	6.4%
Benzene	48.2	50.0	96.4%	47.5	50.0	95.0%	1.5%
trans-1,3-Dichloropropene	44.8	50.0	89.6%	47.0	50.0	94.0%	4.8%
2-Chloroethylvinylether	43.9	50.0	87.8%	48.0	50.0	96.0%	8.9%
Bromoform	44.1	50.0	88.2%	46.3	50.0	92.6%	4.9%
4-Methyl-2-Pentanone (MIBK)	201	250	80.4%	223	250	89.2%	10.4%
2-Hexanone	199	250	79.6%	227	250	90.8%	13.1%
Tetrachloroethene	54.6	50.0	109%	55.9	50.0	112%	2.4%
1,1,2,2-Tetrachloroethane	46.5	50.0	93.0%	48.8	50.0	97.6%	4.8%
Toluene	48.0	50.0	96.0%	49.4	50.0	98.8%	2.9%
Chlorobenzene	51.7	50.0	103%	53.9	50.0	108%	4.2%
Ethylbenzene	51.4	50.0	103%	52.6	50.0	105%	2.3%
Styrene	50.8	50.0	102%	52.1	50.0	104%	2.5%
Trichlorofluoromethane	58.6	50.0	117%	60.6	50.0	121%	3.4%
1,1,2-Trichloro-1,2,2-trifluoroetha	60.5	50.0	121%	60.1	50.0	120%	0.7%
m,p-Xylene	104	100	104%	106	100	106%	1.9%
o-Xylene	50.7	50.0	101%	52.0	50.0	104%	2.5%
1,2-Dichlorobenzene	53.5	50.0	107%	54.5	50.0	109%	1.9%
1,3-Dichlorobenzene	55.3	50.0	111%	55.9	50.0	112%	1.1%
1,4-Dichlorobenzene	55.9	50.0	112%	55.2	50.0	110%	1.3%
Acrolein	226	250	90.4%	242	250	96.8%	6.8%
Methyl Iodide	58.9	50.0	118%	58.5	50.0	117%	0.7%
Bromoethane	58.5	50.0	117%	60.0	50.0	120%	2.5%
Acrylonitrile	47.2	50.0	94.4%	49.3	50.0	98.6%	4.4%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2

Sample ID: LCS-042208
LAB CONTROL SAMPLE

Lab Sample ID: LCS-042208
LIMS ID: 08-7984
Matrix: Soil

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	47.8	50.0	95.6%	49.6	50.0	99.2%	3.7%
Dibromomethane	45.8	50.0	91.6%	50.7	50.0	101%	10.2%
1,1,1,2-Tetrachloroethane	49.9	50.0	99.8%	52.9	50.0	106%	5.8%
1,2-Dibromo-3-chloropropane	39.0	50.0	78.0%	41.7	50.0	83.4%	6.7%
1,2,3-Trichloropropane	49.6	50.0	99.2%	53.2	50.0	106%	7.0%
trans-1,4-Dichloro-2-butene	43.1	50.0	86.2%	46.6	50.0	93.2%	7.8%
1,3,5-Trimethylbenzene	55.2	50.0	110%	55.1	50.0	110%	0.2%
1,2,4-Trimethylbenzene	55.7	50.0	111%	55.5	50.0	111%	0.4%
Hexachlorobutadiene	56.2	50.0	112%	55.0	50.0	110%	2.2%
Ethylene Dibromide	46.8	50.0	93.6%	50.0	50.0	100%	6.6%
Bromochloromethane	56.4	50.0	113%	56.6	50.0	113%	0.4%
2,2-Dichloropropane	50.9	50.0	102%	51.4	50.0	103%	1.0%
1,3-Dichloropropane	47.5	50.0	95.0%	50.4	50.0	101%	5.9%
Isopropylbenzene	55.9	50.0	112%	56.8	50.0	114%	1.6%
n-Propylbenzene	54.9	50.0	110%	54.3	50.0	109%	1.1%
Bromobenzene	52.2	50.0	104%	53.4	50.0	107%	2.3%
2-Chlorotoluene	52.7	50.0	105%	51.0	50.0	102%	3.3%
4-Chlorotoluene	53.3	50.0	107%	56.5	50.0	113%	5.8%
tert-Butylbenzene	54.6	50.0	109%	56.0	50.0	112%	2.5%
sec-Butylbenzene	56.3	50.0	113%	56.0	50.0	112%	0.5%
4-Isopropyltoluene	57.1	50.0	114%	57.0	50.0	114%	0.2%
n-Butylbenzene	59.0	50.0	118%	58.1	50.0	116%	1.5%
1,2,4-Trichlorobenzene	59.3	50.0	119%	58.4	50.0	117%	1.5%
Naphthalene	45.5	50.0	91.0%	48.0	50.0	96.0%	5.3%
1,2,3-Trichlorobenzene	53.1	50.0	106%	54.0	50.0	108%	1.7%

