



7601 S. 190th Street, Kent, Washington 98032 425-251-8500 FAX 425-251-6099

April 7, 2000

Ms. Hillary Holt
Environmental Programs
King County Industrial Waste
Suite 200
130 Nickerson Street
Seattle, WA 98109-1658

Re: Quarterly Self-Monitoring Report
King County Industrial Waste Discharge Authorization Number 217

Dear Ms. Holt:

Attached is the Quarterly Self Monitoring Report for the Groundwater Remediation System that discharges from the CHEMCENTRAL / Seattle facility in Kent in accordance with the requirements of the Discharge Authorization Number 217.

CHEMCENTRAL personnel performed the monthly sampling and CHEMCENTRAL's consultant, Hart Crowser, Inc., performed the quarterly sampling and prepared the report.

If you should have any questions, please feel free to contact Dave Heffner or Scott Shock at Hart Crowser at 206-324-9530 or myself at 425-251-8500.

Sincerely,

A handwritten signature in black ink, appearing to be "Terry D. Wells", written over a horizontal line.

Terry D. Wells
General Manager

Attachment:

Waste Discharge Self Monitoring Report

cc: (w/Attachment) CHEMCENTRAL Corp, Attn: Mr. Robert Garner
City of Kent, Attn: Mr. Gary Gill, City Engineer (2)
WA State Department of Ecology, Attn: Mr. Doug Knutson

QUARTERLY WASTEWATER DISCHARGE SELF-MONITORING REPORT

CHEMCENTRAL/SEATTLE FACILITY

KENT, WASHINGTON

This report presents the results of the first quarter 2000 self-monitoring conducted on the groundwater treatment system effluent at the CHEMCENTRAL/Seattle facility in Kent, Washington (as required by King County Industrial Waste (KCIW) Discharge Authorization Number 217). Effluent samples were collected to observe discharge parameters on January 28, February 28, and March 29, 2000. Samples are collected from a sampling port in the effluent piping at the base of the air stripping tower, at the point of hookup to the KCIW sewer line.

Quarterly effluent samples were collected on February 25, 2000, at the point of the KCIW hookup and submitted to MultiChem Analytical Services (MultiChem) for Volatile Organic Compounds (VOCs) analysis by EPA Method 8260A and Total Petroleum Hydrocarbons (TPH) analysis by EPA Method 418.1 (approved by KCIW as a replacement for the Fat, Oil and Grease analysis specified in the Discharge Authorization). No discharge parameters, constituent concentrations, or daily flow rates exceeded the KCIW limits during this quarter.

The monthly Waste Discharge Self-Monitoring reports for January, February, and March 2000 are attached. Appendix A contains the analytical laboratory certificates.

DISCHARGE PARAMETERS

The monthly samples of pH and temperature are within the limits of the Discharge Authorization and are recorded in the Waste Discharge Self-Monitoring reports. The samples did not exhibit any solvent, gasoline, or hydrogen sulfide odors, or oil sheens. However, a reddish-brown tint was observed in the samples.

DISCHARGE VOLUME

As documented in our fourth quarter 1999 self-monitoring report, the flow totalizer was found to be inoperable in December 1999, and was replaced on January 8, 2000. An average discharge rate of 8,000 gpd was assumed for the period January 1 - 8, 2000. Between January 1 and March 29, 2000, the groundwater treatment system discharged approximately 350,000 gallons of

treated water to KCIW under Discharge Authorization Number 217. Average flow rates by month for the first quarter of 2000 are estimated as follows:

- ▶ January: 5,022 gallons per day;
- ▶ February: 5,674 gallons per day; and
- ▶ March: 975 gallons per day.

EFFLUENT SAMPLE ANALYTICAL RESULTS

The analytical results for the February 25, 2000, samples for constituents with KCIW discharge limits are presented in Table 1. No constituent concentrations exceeded the KCIW discharge limits.

ADDITIONAL SAMPLE FROM AIR STRIPPER INFLUENT

During this sampling event, CHEMCENTRAL requested that an additional water sample be collected from the air stripper influent line and analyzed for VOCs using EPA Method 8260A. The groundwater pumps operate on float switches, making collection of a representative influent sample problematic. To increase the probability that all pumps would be operating at the time of sample collection, the system was turned off for approximately one hour before sampling the influent line. This allowed time for the sumps to recharge with groundwater. The influent sample was then collected immediately after restarting the system. Analytical results are summarized in Table 2.

Sampling and analysis of air stripper influent was previously performed on February 24, 1999, and results documented in the Self-Monitoring Report dated March 26, 1999. Analytical results of influent sampling will be used along with the volume of water treated to estimate contaminant mass removal rates from site groundwater.

This report was prepared according to the standard of care of our profession.
No other warranty, express or implied, is made.

Sincerely,

HART CROWSER, INC.



DAVID A. HEFFNER, P.E.