Reported in $\mu\text{g}/\text{kg}$ (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	102%	104%
d8-Toluene	101%	102%
Bromofluorobenzene	98.9%	100%
d4-1,2-Dichlorobenzene	102%	101%

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Soil

Data Release Authorized:
Reported: 04/22/08

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
Event: 350429
Date Sampled: 04/16/08
Date Received: 04/16/08



ARI ID	Client ID	Analysis Date	Basis	Range	Result
MB-041708 08-7983	Method Blank	04/17/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 5.0 U --- 100% 104%
MS68A 08-7983	CHB-09-20.0-21.5	04/17/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.2 U --- 92.7% 94.7%
MS68B 08-7984	CHB-09-25.0-26.5	04/17/08 PID3	Dry	Gasoline HC ID Trifluorotoluene Bromobenzene	< 6.1 U --- 96.8% 100%

Gasoline values reported in mg/kg (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Results corrected for soil moisture content per Section 11.10.5 of EPA Method 8000C.

TPHG SOIL SURROGATE RECOVERY SUMMARY

ARI Job: MS68
Matrix: Soil

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
Event: 350429

<u>Client ID</u>	<u>BFB</u>	<u>TFT</u>	<u>BBZ</u>	<u>TOT</u>	<u>OUT</u>
MB-041708	NA	100%	104%		0
LCS-041708	NA	97.8%	101%		0
LCSD-041708	NA	96.9%	100%		0
CHB-09-20.0-21.5	NA	92.7%	94.7%		0
CHB-09-25.0-26.5	NA	96.8%	100%		0

LCS/MB LIMITS QC LIMITS

(BFB) = Bromofluorobenzene
(TFT) = Trifluorotoluene
(BBZ) = Bromobenzene

(70-130) (70-130)
(80-120) (65-137)
(80-120) (54-144)

Log Number Range: 08-7983 to 08-7984

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
 Page 1 of 1

Sample ID: LCS-041708
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-041708
 LIMS ID: 08-7983
 Matrix: Soil
 Data Release Authorized:
 Reported: 04/22/08

QC Report No: MS68-CH2M HILL
 Project: 9th Avenue SU Project
 Event: 350429
 Date Sampled: NA
 Date Received: NA

Date Analyzed LCS: 04/17/08 11:23
 LCSD: 04/17/08 11:47
 Instrument/Analyst LCS: PID3/PKC
 LCSD: PID3/PKC

Purge Volume: 5.0 mL

Sample Amount LCS: 100 mg-dry-wt
 LCSD: 100 mg-dry-wt

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	50.2	50.0	100%	51.2	50.0	102%	2.0%

Reported in mg/kg (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.8%	96.9%
Bromobenzene	101%	100%

ORGANICS ANALYSIS DATA SHEET
 TPHG by Method NWTPHG
 Matrix: Water



QC Report No: MS68-CH2M HILL
 Project: 9th Avenue SU Project
 Event: 350429
 Date Sampled: 04/16/08
 Date Received: 04/16/08

Data Release Authorized:
 Reported: 04/22/08

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-041708 08-7985	Method Blank	04/17/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 100% 104%
MS68C 08-7985	CHB-09-W	04/17/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 108% 109%
MS68D 08-7986	CHB-50-W	04/17/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 106% 107%
MB-041908 08-7987	Method Blank	04/19/08 PID3	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 93.2% 94.5%
MS68E 08-7987	IDW-0809-041608	04/19/08 PID3	10	Gasoline HC ID Trifluorotoluene Bromobenzene	< 2.5 U --- 97.1% 98.9%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
 GRO: Positive result that does not match an identifiable gasoline pattern.

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: MS68
Matrix: Water

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
Event: 350429

<u>Client ID</u>	<u>TFT</u>	<u>BBZ</u>	<u>TOT OUT</u>
MB-041708	100%	104%	0
LCS-041708	97.8%	101%	0
LCSD-041708	96.9%	100%	0
CHB-09-W	108%	109%	0
CHB-50-W	106%	107%	0
MB-041908	93.2%	94.5%	0
LCS-041908	94.9%	96.5%	0
LCSD-041908	100%	101%	0
IDW-0809-041608	97.1%	98.9%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 08-7985 to 08-7987



ORGANICS ANALYSIS DATA SHEET
 TPHG by Method NWTPHG
 Page 1 of 1

Sample ID: LCS-041708
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-041708
 LIMS ID: 08-7985
 Matrix: Water
 Data Release Authorized:
 Reported: 04/22/08

QC Report No: MS68-CH2M HILL
 Project: 9th Avenue SU Project
 Event: 350429
 Date Sampled: NA
 Date Received: NA

Date Analyzed LCS: 04/17/08 11:23
 LCSD: 04/17/08 11:47
 Instrument/Analyst LCS: PID3/PKC
 LCSD: PID3/PKC

Purge Volume: 5.0 mL
 Dilution Factor LCS: 1.0
 LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	1.00	1.00	100%	1.02	1.00	102%	2.0%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	97.8%	96.9%
Bromobenzene	101%	100%

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1



Sample ID: LCS-041908
LAB CONTROL SAMPLE

Lab Sample ID: LCS-041908
LIMS ID: 08-7987
Matrix: Water
Data Release Authorized:
Reported: 04/22/08

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
Event: 350429
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 04/19/08 10:41
LCSD: 04/19/08 11:06
Instrument/Analyst LCS: PID3/PKC
LCSD: PID3/PKC

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	0.98	1.00	98.0%	0.99	1.00	99.0%	1.0%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	94.9%	100%
Bromobenzene	96.5%	101%

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Soil

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429
Date Received: 04/16/08

Data Release Authorized: *AB*
Reported: 04/24/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-041808	Method Blank	04/18/08	04/21/08	1.00	Diesel	5.0	< 5.0 U
08-7983	HC ID: ---		FID3A	1.0	Motor Oil o-Terphenyl	10	< 10 U 69.1%
MS68A	CHB-09-20.0-21.5	04/18/08	04/22/08	1.00	Diesel	6.1	11
08-7983	HC ID: DRO/MOTOR OIL		FID3A	1.0	Motor Oil o-Terphenyl	12	23 94.4%
MS68B	CHB-09-25.0-26.5	04/18/08	04/22/08	1.00	Diesel	6.5	36
08-7984	HC ID: DRO/MOTOR OIL		FID3A	1.0	Motor Oil o-Terphenyl	13	130 85.1%

Reported in mg/kg (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
041808MBS	69.1%	0
041808LCS	82.4%	0
041808LCSD	87.3%	0
CHB-09-20.0-21.5	94.4%	0
CHB-09-25.0-26.5	85.1%	0

(OTER) = o-Terphenyl

LCS/MB LIMITS QC LIMITS
(52-121) (48-119)