Associate Engineer

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Attachments:

Table 1 - Analytical Results of Quarterly Wastewater Effluent Sampling for
Constituents with KCIW Discharge Limits

Table 2 - Analytical Results of Additional Water Sample Collected from
Air Stripper Influent on February 25, 2000

January 2000 Waste Discharge Self Monitoring Report

February 2000 Waste Discharge Self Monitoring Report

March 2000 Waste Discharge Self Monitoring Report

Appendix A - Sample Analytical Data Quality and Laboratory Certificates
MultiChem Analytical Services

Table 1 - Analytical Results of Quarterly Wastewater Effluent Sampling for Constituents with KCIW Discharge Limits

Constituent	Concentration in mg/L	
	KCIW Discharge Limits	2/25/00 Sample
Benzene	0.13	0.005 U
Ethylbenzene	1.4	0.026
Toluene	1.5	0.27
TPH ⁽²⁾	100	1.6

U: Constituent not detected at the indicated detection limit.

- (1) Benzene, toluene, and ethylbenzene were analyzed using EPA Method 8260; TPH was analyzed using EPA Method 418.1. The KCIW permit actually specifies a discharge limit of 100 mg/L for nonpolar fats, oils, and greases (FOG) using Standard Method 5520F rather than for TPH. However, KCIW has indicated that TPH is a more appropriate analyte than FOG for this site, and that the same discharge limit applies.
- (2) The reported TPH result represents the average of three samples collected at least 5 minutes apart and analyzed separately.

233529\1stQuarter(rpt).doc

Table 2 - Analytical Results of Additional Water Sample Collected from Air Stripper Influent on February 25, 2000

Constituent ⁽²⁾	Concentration in mg/L
	AS Influent (INFLUENT-1)
cis-1,2-Dichloroethene	0.21
Trichloroethene	0.16
Toluene	0.057
Tetrachloroethene	0.64
Ethylbenzene	0.0096
Total Xylenes	0.059
1,2,4-Trimethylbenzene	0.0094
Acetone	0.1

⁽¹⁾ Water samples were analyzed using EPA Method 8260.

⁽²⁾ Only detected constituents are reported in this table. Complete analytical results are provided in Appendix A.



Waste Discharge Self-Monitoring Report

Company Name CHEM CENTRAL/Seattle

Month January 2000

No. of Employees (per day) Average _____ Maximum _____

Sample Site No. _____

Permit/UDA No. DA 217

All units mg/l unless otherwise noted Industry Type Chemical Distribution

Sample Date (circle)	Sample Type C (composite) or G (grab)	pH		Cadmium, Cd	Chromium, Cr	Copper, Cu	Lead, Pb	Mercury, Hg	Nickel, Ni	Silver, Ag	Zinc, Zn	Cyanide, CN-A	Cyanide, CN-T	Fats, Oils and Grease (FOG)	Total Toxic Organics (TTO)	Temperature °F	Other Parameters	✓ check maximum	Flow (GPD) Industrial	Notes (Indicate Batch Discharges)
		Min	Max																	
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2																				
3																				
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5																				
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9																			3573	New flowmeter/totalizer installed, reading recorded.
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18																			↓	
19																			3849	Totalizer reading recorded.
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25																				
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27																				
28	G	7.1														44			↓	
29																			5816	Samples collected to observe discharge parameters.
30																				
31																			↓	
Monthly Minimum																			3573	
Monthly Maximum																			8000	
Average																			5,022	Total Monthly Flow (Gallons)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

Date

Sample Date (circle)	Sample Type C (composite) or G (grab)	pH		Cadmium, Cd	Chromium, Cr	Copper, Cu	Lead, Pb	Mercury, Hg	Nickel, Ni	Silver, Ag	Zinc, Zn	Cyanide, CN,A	Cyanide, CN,T	Fats, Oils and Grease (FOG)	Total Toxic Organics (TTO)	Temperature of	Other Parameters	Flow (GPD) Industrial	Notes (Indicate Batch Discharges)
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28	6.9															44		1702	✓ Samples collected to observe discharge parameters
29																			
30																			
31																			
Monthly Minimum																		1702	
Monthly Maximum																		5816	
Average																		5674	Total Monthly Flow (Gallons)



Department of Natural Resources

Waste Discharge Self-Monitoring Report

Company Name

CHEM CENTRAL/Seattle

Month

March

20 00

No. of Employees (per day) Average

Maximum

Sample Site No.

Permit/DA No. DA 217

All units mgl unless otherwise noted

Industry Type

Chemical Distribution

1300 Nickerson St., Suite 200
Seattle, WA 98109-1656
Phone (206) 263-3000 / FAX (206) 263-3001

Sample Date (circle)	Sample Type C (composite) or G (grab)	pH		Cadmium, Cd	Chromium, Cr	Copper, Cu	Lead, Pb	Mercury, Hg	Nickel, Ni	Silver, Ag	Zinc, Zn	Cyanide, CN,A	Cyanide, CN,T	Fats, Oils and Grease (FOG)	Total Toxic Organics (TTO)	Other Parameters	check maximum	Flow (GPD) Industrial	Notes (Indicate Batch Discharges)
		Min	Max																
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29	<u>G</u>														<u>59</u>				<u>sample collected to observe discharge parameters</u>
30																			
31																			
Monthly Minimum																			
Monthly Maximum																			
Average																			

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further certify that all data requiring a laboratory analysis were analyzed by a Washington State Department of Ecology accredited laboratory for each parameter tested.

Signature of Principal Executive or Authorized Agent

Date

APPENDIX A
SAMPLE ANALYTICAL DATA QUALITY
AND LABORATORY CERTIFICATES
MULTICHEM ANALYTICAL SERVICES

**APPENDIX A
SAMPLE ANALYTICAL DATA QUALITY
AND LABORATORY CERTIFICATES
MULTICHEM ANALYTICAL SERVICES**

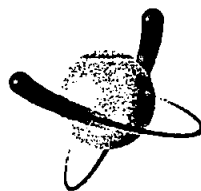
Wastewater Sample Analytical Data Quality Review

Five water samples (Effluent-1, Influent-1, ES-1A, ES-1B, and ES-1C) were collected on February 25, 2000. The samples were submitted along with a trip blank to MultiChem Analytical Services of Renton, Washington. Samples Effluent-1 and Influent-1 were analyzed for volatile organics by EPA Method 8260B. Samples ES-1A, ES-1B, and ES-1C were analyzed for Total Petroleum Hydrocarbons by WTPH Method 418.1. The following quality assurance/quality control parameters were evaluated:

- ▶ Holding Times;
- ▶ Method Blanks;
- ▶ Surrogate Recoveries;
- ▶ Blank Spike/Blank Spike Duplicate (BS/BSD) Recoveries;
- ▶ Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries;
- ▶ Laboratory Duplicate Relative Percent Differences (RPDs); and
- ▶ Reporting Limits.

Volatile Organics. Samples were analyzed within the required holding time. No method blank or trip blank contamination was detected, and surrogate recoveries were within limits. The data are acceptable for use as reported.

Total Petroleum Hydrocarbons. Samples were analyzed within the required holding time. No method blank contamination was detected. Blank spike recovery was within laboratory control limits. The data are acceptable for use as reported.



MultiChem
ANALYTICAL SERVICES

MAS I.D. # 002065

March 15, 2000

Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle WA 98102-3699

Attention : Dave Heffner

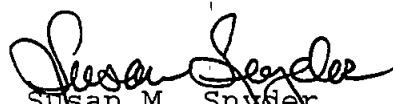
Project Number : 2335-24

Project Name : Chem Central

Dear Mr. Heffner:

On February 25, 2000, MultiChem Analytical Services received ten samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Sincerely,


Susan M. Snyder
Project Manager

SMS/hal/trm

Enclosure

SAMPLE CROSS REFERENCE SHEET

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL

MAS #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
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002065-1	INFLUENT-1	02/25/00	WATER
002065-2	EFFLUENT-1	02/25/00	WATER
002065-3	ES-1A	02/25/00	WATER
002065-4	ES-1B	02/25/00	WATER
002065-5	ES-1C	02/25/00	WATER
002065-6	HC-12	02/25/00	WATER
002065-7	HC-10	02/25/00	WATER
002065-8	HC-8	02/25/00	WATER
002065-9	HC-6D	02/25/00	WATER
002065-10	TRIP BLANK	02/25/00	WATER

----- TOTALS -----

MATRIX	# SAMPLES
WATER	10

MAS STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

MAS I.D. # 002065

MultiChem
ANALYTICAL SERVICES

ANALYTICAL SCHEDULE

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL

ANALYSIS	TECHNIQUE	REFERENCE	LAB
VOLATILE ORGANICS ANALYSIS	GCMS	EPA 8260B	R
TOTAL PETROLEUM HYDROCARBONS	IR	EPA 418.1	R

R = MAS - Renton
ANC = MAS - Anchorage
SUB = Subcontract

CASE NARRATIVE

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL

CASE NARRATIVE: VOLATILE ORGANICS ANALYSIS

The following anomalies were associated with the preparation and/or analysis of the samples in this accession:

The percent recovery of the surrogate spiking compound toluene-d8 fell below the 80-120% recovery range in the undiluted analysis of the sample identified as 002065-6 (HC-12). Since toluene-d8 was within established control limits in the two diluted analyses of this sample, this anomaly was attributed to matrix interference and flagged with an "F" for reporting purposes.

The sample identified as 002065-7 (HC-10) was initially analyzed at a 50 fold dilution based on historical data. Since a further dilution was required, the sample was not analyzed at a lesser dilution. Due to foaming of the sample matrix, the samples identified as 002065-1 (INFLUENT-1) and 002065-2 (EFFLUENT-1) were initially analyzed at a five fold dilution. All reporting limits have been adjusted accordingly. No further corrective action was performed.

All other associated quality assurance/quality control (QA/QC) parameters were within established MultiChem control limits.

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE SAMPLED	: N/A
PROJECT #	: 2335-24	DATE RECEIVED	: N/A
PROJECT NAME	: CHEM CENTRAL	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/07/00
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8260B	DILUTION FACTOR	: 1