Prep Method: SW3550B
Log Number Range: 08-7983 to 08-7984

ORGANICS ANALYSIS DATA SHEET

NWTPHD by GC/FID

Page 1 of 1

Sample ID: LCS-041808

LCS/LCSD

Lab Sample ID: LCS-041808

LIMS ID: 08-7983

Matrix: Soil

Data Release Authorized: *RB*

Reported: 04/24/08

QC Report No: MS68-CH2M HILL

Project: 9th Avenue SU Project

350429

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 04/18/08

Sample Amount LCS: 10.0 g

LCSD: 10.0 g

Date Analyzed LCS: 04/21/08 21:33

Final Extract Volume LCS: 1.0 mL

LCSD: 04/21/08 21:49

LCSD: 1.0 mL

Instrument/Analyst LCS: FID3A/MS

Dilution Factor LCS: 1.00

LCSD: FID3A/MS

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	105	150	70.0%	109	150	72.7%	3.7%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	82.4%	87.3%

Results reported in mg/kg

RPD calculated using sample concentrations per SW846.

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 04/16/08

ARI Job: MS68
Project: 9th Avenue SU Project
350429

ARI ID	Client ID	Client Amt	Final Vol	Basis	Prep Date
08-7983-041808MB1	Method Blank	10.0 g	1.00 mL	-	04/18/08
08-7983-041808LCS1	Lab Control	10.0 g	1.00 mL	-	04/18/08
08-7983-041808LCSD1	Lab Control Dup	10.0 g	1.00 mL	-	04/18/08
08-7983-MS68A	CHB-09-20.0-21.5	8.19 g	1.00 mL	D	04/18/08
08-7984-MS68B	CHB-09-25.0-26.5	7.72 g	1.00 mL	D	04/18/08

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Water

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429
Date Received: 04/16/08

Data Release Authorized: *APB*
Reported: 04/28/08

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range	RL	Result
MB-041708 08-7985	Method Blank HC ID: ---	04/17/08	04/25/08 FID3A	1.00 1.0	Diesel Motor Oil o-Terphenyl	0.25 0.50	< 0.25 U < 0.50 U 84.7%
MS68C 08-7985	CHB-09-W HC ID: ---	04/17/08	04/25/08 FID3A	1.00 1.0	Diesel Motor Oil o-Terphenyl	0.25 0.50	< 0.25 U < 0.50 U 89.1%
MS68D 08-7986	CHB-50-W HC ID: DRO/MOTOR OIL	04/17/08	04/25/08 FID3A	1.00 1.0	Diesel Motor Oil o-Terphenyl	0.25 0.50	0.40 1.4 74.2%
MS68E 08-7987	IDW-0809-041608 HC ID: ---	04/17/08	04/25/08 FID3A	1.00 1.0	Diesel Motor Oil o-Terphenyl	0.25 0.50	< 0.25 U < 0.50 U 57.1%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: MS68-CH2M HILL
Project: 9th Avenue SU Project
350429

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-041708	84.7%	0
LCS-041708	91.8%	0
LCSD-041708	90.4%	0
CHB-09-W	89.1%	0
CHB-50-W	74.2%	0
IDW-0809-041608	57.1%*	1

LCS/MB LIMITS QC LIMITS

(OTER) = o-Terphenyl

(63-115)

(64-111)

Prep Method: SW3510C
Log Number Range: 08-7985 to 08-7987

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Water
Date Received: 04/16/08

ARI Job: MS68
Project: 9th Avenue SU Project
350429

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
08-7985-041708MB1	Method Blank	500 mL	1.00 mL	04/17/08
08-7985-041708LCS1	Lab Control	500 mL	1.00 mL	04/17/08
08-7985-041708LCSD1	Lab Control Dup	500 mL	1.00 mL	04/17/08
08-7985-MS68C	CHB-09-W	450 mL	1.00 mL	04/17/08
08-7986-MS68D	CHB-50-W	500 mL	1.00 mL	04/17/08
08-7987-MS68E	IDW-0809-041608	500 mL	1.00 mL	04/17/08