COMPOUNDS RESULTS

DICHLORODIFLUOROMETHANE	<1.0
CHLOROMETHANE	<5.0
VINYL CHLORIDE	<1.0
BROMOMETHANE	<1.0
CHLOROETHANE	<1.0
TRICHLOROFLUOROMETHANE	<1.0
ACETONE	<10
1,1-DICHLOROETHENE	<1.0
METHYLENE CHLORIDE	<5.0
CARBON DISULFIDE	<10
TRANS-1,2-DICHLOROETHENE	<1.0
1,1-DICHLOROETHANE	<1.0
VINYL ACETATE	<10
2-BUTANONE (MEK)	<10
CHLOROFORM	<1.0
CIS-1,2-DICHLOROETHENE	<1.0
BROMOCHLOROMETHANE	<1.0
2,2-DICHLOROPROPANE	<1.0
1,1,1-TRICHLOROETHANE	<1.0
1,2-DICHLOROETHANE	<1.0
1,1-DICHLOROPROPENE	<1.0
CARBON TETRACHLORIDE	<1.0
BENZENE	<1.0
DIBROMOMETHANE	<1.0
1,2-DICHLOROPROPANE	<1.0
TRICHLOROETHENE	<1.0
BROMODICHLOROMETHANE	<1.0
CIS-1,3-DICHLOROPROPENE	<3.0
4-METHYL-2-PENTANONE (MIBK)	<10
TRANS-1,3-DICHLOROPROPENE	<3.0
1,1,2-TRICHLOROETHANE	<1.0
TOLUENE	<1.0
1,2-DIBROMOETHANE (EDB)	<1.0
1,3-DICHLOROPROPANE	<1.0
CHLORODIBROMOMETHANE	<2.0
2-HEXANONE	<10
TETRACHLOROETHENE	<1.0
1,1,1,2-TETRACHLOROETHANE	<1.0

MAS I.D. # 002065

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE SAMPLED	: N/A
PROJECT #	: 2335-24	DATE RECEIVED	: N/A
PROJECT NAME	: CHEM CENTRAL	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 03/07/00
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8260B	DILUTION FACTOR	: 1

COMPOUNDS

RESULTS

CHLOROBENZENE	<1.0
ETHYLBENZENE	<1.0
BROMOFORM	<3.0
STYRENE	<1.0
TOTAL XYLENES	<1.0
1,1,2,2-TETRACHLOROETHANE	<1.0
1,2,3-TRICHLOROPROPANE	<1.0
ISOPROPYLBENZENE	<1.0
BROMOBENZENE	<1.0
N-PROPYLBENZENE	<1.0
2-CHLOROTOLUENE	<1.0
4-CHLOROTOLUENE	<1.0
1,3,5-TRIMETHYLBENZENE	<1.0
TERT-BUTYLBENZENE	<1.0
1,2,4-TRIMETHYLBENZENE	<1.0
SEC-BUTYLBENZENE	<1.0
1,3-DICHLOROBENZENE	<2.0
1,4-DICHLOROBENZENE	<2.0
P-ISOPROPYLTOLUENE	<2.0
1,2-DICHLOROBENZENE	<2.0
N-BUTYLBENZENE	<1.0
1,2-DIBROMO-3-CHLOROPROPANE	<3.0
1,2,4-TRICHLOROBENZENE	<5.0
NAPHTHALENE	<5.0
HEXACHLOROBUTADIENE	<3.0
1,2,3-TRICHLOROBENZENE	<5.0

SURROGATE PERCENT RECOVERY

LIMITS

DIBROMOFLUOROMETHANE	103	50 - 150
1,2-DICHLOROETHANE-D4	100	81 - 130
TOLUENE-D8	98	80 - 120
BROMOFLUOROBENZENE	97	75 - 118

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL
CLIENT I.D. : INFLUENT-1
SAMPLE MATRIX : WATER
EPA METHOD : 8260B

DATE SAMPLED : 02/25/00
DATE RECEIVED : 02/25/00
DATE EXTRACTED : N/A
DATE ANALYZED : 03/07/00
UNITS : ug/L
DILUTION FACTOR : 5

COMPOUNDS

RESULTS

DICHLORODIFLUOROMETHANE	<5.0
CHLOROMETHANE	<25
VINYL CHLORIDE	<5.0
BROMOMETHANE	<5.0
CHLOROETHANE	<5.0
TRICHLOROFLUOROMETHANE	<5.0
ACETONE	100
1,1-DICHLOROETHENE	<5.0
METHYLENE CHLORIDE	<25
CARBON DISULFIDE	<50
TRANS-1,2-DICHLOROETHENE	<5.0
1,1-DICHLOROETHANE	<5.0
VINYL ACETATE	<50
2-BUTANONE (MEK)	<50
CHLOROFORM	<5.0
CIS-1,2-DICHLOROETHENE	210
BROMOCHLOROMETHANE	<5.0
2,2-DICHLOROPROPANE	<5.0
1,1,1-TRICHLOROETHANE	<5.0
1,2-DICHLOROETHANE	<5.0
1,1-DICHLOROPROPENE	<5.0
CARBON TETRACHLORIDE	<5.0
BENZENE	<5.0
DIBROMOMETHANE	<5.0
1,2-DICHLOROPROPANE	<5.0
TRICHLOROETHENE	160
BROMODICHLOROMETHANE	<5.0
CIS-1,3-DICHLOROPROPENE	<15
4-METHYL-2-PENTANONE (MIBK)	<50
TRANS-1,3-DICHLOROPROPENE	<15
1,1,2-TRICHLOROETHANE	<5.0
TOLUENE	57
1,2-DIBROMOETHANE (EDB)	<5.0
1,3-DICHLOROPROPANE	<5.0
CHLORODIBROMOMETHANE	<10
2-HEXANONE	<50
TETRACHLOROETHENE	640
1,1,1,2-TETRACHLOROETHANE	<5.0

MAS I.D. # 002065-1

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE SAMPLED	: 02/25/00
PROJECT #	: 2335-24	DATE RECEIVED	: 02/25/00
PROJECT NAME	: CHEM CENTRAL	DATE EXTRACTED	: N/A
CLIENT I.D.	: INFLUENT-1	DATE ANALYZED	: 03/07/00
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8260B	DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROBENZENE	<5.0
ETHYLBENZENE	9.6
BROMOFORM	<15
STYRENE	<5.0
TOTAL XYLENES	59
1,1,2,2-TETRACHLOROETHANE	<5.0
1,2,3-TRICHLOROPROPANE	<5.0
ISOPROPYLBENZENE	<5.0
BROMOBENZENE	<5.0
N-PROPYLBENZENE	<5.0
2-CHLOROTOLUENE	<5.0
4-CHLOROTOLUENE	<5.0
1,3,5-TRIMETHYLBENZENE	<5.0
TERT-BUTYLBENZENE	<5.0
1,2,4-TRIMETHYLBENZENE	9.4
SEC-BUTYLBENZENE	<5.0
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
P-ISOPROPYLTOLUENE	<10
1,2-DICHLOROBENZENE	<10
N-BUTYLBENZENE	<5.0
1,2-DIBROMO-3-CHLOROPROPANE	<15
1,2,4-TRICHLOROBENZENE	<25
NAPHTHALENE	<25
HEXACHLOROBUTADIENE	<15
1,2,3-TRICHLOROBENZENE	<25

SURROGATE PERCENT RECOVERY

LIMITS

DIBROMOFLUOROMETHANE	100	50 - 150
1,2-DICHLOROETHANE-D4	101	81 - 130
TOLUENE-D8	99	80 - 120
BROMOFLUOROBENZENE	99	75 - 118

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE SAMPLED	: 02/25/00
PROJECT #	: 2335-24	DATE RECEIVED	: 02/25/00
PROJECT NAME	: CHEM CENTRAL	DATE EXTRACTED	: N/A
CLIENT I.D.	: EFFLUENT-1	DATE ANALYZED	: 03/07/00
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8260B	DILUTION FACTOR	: 5

COMPOUNDSRESULTS

DICHLORODIFLUOROMETHANE	<5.0
CHLOROMETHANE	<25
VINYL CHLORIDE	<5.0
BROMOMETHANE	<5.0
CHLOROETHANE	21
TRICHLOROFLUOROMETHANE	<5.0
ACETONE	85
1,1-DICHLOROETHENE	<5.0
METHYLENE CHLORIDE	<25
CARBON DISULFIDE	<50
TRANS-1,2-DICHLOROETHENE	<5.0
1,1-DICHLOROETHANE	<5.0
VINYL ACETATE	<50
2-BUTANONE (MEK)	<50
CHLOROFORM	<5.0
CIS-1,2-DICHLOROETHENE	120
BROMOCHLOROMETHANE	<5.0
2,2-DICHLOROPROPANE	<5.0
1,1,1-TRICHLOROETHANE	<5.0
1,2-DICHLOROETHANE	<5.0
1,1-DICHLOROPROPENE	<5.0
CARBON TETRACHLORIDE	<5.0
BENZENE	<5.0
DIBROMOMETHANE	<5.0
1,2-DICHLOROPROPANE	<5.0
TRICHLOROETHENE	58
BROMODICHLOROMETHANE	<5.0
CIS-1,3-DICHLOROPROPENE	<15
4-METHYL-2-PENTANONE (MIBK)	<50
TRANS-1,3-DICHLOROPROPENE	<15
1,1,2-TRICHLOROETHANE	<5.0
TOLUENE	270
1,2-DIBROMOETHANE (EDB)	<5.0
1,3-DICHLOROPROPANE	<5.0
CHLORODIBROMOMETHANE	<10
2-HEXANONE	<50
TETRACHLOROETHENE	310
1,1,1,2-TETRACHLOROETHANE	<5.0

MAS I.D. # 002065-2

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE SAMPLED	: 02/25/00
PROJECT #	: 2335-24	DATE RECEIVED	: 02/25/00
PROJECT NAME	: CHEM CENTRAL	DATE EXTRACTED	: N/A
CLIENT I.D.	: EFFLUENT-1	DATE ANALYZED	: 03/07/00
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8260B	DILUTION FACTOR	: 5

COMPOUNDS	RESULTS
CHLOROBENZENE	<5.0
ETHYLBENZENE	26
BROMOFORM	<15
STYRENE	<5.0
TOTAL XYLENES	160
1,1,2,2-TETRACHLOROETHANE	<5.0
1,2,3-TRICHLOROPROPANE	<5.0
ISOPROPYLBENZENE	<5.0
BROMOBENZENE	<5.0
N-PROPYLBENZENE	<5.0
2-CHLOROTOLUENE	<5.0
4-CHLOROTOLUENE	<5.0
1,3,5-TRIMETHYLBENZENE	<5.0
TERT-BUTYLBENZENE	<5.0
1,2,4-TRIMETHYLBENZENE	9.1
SEC-BUTYLBENZENE	<5.0
1,3-DICHLOROBENZENE	<10
1,4-DICHLOROBENZENE	<10
P-ISOPROPYLTOLUENE	<10
1,2-DICHLOROBENZENE	<10
N-BUTYLBENZENE	<5.0
1,2-DIBROMO-3-CHLOROPROPANE	<15
1,2,4-TRICHLOROBENZENE	<25
NAPHTHALENE	<25
HEXACHLOROBUTADIENE	<15
1,2,3-TRICHLOROBENZENE	<25

SURROGATE PERCENT RECOVERY

LIMITS

DIBROMOFLUOROMETHANE	100	50 - 150
1,2-DICHLOROETHANE-D4	101	81 - 130
TOLUENE-D8	99	80 - 120
BROMOFLUOROBENZENE	100	75 - 118

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE SAMPLED	: 02/25/00
PROJECT #	: 2335-24	DATE RECEIVED	: 02/25/00
PROJECT NAME	: CHEM CENTRAL	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 03/07/00
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8260B	DILUTION FACTOR	: 1

COMPOUNDS RESULTS

DICHLORODIFLUOROMETHANE	<1.0
CHLOROMETHANE	<5.0
VINYL CHLORIDE	<1.0
BROMOMETHANE	<1.0
CHLOROETHANE	<1.0
TRICHLOROFLUOROMETHANE	<1.0
ACETONE	<10
1,1-DICHLOROETHENE	<1.0
METHYLENE CHLORIDE	<5.0
CARBON DISULFIDE	<10
TRANS-1,2-DICHLOROETHENE	<1.0
1,1-DICHLOROETHANE	<1.0
VINYL ACETATE	<10
2-BUTANONE (MEK)	<10
CHLOROFORM	<1.0
CIS-1,2-DICHLOROETHENE	<1.0
BROMOCHLOROMETHANE	<1.0
2,2-DICHLOROPROPANE	<1.0
1,1,1-TRICHLOROETHANE	<1.0
1,2-DICHLOROETHANE	<1.0
1,1-DICHLOROPROPENE	<1.0
CARBON TETRACHLORIDE	<1.0
BENZENE	<1.0
DIBROMOMETHANE	<1.0
1,2-DICHLOROPROPANE	<1.0
TRICHLOROETHENE	<1.0
BROMODICHLOROMETHANE	<1.0
CIS-1,3-DICHLOROPROPENE	<3.0
4-METHYL-2-PENTANONE (MIBK)	<10
TRANS-1,3-DICHLOROPROPENE	<3.0
1,1,2-TRICHLOROETHANE	<1.0
TOLUENE	<1.0
1,2-DIBROMOETHANE (EDB)	<1.0
1,3-DICHLOROPROPANE	<1.0
CHLORODIBROMOMETHANE	<2.0
2-HEXANONE	<10
TETRACHLOROETHENE	<1.0
1,1,1,2-TETRACHLOROETHANE	<1.0

MAS I.D. # 002065-10

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE SAMPLED	: 02/25/00
PROJECT #	: 2335-24	DATE RECEIVED	: 02/25/00
PROJECT NAME	: CHEM CENTRAL	DATE EXTRACTED	: N/A
CLIENT I.D.	: TRIP BLANK	DATE ANALYZED	: 03/07/00
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8260B	DILUTION FACTOR	: 1

COMPOUNDS	RESULTS
-----------	---------

CHLOROBENZENE	<1.0
ETHYLBENZENE	<1.0
BROMOFORM	<3.0
STYRENE	<1.0
TOTAL XYLENES	<1.0
1,1,2,2-TETRACHLOROETHANE	<1.0
1,2,3-TRICHLOROPROPANE	<1.0
ISOPROPYLBENZENE	<1.0
BROMOBENZENE	<1.0
N-PROPYLBENZENE	<1.0
2-CHLOROTOLUENE	<1.0
4-CHLOROTOLUENE	<1.0
1,3,5-TRIMETHYLBENZENE	<1.0
TERT-BUTYLBENZENE	<1.0
1,2,4-TRIMETHYLBENZENE	<1.0
SEC-BUTYLBENZENE	<1.0
1,3-DICHLOROBENZENE	<2.0
1,4-DICHLOROBENZENE	<2.0
P-ISOPROPYLTOLUENE	<2.0
1,2-DICHLOROBENZENE	<2.0
N-BUTYLBENZENE	<1.0
1,2-DIBROMO-3-CHLOROPROPANE	<3.0
1,2,4-TRICHLOROBENZENE	<5.0
NAPHTHALENE	<5.0
HEXACHLOROBUTADIENE	<3.0
1,2,3-TRICHLOROBENZENE	<5.0

SURROGATE PERCENT RECOVERY

LIMITS

DIBROMOFLUOROMETHANE	103	50 - 150
1,2-DICHLOROETHANE-D4	101	81 - 130
TOLUENE-D8	98	80 - 120
BROMOFLUOROBENZENE	102	75 - 118

MAS I.D. # 002065

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL
SAMPLE MATRIX : WATER
EPA METHOD : 8260B

SAMPLE I.D. # : BLANK
DATE EXTRACTED : N/A
DATE ANALYZED : 03/07/00
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1.00	50.0	49.4	99	N/A	N/A	N/A
BENZENE	<1.00	50.0	48.0	96	N/A	N/A	N/A
TRICHLOROETHENE	<1.00	50.0	49.5	99	N/A	N/A	N/A
TOLUENE	<1.00	50.0	48.7	97	N/A	N/A	N/A
CHLOROBENZENE	<1.00	50.0	54.0	108	N/A	N/A	N/A

CONTROL LIMITS

	% REC.	RPD
1,1-DICHLOROETHENE	67 - 131	20
BENZENE	80 - 120	20
TRICHLOROETHENE	80 - 120	20
TOLUENE	80 - 125	20
CHLOROBENZENE	80 - 120	20

SURROGATE RECOVERIES

SPIKE

DUP. SPIKE

LIMITS

DIBROMOFLUOROMETHANE	104	N/A	50 - 150
1,2-DICHLOROETHANE-D4	100	N/A	81 - 130
TOLUENE-D8	97	N/A	80 - 120
BROMOFLUOROBENZENE	92	N/A	75 - 118

MAS I.D. # 002065

MultiChem

ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS QUALITY CONTROL DATA

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL
SAMPLE MATRIX : WATER
EPA METHOD : 8260B

SAMPLE I.D. # : BLANK
DATE EXTRACTED : N/A
DATE ANALYZED : 03/08/00
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1.00	50.0	56.6	113	N/A	N/A	N/A
BENZENE	<1.00	50.0	50.3	101	N/A	N/A	N/A
TRICHLOROETHENE	<1.00	50.0	52.0	104	N/A	N/A	N/A
TOLUENE	<1.00	50.0	52.5	105	N/A	N/A	N/A
CHLOROBENZENE	<1.00	50.0	50.8	102	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
1,1-DICHLOROETHENE	67 - 131	20
BENZENE	80 - 120	20
TRICHLOROETHENE	80 - 120	20
TOLUENE	80 - 125	20
CHLOROBENZENE	80 - 120	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DIBROMOFLUOROMETHANE	114	N/A	50 - 150
1,2-DICHLOROETHANE-D4	120	N/A	81 - 130
TOLUENE-D8	105	N/A	80 - 120
BROMOFLUOROBENZENE	100	N/A	75 - 118

MAS I.D. # 002065

MultiChem

ANALYTICAL SERVICES

VOLATILE ORGANICS ANALYSIS QUALITY CONTROL DATA

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL
SAMPLE MATRIX : WATER
EPA METHOD : 8260B

SAMPLE I.D. # : 002065-8
DATE EXTRACTED : N/A
DATE ANALYZED : 03/07/00
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
1,1-DICHLOROETHENE	<1.00	50.0	49.0	98	47.9	96	2
BENZENE	<1.00	50.0	49.4	99	49.3	99	0
TRICHLOROETHENE	<1.00	50.0	51.6	103	51.1	102	1
TOLUENE	<1.00	50.0	46.9	94	46.4	93	1
CHLOROBENZENE	<1.00	50.0	53.5	107	52.4	105	2

CONTROL LIMITS	% REC.	RPD
1,1-DICHLOROETHENE	72 - 137	20
BENZENE	80 - 133	20
TRICHLOROETHENE	79 - 120	20
TOLUENE	72 - 137	20
CHLOROBENZENE	80 - 120	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DIBROMOFLUOROMETHANE	103	103	50 - 150
1,2-DICHLOROETHANE-D4	101	102	81 - 130
TOLUENE-D8	95	96	80 - 120
BROMOFLUOROBENZENE	98	100	75 - 118

MAS I.D. # 002065

CASE NARRATIVE

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL

CASE NARRATIVE: TOTAL PETROLEUM HYDROCARBONS ANALYSIS

There were no anomalies associated with the preparation and/or analysis of the samples in this accession.

MultiChem
ANALYTICAL SERVICES

MAS I.D. # 002065

TOTAL PETROLEUM HYDROCARBONS
DATA SUMMARY

CLIENT	: HART CROWSER, INC.	DATE EXTRACTED	: 03/02/00
PROJECT #	: 2335-24	DATE ANALYZED	: 03/02/00
PROJECT NAME	: CHEM CENTRAL	UNITS	: mg/L
EPA METHOD	: 418.1	SAMPLE MATRIX	: WATER

MAS I.D. #	CLIENT I.D.	TOTAL PETROLEUM HYDROCARBONS	TOTAL PETROLEUM HYDROCARBONS *
002065-3	ES-1A	1.3	1.4
002065-4	ES-1B	1.5	1.7
002065-5	ES-1C	2.1	2.1
BLANK	-	<1.0	<1.0

* Reanalyzed after second aliquot of silica gel added.

MAS I.D. # 002065

TOTAL PETROLEUM HYDROCARBONS
QUALITY CONTROL DATA

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL
EPA METHOD : 418.1
SAMPLE MATRIX : WATER

SAMPLE I.D. # : BLANK
DATE EXTRACTED : 03/02/00
DATE ANALYZED : 03/02/00
UNITS : mg/L

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
PETROLEUM HYDROCARBONS	<1.00	N/A	N/A	10	8.35	84	N/A	N/A	N/A

CONTROL LIMITS	%REC.	RPD
TOTAL PETROLEUM HYDROCARBONS	80-120	20

MAS I.D. # 002065

TOTAL PETROLEUM HYDROCARBONS
QUALITY CONTROL DATA

CLIENT : HART CROWSER, INC.
PROJECT # : 2335-24
PROJECT NAME : CHEM CENTRAL
EPA METHOD : 418.1
SAMPLE MATRIX : WATER

SAMPLE I.D. # : 002065-3
DATE EXTRACTED : 03/02/00
DATE ANALYZED : 03/02/00
UNITS : mg/L

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
PETROLEUM HYDROCARBONS	1.40	N/A	N/A	10	7.33	59	7.99	66	9

CONTROL LIMITS

%REC.

RPD

TOTAL PETROLEUM HYDROCARBONS

75-125

20

COMPANY: HC
ADDRESS:

PHONE: () - FAX () -
PROJ. MGR / CONTACT: D. Helfner / Jae Lee
PROJECT NUMBER: 2335-24
PROJECT NAME: Client Central
DISPOSAL: ☐ MAS ☐ HOLD ☐ RETURN

FUELS										ORGANIC COMPOUNDS										METALS			TCLP			OTHER			Total # of Containers						
TPH-HCO	BETX / TPH-G	BETX / AK101	BETX (by 8021)	TPH-G	TPH-D	TPHD-extended	8015 modified	418.1	413.2	AK-CRO	AK101	AK-DR0	AK102 / 103	8240 X 8260 GCMS Volatiles	8270 GCMS Semivolatiles	8081 Pesticides / PCBs	PCB only (by 8081) STD / LL	8021 Halogenated VOCs	8021 Aromatic VOCs	8310 HPLC PAHs	8041 Phenols	8151 OC Herbicides	Metals indicate below*	Total / Dissolved Lead	RCRA Metals (8)	PP Metals (13)	TAL Metals (23)	TCLP 8240 (ZHE)		TCLP 8270 Semivolatiles	TCLP 8081 Pesticides	TCLP 8151 Herbicides	TCLP Metals		
																																			2
																																			2
																																			3
																																			1
																																			1
																																			2
																																			2
																																			2
																																			2
																																			2
																																			2

SAMPLE RECEIPT			TAT:		RELINQUISHED BY:		RELINQUISHED BY:		RELINQUISHED BY:	
TOTAL # OF CONTAINERS	☒ YES ☐ NO	☐ 24 HOURS	SIGNATURE:		SIGNATURE:		SIGNATURE:		SIGNATURE:	
COC SEALS PRESENT?	☐ YES ☒ NO	☐ 48 HOURS	PRINT NAME:		PRINT NAME:		PRINT NAME:		PRINT NAME:	
COC SEALS INTACT?	☐ YES ☒ NO	☐ 72 HOURS								
RECEIVED COLD?	☐ YES ☒ NO	☐ 7 DAYS								
RECEIVED INTACT?	☒ YES ☐ NO	☐ SP	DATE: <u>2/25/00</u>	TIME: <u>1300</u>	DATE:	TIME:	DATE:	TIME:	DATE:	TIME:
RECEIVED VIA:		☐ STANDARD	COMPANY: <u>HC</u>		COMPANY:		COMPANY:		COMPANY:	
SPECIAL INSTRUCTIONS/COMMENTS:			RECEIVED BY:		RECEIVED BY:		RECEIVED BY:		RECEIVED BY:	
			SIGNATURE:		SIGNATURE:		SIGNATURE:		SIGNATURE:	
			PRINT NAME:		PRINT NAME:		PRINT NAME:		PRINT NAME:	
			DATE: <u>2/25/00</u>	TIME: <u>1300</u>	DATE:	TIME:	DATE:	TIME:	DATE:	TIME:
			COMPANY: <u>MISA</u>		COMPANY:		COMPANY:		COMPANY:	
			MAS USE ONLY:		SUBCONTRACT LAB:				PO #:	

MultiChem Analytical Services

SAMPLE LOG-IN CHECKLIST

NON-CONFORMANCES?
 (if Y see other side)

DATE: 2/25/10
 TIME: 1300
 INITIALS: CR

ACCESSION NO. 002068
 CLIENT: Hart Crocker
 PROJECT: Chem Central

Shipping:

Type:

☒ Cooler
☐ Box
☐ Other

COC Seals:

☐ Ship. Cont.
☐ On Bottles
☒ None

Intact?

Y N
 Y N

Packing Material:

☐ Styrofoam
☒ Bubble Bags
☐ Foam Vial Packs
☐ Other

Refrigerant:

☒ Gel Ice Pack
☐ Loose Ice
☐ Other
☐ None

Frozen?

☒ Y N
☐ Y N
☐ Y N

Received Via:

☒ Hand Delivery
☐ Federal Express
☐ Airborne
☐ Other: _____
☐ Courier
☐ UPS
☐ Taxi
☐ Goldstreak

Sample Information:

Samp.

10

Bottle

19

Type

☒ Soil
☒ Water
☐ Product
☐ Other

Soil VOAs

Water VOAs

0 headspace ☒ Y N N
 0 headspace ☒ Y N N
 Preserved? ☒ Y N
 Trip blanks? ☒ Y N

Condition of Samples:

Containers:

Intact? (Bottle/Lid)

Correct Type?

☒ Y N
☒ Y N

CA

Waters Preserved?
 (if needed)

☒ Y N N

ID's

Match C.O.C.

☒ Y N N

Temperature: 15 C

CA NO. _____

(See corrective action on reverse side for explanation if temperature is outside of the MAS recommended range.)

LAB USE ONLY

☐ NO NOTICE

☐ SENDOUTS NEEDED BY

☐ COC/AT DOES NOT MATCH NOTICE

☐ NEED TEST(S) VERIFIED BY CLIENT

COMMENTS: