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Doc # 11111

PROJECT NO. 6201406
DRILLING AND SAMPLING RESULTS
FOR
1308 GRAND AVENUE
IN DES MOINES, IOWA.

PREPARED FOR:

Mr. Call Dickenson
Greater Des Moines Partnership
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PREPARED BY:

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DRILLING AND SAMPLING

1308 GRAND AVENUE

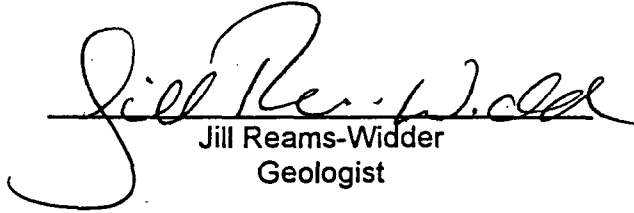
DES MOINES, IOWA

Prepared for:

Mr. Call Dickenson
Greater Des Moines Partnership
700 Locust Street, Suite 100
Des Moines, Iowa 50309

Seneca Project No. 6201406

by
Seneca Environmental Services


Jill Reams-Widder
Geologist

September 6, 2001

TABLE OF CONTENTS

INTRODUCTION	1
MODULE I. Site History	1
MODULE II. Drilling and Sampling.....	2
MODULE III. Results of Drilling.....	3
MODULE IV. Data Review and Recommendations.....	3

APPENDICES

- A. Site Map of Boring Location
- B. Lithologic Log(s)
- C. Laboratory Analysis of Samples / Chain-of-Custody Form

DRILLING AND SAMPLING

1308 GRAND AVENUE

DES MOINES, IOWA

Introduction:

This report summarizes the data, observations, and conclusions of the drilling and sampling conducted at 1308 Grand Avenue in Des Moines, Iowa. The drilling and sampling involved the drilling of one temporary monitoring well for the acquisition and analysis of soil and groundwater samples. This report was prepared for Mr. Call Dickerson, Greater Des Moines Partnership, Des Moines, Iowa.

Module I. Site History:

The Greater Des Moines Partnership worked with Mr. David McGuffin, City of Des Moines Engineer in developing a drilling and sampling strategy at the subject property. Note that a Phase I ESA was not conducted at the subject property. It was determined, based on drilling location availability, that one temporary monitoring well would be installed in the City of Des Moines right of way in the front of 1308 Grand Avenue. Due to numerous underground and above ground utilities, drilling in the alley behind the subject property was not an option.

Module II. Drilling and Sampling:

Based on directive from the City of Des Moines Engineering Department a drilling and sampling strategy was developed. One temporary monitoring well was installed in the sidewalk in front of the subject property. Please refer to the site map, which is included as Appendix A for borehole location. The borehole was drilled on August 15, 2001, with a

truck-mounted drill rig equipped with a continuous flight auger system that allowed the collection of continuous core samples in five-foot increments. The temporary monitoring well, BH1, was drilled to a depth of 45 feet below grade, where it was determined that the groundwater had been sufficiently penetrated. The sediments encountered were silty sands and sands. Soils were moist beginning at about 37 feet below grade. Detailed lithologic log documenting the sediments are included in Appendix B.

A photoionization detector (PID) was used for field screening of soil samples at one-foot intervals. Soil samples were collected and placed in labeled zip-lock baggies. Following sufficient time for vapor equilibration, the PID was used to detect volatile organic compounds inside the soil sample bags. One shallow soil sample was collected from two feet below grade and analyzed for metals. A second soil sample was collected from the highest PID reading (108.3 ppm), which was at 43 feet below grade. Refer to the lithologic log in Appendix B for PID readings. The temporary monitoring well was developed and allowed time for stabilization and then a groundwater sample was collected. The groundwater sample was analyzed for volatile organic compounds, dissolved metals and petroleum compounds.

Soil and groundwater samples were stored on ice until they were received by a certified laboratory for analysis, along with the chain-of-custody forms for the samples.

Module III. Results of Drilling:

Soil and groundwater samples collected from temporary monitoring well BH1 were found to contain amounts of contaminants above the laboratory minimum detection limits for analytical methods utilized. The table below details the laboratory findings.

<i>Matrix</i>	<i>Chemical</i>	<i>Results</i>	<i>State of Iowa Limit</i>
Soil	Arsenic	5.2 ppm	1.4 ppm

Soil	Barium	170 ppm	5500 ppm
Soil	Chromium	9.7 ppm	230 ppm
Soil	Lead	11 ppm	400 ppm
Soil	Diesel	40.8 ppm	3800 ppm
Soil	Gasoline	109 ppm	NA
Groundwater	Barium	0.152 ppm	2 ppm
Groundwater	Chromium	0.0031 ppm	0.1 ppm
Groundwater	Chloroform	2.5 ppb	100 ppb
Groundwater	Diesel	2950 ppb	1200 ppb
Groundwater	Gasoline	7,580 ppb	NA

Analytical results of the soil and groundwater samples and the chain-of-custody form are included in Appendix C.

MODULE IV. Data Review and Recommendations:

As a result of drilling and sampling performed at the subject site, we have concluded that the soil sample collected from two feet below grade contained arsenic levels above State of Iowa regulatory limits and the groundwater sample collected contained diesel contamination above State of Iowa regulatory limits. These findings are required to be reported to the Iowa Department of Natural Resources, at the following address, by the property owner;

Mr. Matt Culp
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, Iowa 50309

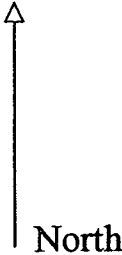
The information contained in this report is based on a limited number of boreholes and a limited analytical suite. The soil and groundwater samples that were collected are assumed to be representative of the small area surrounding the borehole. Failure to discover all hazardous substances or conditions at the time of this report through appropriate techniques does not guarantee that hazardous materials or substances do not exist at the site. We make no warranty, expressed or implied, for this property nor make certification of the suitability of future use of the property based on the results of this assessment, except that our services were performed in accordance with the level of care and skill ordinarily practiced by members of the profession in this area at this time under similar budget and time constraints.

This report has been prepared on behalf of and exclusively for the use of Mr. Call Dickerson, Greater Des Moines Partnership, Des Moines, Iowa. This report and the findings contained herein shall not, in whole or part, be disseminated or conveyed to any other party or be used or relied upon by any other party, in whole or in part, without the consultant's prior written consent.

APPENDIX A
SITE MAP OF BORING LOCATIONS



1308 Grand Avenue
Scale
1" = 100'



APPENDIX B
LITHOLOGIC LOG(S)

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well Number: BH1		Facility Name Des Moines, Iowa		Facility Street Address 1308 Grand Avenue	
Boring Depth (ft) X Diameter (in): 45 X 6.25		Drilling Method: HS			
Certified Well Contractor Name: Jarrod Robinson		Logged by: James Goodrich			
Certification Number: 40617					
Ground Surface Elevation (ASL): unknown		Top of Casing Elevation (ASL): unknown			
Date: 8/15/01	Date: 8/15/01	UST Number NA		LUST Number NA	
Time Start: 9:30 AM	End Time: 3:00 PM				

Depth (FT)	Well Construction Details	Blow Count If Applicable	Sample		Field Screening Results (PID/FID)	Rock Formations, Soil, Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
			No.	Type*		
1			1	HS	0	Concrete, 0 to 0.5'
2			2	Soil*	0	
3			3		0	SC-Sandy Clay, Brown/Grey Mottled,
4			4		0	Malible, Damp, No Odor, firm
5			5		0	Trace sand and gravel
6			6		0	
7			7		0	
8			8		0	
9			9		0	Sand, Brown, med grained, moist
10			10		0	No Odor.
11			11		0	
12			12		0	
13			13		0	
14			14		0	
15			15		0	
16			16		0	
17			17		0	
18			18		0	Sand, Brown med grained, dry
19			19		0	
20			20		0	
21			21		0	
22			22		0	
23			23		0	
24			24		0	
25			25		0	

* SS (split spoon) HS (hollow stem auger)

SF (Solid Flight Auger)

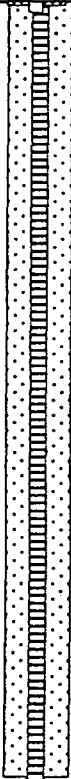
Observations	Date:	8/15/01			
Water Levels (ASL)	Level:	-37.5			
Static Water Level Symbol (v)	Time:				

DNR FORM 542-1392

Revised June 1998

SOIL BORING LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

Boring/Well Number: BH1 cont.		Facility Name Des Moines, Iowa		Facility Street Address 1308 Grand Avenue	
Boring Depth (ft) X Diameter (in): 45 X 6.25		Drilling Method: HS			
Certified Well Contractor Name: Jarrod Robinson		Logged by: James Goodrich			
Certification Number: 40617					
Ground Surface Elevation (ASL): unknown			Top of Casing Elevation (ASL): unknown		
Date: 8/15/01	Date: 8/15/01	UST Number NA		LUST Number NA	
Time Start: 9:30 AM	End Time: 3:00 PM				

Depth (FT)	Well Construction Details	Blow Count If Applicable	Sample		Field Screening Results (PID/FID)	Rock Formations, Soil, Color and Classifications, Observations (moisture, odor, etc.) First column for USCS
			No.	Type*		
1			26	HS	0	Sand cont.
2			27		0	
3			28		0	
4			29		0	
5			30		0	
6			31		0	
7			32		0	
8			33		0	
9			34		0	
10			35		0	
11			36		0	
12			37		0	
13			38		0	
14			39		0	
15			40		0	
16			41		0	
17			42	Soil*	108.3	Total depth 45 feet
18			43		103.1	
19			44		31.9	
20			45		17.1	
21						
22						
23						
24						
25						

* SS (split spoon) HS (hollow stem auger)

SF (Solid Flight Auger)

Observations	Date:	8/15/01				
Water Levels (ASL)	Level:	-37.5				
Static Water Level Symbol (v)	Time:					

DNR FORM 542-1392

Revised June 1998

APPENDIX C

**LABORATORY ANALYSIS
CHAIN OF CUSTODY FORM**

ANALYTICAL REPORT

Jill Reams-Widder
SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313

08/29/2001

Job Number: 01.09679

Sample Number: 634876

Project ID: 1308 Grand Ave. #6201406

Sample ID: TMW-1-2' Project #6201406

Date Taken: 08/15/2001

Date Received: 08/17/2001

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Result</u>		<u>Date</u>	<u>Method</u>	<u>Quantitation</u>
			<u>Flag</u>	<u>Analyst</u>			<u>Limit</u>
Mercury, CVAA	<0.020	mg/kg		rmp	08/21/2001	EPA 245.5	0.020
ICP Metals Prep (Solid)	1.017	g		njp	08/21/2001		
ICP Metals-Solid	Complete	mg/kg		heh	08/22/2001	SW 6010B	
Arsenic, ICP	5.2	mg/kg		heh	08/22/2001	SW 6010B	4.0
Barium, ICP	170	mg/kg		heh	08/22/2001	SW 6010B	0.50
Cadmium, ICP	<1.0	mg/kg		heh	08/22/2001	SW 6010B	1.0
Chromium, ICP	9.7	mg/kg		heh	08/22/2001	SW 6010B	1.0
Lead, ICP	11	mg/kg		heh	08/22/2001	SW 6010B	5.0
Selenium, ICP	<7.5	mg/kg		heh	08/22/2001	SW 6010B	7.5
Silver, ICP	<1.0	mg/kg		heh	08/22/2001	SW 6010B	1.0


R.L. Bindert
Operations Manager

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SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313

08/29/2001

Job Number: 01.09679

Sample Number: 634877

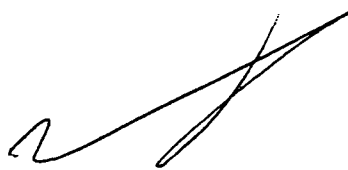
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Sample ID: TMW-1-42' Project #6201406

Date Taken: 08/15/2001

Date Received: 08/17/2001

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Result</u> <u>Flag</u>	<u>Analyst</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u>	<u>Quantitation</u> <u>Limit</u>
Extraction Prep, soil	COMPLETE			eee	08/17/2001	IOWA-OA2	
EXTRACTABLE HYDROCARBONS-SOIL							
Total Extractable Hydrocarbons	150	mg/kg		jcp	08/20/2001	IA-OA2/S-8015	10
Diesel	40.8	mg/kg		jcp	08/20/2001	IA-OA2/S-8015	10
Gasoline	109	mg/kg		jcp	08/20/2001	IA-OA2/S-8015	10
Motor Oil	<10	mg/kg		jcp	08/20/2001	IA-OA2/S-8015	10
VOLATILES - BTEX (NONAQUEOUS)							
Benzene	<0.25	ug/g		mmk	08/20/2001	IA-OA1	0.25
Toluene	<0.5	ug/g		mmk	08/20/2001	IA-OA1	0.5
Ethylbenzene	<0.5	ug/g		mmk	08/20/2001	IA-OA1	0.5
Xylenes, Total	<0.5	ug/g		mmk	08/20/2001	IA-OA1	0.5



R.L. Bindert
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Des Moines, IA 50313

08/29/2001

Job Number: 01.09679

Sample Number: 634878

Project ID: 1308 Grand Ave. #6201406

Sample ID: TMW-1 Project #6201406

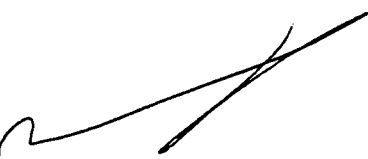
Date Taken: 08/15/2001

Date Received: 08/17/2001

Analyte	Result	Units	Result		Analyst	Date		Method	Quantitation	
			Flag			Analyzed			Limit	
Barium, Dissolved (ICP)	0.152	mg/L			heh	08/20/2001		SW 6010B	0.010	
Arsenic, diss. (GFAA)	<0.0010	mg/L			llw	08/28/2001		SW 7060A	0.0010	
Cadmium, diss. (GFAA)	<0.0005	mg/L			llw	08/21/2001		SW 7131A	0.0005	
Chromium, diss. (GFAA)	0.0031	mg/L			lmc	08/23/2001		SW 7191	0.0020	
Lead, diss. (GFAA)	<0.0040	mg/L			llw	08/27/2001		SW 7421	0.0040	
Mercury, diss. Cold Vapor	<0.0002	mg/L			rmp	08/23/2001		SW 7470A	0.0002	
Selenium, diss. (GFAA)	<0.0050	mg/L	N,MSO		lmc	08/21/2001		SW 7740	0.0050	
Silver, diss. (GFAA)	<0.0010	mg/L			lmc	08/23/2001		SW 7761	0.0010	
VOLATILE COMPOUNDS - 8260										
Acetone	<20	ug/L			dmd	08/23/2001		SW 8260B	20	
Benzene	<0.5	ug/L			dmd	08/23/2001		SW 8260B	0.5	
Bromobenzene	<1.0	ug/L			dmd	08/23/2001		SW 8260B	1.0	
Bromochloromethane	<5.0	ug/L			dmd	08/23/2001		SW 8260B	5.0	
Bromodichloromethane	<1.0	ug/L			dmd	08/23/2001		SW 8260B	1.0	
Bromoform	<5.0	ug/L			dmd	08/23/2001		SW 8260B	5.0	
Bromomethane	<4.0	ug/L			dmd	08/23/2001		SW 8260B	4.0	
2-Butanone (MEK)	<10	ug/L			dmd	08/23/2001		SW 8260B	10	
n-Butylbenzene	<1.0	ug/L			dmd	08/23/2001		SW 8260B	1.0	
sec-Butylbenzene	<1.0	ug/L			dmd	08/23/2001		SW 8260B	1.0	
tert-Butylbenzene	<1.0	ug/L			dmd	08/23/2001		SW 8260B	1.0	
Carbon Tetrachloride	<2.0	ug/L			dmd	08/23/2001		SW 8260B	2.0	
Chlorobenzene	<1.0	ug/L			dmd	08/23/2001		SW 8260B	1.0	
Chlorodibromomethane	<5.0	ug/L			dmd	08/23/2001		SW 8260B	5.0	
Chloroethane	<4.0	ug/L			dmd	08/23/2001		SW 8260B	4.0	
Chloroform	2.5	ug/L			dmd	08/23/2001		SW 8260B	1.0	

MSO - MS and/or MSD are out of control for this analyte.

N - Spike recovery for this analyte is out of control


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08/29/2001

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Sample Number: 634878

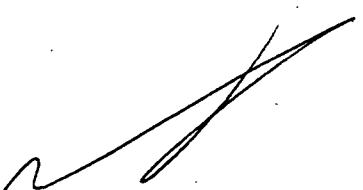
Project ID: 1308 Grand Ave. #6201406

Sample ID: TMW-1 Project #6201406

Date Taken: 08/15/2001

Date Received: 08/17/2001

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Result</u> <u>Flag</u>	<u>Analyst</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u>	<u>Quantitation</u> <u>Limit</u>
Chloromethane	<4.0	ug/L		dmd	08/23/2001	SW 8260B	4.0
2-Chlorotoluene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
4-Chlorotoluene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,2-Dibromo-3-Chloropropane	<10	ug/L		dmd	08/23/2001	SW 8260B	10
1,2-Dibromoethane (EDB)	<10	ug/L		dmd	08/23/2001	SW 8260B	10
Dibromomethane	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,2-Dichlorobenzene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,3-Dichlorobenzene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,4-Dichlorobenzene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
Dichlorodifluoromethane	<3.0	ug/L		dmd	08/23/2001	SW 8260B	3.0
1,1-Dichloroethane	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,2-Dichloroethane	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,1-Dichloroethene	<2.0	ug/L		dmd	08/23/2001	SW 8260B	2.0
cis-1,2-Dichloroethene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
trans-1,2-Dichloroethene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,2-Dichloropropane	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
1,3-Dichloropropane	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
2,2-Dichloropropane	<4.0	ug/L		dmd	08/23/2001	SW 8260B	4.0
1,1-Dichloropropene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
cis-1,3-Dichloropropene	<5.0	ug/L		dmd	08/23/2001	SW 8260B	5.0
trans-1,3-Dichloropropene	<5.0	ug/L		dmd	08/23/2001	SW 8260B	5.0
Ethylbenzene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
Hexachlorobutadiene	<5.0	ug/L		dmd	08/23/2001	SW 8260B	5.0
Isopropylbenzene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0
p-Isopropyltoluene	<1.0	ug/L		dmd	08/23/2001	SW 8260B	1.0


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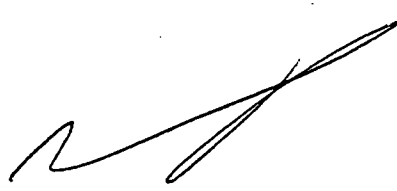
Project ID: 1308 Grand Ave. #6201406

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Date Received: 08/17/2001

Analyte	Result	Units	Result		Analyst	Date Analyzed	Method	Quantitation	
			Flag					Limit	
Methylene Chloride	<5.0	ug/L			dmd	08/23/2001	SW 8260B	5.0	
MTBE	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Naphthalene	<5.0	ug/L			dmd	08/23/2001	SW 8260B	5.0	
n-Propylbenzene	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Styrene	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
1,1,1,2-Tetrachloroethane	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
1,1,2,2-Tetrachloroethane	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Tetrachloroethene	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Toluene	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
1,2,3-Trichlorobenzene	<5.0	ug/L			dmd	08/23/2001	SW 8260B	5.0	
1,2,4-Trichlorobenzene	<5.0	ug/L			dmd	08/23/2001	SW 8260B	5.0	
1,1,1-Trichloroethane	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
1,1,2-Trichloroethane	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Trichloroethylene	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Trichlorofluoromethane	<4.0	ug/L			dmd	08/23/2001	SW 8260B	4.0	
1,2,3-Trichloropropane	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
1,2,4-Trimethylbenzene	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
1,3,5-Trimethylbenzene	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Vinyl Chloride	<1.0	ug/L			dmd	08/23/2001	SW 8260B	1.0	
Xylenes, Total	<3.0	ug/L			dmd	08/23/2001	SW 8260B	3.0	
Extraction Prep	COMPLETE				jlc	08/22/2001	IOWA-OA2		
EXTRACTABLE HYDROCARBONS-WATER									
Total Extractable Hydrocarbons	10,500	ug/L			jcp	08/25/2001	IA-OA2/S-8015	380	
Diesel	2,950	ug/L			jcp	08/25/2001	IA-OA2/S-8015	380	
Gasoline	7,580	ug/L			jcp	08/25/2001	IA-OA2/S-8015	380	


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Job Number: 01.09679

Sample Number: 634878

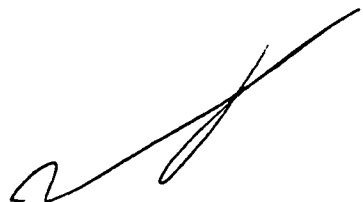
Project ID: 1308 Grand Ave. #6201406

Sample ID: TMW-1 Project #6201406

Date Taken: 08/15/2001

Date Received: 08/17/2001

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Result</u> <u>Flag</u>	<u>Analyst</u>	<u>Date</u> <u>Analyzed</u>	<u>Method</u>	<u>Quantitation</u> <u>Limit</u>
Motor Oil	<380	ug/L		jcp	08/25/2001	IA-OA2/S-8015	380
VOA Preservation pH	>2	units		dmd	08/20/2001	SW 9041A	



R.L. Bindert
Operations Manager

QUALITY CONTROL REPORT

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Enclosed is the Quality Control data for the following samples submitted to TestAmerica, Inc. - Cedar Falls for analysis:

Sample Number	Sample Description	Date Taken	Date Received
634876	TMW-1-2' Project #6201406	08/15/2001	08/17/2001
634877	TMW-1-42' Project #6201406	08/15/2001	08/17/2001
634878	TMW-1 Project #6201406	08/15/2001	08/17/2001

This Quality Control report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Iowa Laboratory Certification number - 7

QUALITY CONTROL REPORT

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Result	Units	Date Analyzed	Prep Batch Number	Run Batch Number	Analysis Method	Quantitation Limit
634876 TMW-1-2' Project #6201406 08/15/2001						
Mercury, CVAA	<0.020	mg/kg	08/21/2001	1745	EPA 245.5	0.020
ICP Metals Prep (Solid)	1.017	g	08/21/2001	1057		
ICP Metals-Solid	Complete	mg/kg	08/22/2001	1297	SW 6010B	
Arsenic, ICP	5.2	mg/kg	08/22/2001	1057	1562 SW 6010B	4.0
Barium, ICP	170	mg/kg	08/22/2001	1057	1556 SW 6010B	0.50
Cadmium, ICP	<1.0	mg/kg	08/22/2001	1057	1559 SW 6010B	1.0
Chromium, ICP	9.7	mg/kg	08/22/2001	1057	1560 SW 6010B	1.0
Lead, ICP	11	mg/kg	08/22/2001	1057	1569 SW 6010B	5.0
Selenium, ICP	<7.5	mg/kg	08/22/2001	1057	1552 SW 6010B	7.5
Silver, ICP	<1.0	mg/kg	08/22/2001	1057	1560 SW 6010B	1.0
634877 TMW-1-42' Project #6201406 08/15/2001						
Extraction Prep, soil	COMPLETE	08/17/2001	2487		IOWA-OA2	
EXTRACTABLE HYDROCARBONS-SOIL						
Total Extractable Hydrocarbons	150	mg/kg	08/20/2001	2487	4080 IA-OA2/S-8015	10
Diesel	40.8	mg/kg	08/20/2001	2487	4080 IA-OA2/S-8015	10
Gasoline	109	mg/kg	08/20/2001	2487	4080 IA-OA2/S-8015	10
Motor Oil	<10	mg/kg	08/20/2001	2487	4080 IA-OA2/S-8015	10
N-Octacosane (Surr.)	64	%	08/20/2001	2487	4080 IA-OA2/S-8015	1.0
VOLATILES - BTEX (NONAQUEOUS)						
Benzene	<0.25	ug/g	08/20/2001	4037	IA-OA1	0.25
Toluene	<0.5	ug/g	08/20/2001	4037	IA-OA1	0.5
Ethylbenzene	<0.5	ug/g	08/20/2001	4037	IA-OA1	0.5
Xylenes, Total	<0.5	ug/g	08/20/2001	4037	IA-OA1	0.5
4-Bromofluorobenzene (surr.)	104	%	08/20/2001	4037	IA-OA1	1

QUALITY CONTROL REPORT

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SERVICES, INC.
4140 N.E. 14th St.
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Jill Reams-Widder

08/29/2001

Job Number: 01.09679

			Date	Prep Batch	Run Batch	Analysis Method	Quantitation Limit
Result	Units	Analyzed	Number	Number			
634878	TMW-1	Project #6201406	08/15/2001				
Barium, Dissolved (ICP)	0.152	mg/L	08/20/2001		945	SW 6010B	0.010
Arsenic, diss. (GFAA)	<0.0010	mg/L	08/28/2001		718	SW 7060A	0.0010
Cadmium, diss. (GFAA)	<0.0005	mg/L	08/21/2001		590	SW 7131A	0.0005
Chromium, diss. (GFAA)	0.0031	mg/L	08/23/2001		571	SW 7191	0.0020
Lead, diss. (GFAA)	<0.0040	mg/L	08/27/2001		843	SW 7421	0.0040
Mercury, diss. Cold Vapor	<0.0002	mg/L	08/23/2001		2038	SW 7470A	0.00020
Selenium, diss. (GFAA)	<0.0050	mg/L	08/21/2001		407	SW 7740	0.0050
Silver, diss. (GFAA)	<0.0010	mg/L	08/23/2001		120	SW 7761	0.0010
VOLATILE COMPOUNDS - 8260							
Acetone	<20	ug/L	08/23/2001		2032	SW 8260B	20
Benzene	<0.5	ug/L	08/23/2001		2032	SW 8260B	0.5
Bromobenzene	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
Bromochloromethane	<5.0	ug/L	08/23/2001		2032	SW 8260B	5.0
Bromodichloromethane	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
Bromoform	<5.0	ug/L	08/23/2001		2032	SW 8260B	5.0
Bromomethane	<4.0	ug/L	08/23/2001		2032	SW 8260B	4.0
2-Butanone (MEK)	<10	ug/L	08/23/2001		2032	SW 8260B	10
n-Butylbenzene	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
sec-Butylbenzene	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
tert-Butylbenzene	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
Carbon Tetrachloride	<2.0	ug/L	08/23/2001		2032	SW 8260B	2.0
Chlorobenzene	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
Chlorodibromomethane	<5.0	ug/L	08/23/2001		2032	SW 8260B	5.0
Chloroethane	<4.0	ug/L	08/23/2001		2032	SW 8260B	4.0
Chloroform	2.5	ug/L	08/23/2001		2032	SW 8260B	1.0
Chloromethane	<4.0	ug/L	08/23/2001		2032	SW 8260B	4.0
2-Chlorotoluene	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
4-Chlorotoluene	<1.0	ug/L	08/23/2001		2032	SW 8260B	1.0
1,2-Dibromo-3-Chloropropane	<10	ug/L	08/23/2001		2032	SW 8260B	10

QUALITY CONTROL REPORT

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08/29/2001

Job Number: 01.09679

Result	Units	Date Analyzed	Prep Batch Number	Run Batch Number	Analysis Method	Quantitation Limit
634878	TMW-1	Project #6201406				
		08/15/2001				
1,2-Dibromoethane (EDB)	<10	ug/L	08/23/2001	2032	SW 8260B	10
Dibromomethane	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,2-Dichlorobenzene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,3-Dichlorobenzene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,4-Dichlorobenzene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
Dichlorodifluoromethane	<3.0	ug/L	08/23/2001	2032	SW 8260B	3.0
1,1-Dichloroethane	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,2-Dichloroethane	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,1-Dichloroethene	<2.0	ug/L	08/23/2001	2032	SW 8260B	2.0
cis-1,2-Dichloroethene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
trans-1,2-Dichloroethene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,2-Dichloropropane	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,3-Dichloropropane	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
2,2-Dichloropropane	<4.0	ug/L	08/23/2001	2032	SW 8260B	4.0
1,1-Dichloropropene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
cis-1,3-Dichloropropene	<5.0	ug/L	08/23/2001	2032	SW 8260B	5.0
trans-1,3-Dichloropropene	<5.0	ug/L	08/23/2001	2032	SW 8260B	5.0
Ethylbenzene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
Hexachlorobutadiene	<5.0	ug/L	08/23/2001	2032	SW 8260B	5.0
Isopropylbenzene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
p-Isopropyltoluene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
Methylene Chloride	<5.0	ug/L	08/23/2001	2032	SW 8260B	5.0
MTBE	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
Naphthalene	<5.0	ug/L	08/23/2001	2032	SW 8260B	5.0
n-Propylbenzene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
Styrene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,1,1,2-Tetrachloroethane	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
1,1,2,2-Tetrachloroethane	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0
Tetrachloroethene	<1.0	ug/L	08/23/2001	2032	SW 8260B	1.0

QUALITY CONTROL REPORT

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Jill Reams-Widder

08/29/2001

Job Number: 01.09679

			Date	Prep Batch	Run Batch		Quantitation
Result	Units	Analyzed	Number	Number	Analysis Method	Limit	
634878	TMW-1	Project #6201406	08/15/2001				
Toluene	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
1,2,3-Trichlorobenzene	<5.0	ug/L	08/23/2001		2032 SW 8260B		5.0
1,2,4-Trichlorobenzene	<5.0	ug/L	08/23/2001		2032 SW 8260B		5.0
1,1,1-Trichloroethane	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
1,1,2-Trichloroethane	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
Trichloroethylene	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
Trichlorofluoromethane	<4.0	ug/L	08/23/2001		2032 SW 8260B		4.0
1,2,3-Trichloropropane	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
1,2,4-Trimethylbenzene	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
1,3,5-Trimethylbenzene	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
Vinyl Chloride	<1.0	ug/L	08/23/2001		2032 SW 8260B		1.0
Xylenes, Total	<3.0	ug/L	08/23/2001		2032 SW 8260B		3.0
Dibromofluoromethane(surr)	110.0	%	08/23/2001		2032 SW 8260B		1
Toluene-d8(surr)	106.0	%	08/23/2001		2032 SW 8260B		1
4-Bromofluorobenzene(surr)	99.3	%	08/23/2001		2032 SW 8260B		1
Extraction Prep	COMPLETE		08/22/2001	1740	IOWA-OA2		
EXTRACTABLE HYDROCARBONS-WATER							
Total Extractable Hydrocarbons	10,500	ug/L	08/25/2001	1740	2987 IA-OA2/S-8015		380
Diesel	2,950	ug/L	08/25/2001	1740	2987 IA-OA2/S-8015		380
Gasoline	7,580	ug/L	08/25/2001	1740	2987 IA-OA2/S-8015		380
Motor Oil	<380	ug/L	08/25/2001	1740	2987 IA-OA2/S-8015		380
N-Octacosane (Surr.)	97	%	08/25/2001	1740	2987 IA-OA2/S-8015		100
VOA Preservation pH	>2	units	08/20/2001		264 SW 9041A		

QUALITY CONTROL REPORT CONTINUING CALIBRATION VERIFICATION

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep	Run	CCV	Concentration Found	Percent Recovery
	Batch Number	Batch Number	True Concentration		
Barium, Dissolved (ICP)		945	5.00	4.79	95.8
Arsenic, diss. (GFAA)		718	0.0250	0.0273	109.2
Arsenic, diss. (GFAA)		718	0.0250	0.0264	105.6
Arsenic, diss. (GFAA)		718	0.0250	0.0273	109.2
Cadmium, diss. (GFAA)		590	0.0010	0.0010	100.0
Chromium, diss. (GFAA)		571	0.0050	0.0049	98.0
Chromium, diss. (GFAA)		571	0.0050	0.0049	98.0
Lead, diss. (GFAA)		843	0.0250	0.0249	99.6
Lead, diss. (GFAA)		843	0.0250	0.0247	98.8
Lead, diss. (GFAA)		843	0.0250	0.0245	98.0
Mercury, diss. Cold Vapor		2038	1.00	0.98	98.0
Mercury, diss. Cold Vapor		2038	1.00	1.02	102.0
Selenium, diss. (GFAA)		407	0.0250	0.0230	92.0
Selenium, diss. (GFAA)		407	0.0250	0.0239	95.6
Silver, diss. (GFAA)		120	0.0025	0.0024	96.0
Silver, diss. (GFAA)		120	0.0025	0.0024	96.0
Mercury, CVAA		1745	1.00	1.02	102.0
Mercury, CVAA		1745	1.00	1.03	103.0
Mercury, CVAA		1745	1.00	1.05	105.0
Mercury, CVAA		1745	1.00	1.04	104.0
ICP Metals-Solid		1297	1.0	1.0	100.0
Arsenic, ICP		1562	5.00	4.99	99.8
Arsenic, ICP		1562	5.00	5.00	100.0
Barium, ICP		1556	5.0	4.98	99.6
Barium, ICP		1556	5.0	4.99	99.8
Cadmium, ICP		1559	5.0	4.96	99.2
Cadmium, ICP		1559	5.0	5.00	100.0
Chromium, ICP		1560	5.0	5.05	101.0
Chromium, ICP		1560	5.0	5.01	100.2
Lead, ICP		1569	5.0	5.06	101.2
Lead, ICP		1569	5.0	5.10	102.0
Selenium, ICP		1552	5.0	5.07	101.4

CCV - Continuing Calibration Verification

QUALITY CONTROL REPORT CONTINUING CALIBRATION VERIFICATION

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	CCV True Concentration	Concentration Found	Percent Recovery
Selenium, ICP		1552	5.0	5.02	100.4
Silver, ICP		1560	1.0	1.01	101.0
Silver, ICP		1560	1.0	1.00	100.0
VOLATILE COMPOUNDS - 8260					
Benzene		2032	50	47.0	94.0
Bromoform		2032	50.0	53.5	107.0
Chlorobenzene		2032	50	46.8	93.6
1,1-Dichloroethane		2032	50.0	44.0	88.0
1,1-Dichloroethene		2032	50	41.0	82.0
1,2-Dichloropropane		2032	50.0	53.2	106.4
Ethylbenzene		2032	50	46.3	92.6
MTBE		2032	50.0	42.8	85.6
1,1,2,2-Tetrachloroethane		2032	50.0	59.9	119.8
Toluene		2032	50	44.0	88.0
Trichloroethylene		2032	50	50.2	100.4
1,2,4-Trimethylbenzene		2032	50	49.0	98.0
1,3,5-Trimethylbenzene		2032	50	48.6	97.2
Vinyl Chloride		2032	50.0	42.2	84.4
Xylenes, Total		2032	150	135	90.0
Dibromofluoromethane (surr)		2032	100	111.0	111.0
Toluene-d8 (surr)		2032	100	98.3	98.3
4-Bromofluorobenzene (surr)		2032	100	99.5	99.5
EXTRACTABLE HYDROCARBONS-WATER					
Diesel		2987	2,500	2,529	101.2
Gasoline		2987	2,500	2,785	111.4
Motor Oil		2987	2,500	2,500	100.0
EXTRACTABLE HYDROCARBONS-SOIL					
Diesel		4080	5,000	5,106	102.1
Gasoline		4080	5,000	5,475	109.5
Motor Oil		4080	5,000	5,007	100.1
VOLATILES - BTEX (NONAQUEOUS)					
Benzene		4037	50.0	51.2	102.4

CCV - Continuing Calibration Verification

QUALITY CONTROL REPORT CONTINUING CALIBRATION VERIFICATION

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	CCV True Concentration	Concentration Found	Percent Recovery
Toluene		4037	50.0	47.3	94.6
Ethylbenzene		4037	50.0	47.7	95.4
Xylenes, Total		4037	150	142	94.7
4-Bromofluorobenzene (surr.)		4037	100.	106	106.0

CCV - Continuing Calibration Verification

QUALITY CONTROL REPORT BLANKS

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep	Run	Blank	Units
	Batch	Batch		
	Number	Number	Analysis	
Barium, Dissolved (ICP)		945	<0.010	mg/L
Arsenic, diss. (GFAA)		718	<0.0010	mg/L
Cadmium, diss. (GFAA)		590	<0.0005	mg/L
Chromium, diss. (GFAA)		571	<0.0020	mg/L
Lead, diss. (GFAA)		843	<0.0040	mg/L
Mercury, diss. Cold Vapor		2038	<0.00020	mg/L
Selenium, diss. (GFAA)		407	<0.0050	mg/L
Silver, diss. (GFAA)		120	<0.0010	mg/L
Mercury, CVAA		1745	<0.020	mg/kg
ICP Metals-Solid		1297	Complete	mg/L
Arsenic, ICP	1057	1562	<0.080	mg/L
Barium, ICP	1057	1556	<0.010	mg/L
Cadmium, ICP	1057	1559	<0.020	mg/L
Chromium, ICP	1057	1560	<0.020	mg/L
Lead, ICP	1057	1569	<0.10	mg/L
Selenium, ICP	1057	1552	<0.15	mg/L
Silver, ICP	1057	1560	<0.020	mg/L
VOLATILE COMPOUNDS - 8260				
Acetone		2032	<20	ug/L
Benzene		2032	<0.5	ug/L
Bromobenzene		2032	<1.0	ug/L
Bromochloromethane		2032	<5.0	ug/L
Bromodichloromethane		2032	<1.0	ug/L

Advisory Control Limits for Blanks:

Metals/Wet Chemistry/ Conventional/GC - all compounds should be less than the Reporting Limit.

GC/MS - Semi-Volatiles - all compounds should be less than the Reporting Limit except for phthalates which should be less than 5 times the reporting limit.

Volatiles - Toluene, methylene chloride, acetone and chloroform should be less than 5 times the Reporting Limit. All other volatile compounds should be less than the Reporting Limit.

QUALITY CONTROL REPORT BLANKS

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
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Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	Blank Analysis	Units
Bromoform		2032	<5.0	ug/L
Bromomethane		2032	<4.0	ug/L
2-Butanone (MEK)		2032	<10	ug/L
n-Butylbenzene		2032	<1.0	ug/L
sec-Butylbenzene		2032	<1.0	ug/L
tert-Butylbenzene		2032	<1.0	ug/L
Carbon Tetrachloride		2032	<2.0	ug/L
Chlorobenzene		2032	<1.0	ug/L
Chlorodibromomethane		2032	<5.0	ug/L
Chloroethane		2032	<4.0	ug/L
Chloroform		2032	<1.0	ug/L
Chloromethane		2032	<4.0	ug/L
2-Chlorotoluene		2032	<1.0	ug/L
4-Chlorotoluene		2032	<1.0	ug/L
1,2-Dibromo-3-Chloropropane		2032	<10	ug/L
1,2-Dibromoethane (EDB)		2032	<10	ug/L
Dibromomethane		2032	<1.0	ug/L
1,2-Dichlorobenzene		2032	<1.0	ug/L
1,3-Dichlorobenzene		2032	<1.0	ug/L
1,4-Dichlorobenzene		2032	<1.0	ug/L
Dichlorodifluoromethane		2032	<3.0	ug/L
1,1-Dichloroethane		2032	<1.0	ug/L
1,2-Dichloroethane		2032	<1.0	ug/L

Advisory Control Limits for Blanks:

Metals/Wet Chemistry/ Conventional/GC - all compounds should be less than the Reporting Limit.

GC/MS - Semi-Volatiles - all compounds should be less than the Reporting Limit except for phthalates which should be less than 5 times the reporting limit.

Volatiles - Toluene, methylene chloride, acetone and chloroform should be less than 5 times the Reporting Limit. All other volatile compounds should be less than the Reporting Limit.

QUALITY CONTROL REPORT BLANKS

SENECA ENVIRONMENTAL
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08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	Blank Analysis	Units
1,1-Dichloroethene		2032	<2.0	ug/L
cis-1,2-Dichloroethene		2032	<1.0	ug/L
trans-1,2-Dichloroethene		2032	<1.0	ug/L
1,2-Dichloropropane		2032	<1.0	ug/L
1,3-Dichloropropane		2032	<1.0	ug/L
2,2-Dichloropropane		2032	<4.0	ug/L
1,1-Dichloropropene		2032	<1.0	ug/L
cis-1,3-Dichloropropene		2032	<5.0	ug/L
trans-1,3-Dichloropropene		2032	<5.0	ug/L
Ethylbenzene		2032	<1.0	ug/L
Hexachlorobutadiene		2032	<5.0	ug/L
Isopropylbenzene		2032	<1.0	ug/L
p-Isopropyltoluene		2032	<1.0	ug/L
Methylene Chloride		2032	<5.0	ug/L
MTBE		2032	<1.0	ug/L
Naphthalene		2032	<5.0	ug/L
n-Propylbenzene		2032	<1.0	ug/L
Styrene		2032	<1.0	ug/L
1,1,1,2-Tetrachloroethane		2032	<1.0	ug/L
1,1,2,2-Tetrachloroethane		2032	<1.0	ug/L
Tetrachloroethene		2032	<1.0	ug/L
Toluene		2032	<1.0	ug/L
1,2,3-Trichlorobenzene		2032	<5.0	ug/L

Advisory Control Limits for Blanks:

Metals/Wet Chemistry/ Conventional/GC - all compounds should be less than the Reporting Limit.

GC/MS - Semi-Volatiles - all compounds should be less than the Reporting Limit except for phthalates which should be less than 5 times the reporting limit.

Volatiles - Toluene, methylene chloride, acetone and chloroform should be less than 5 times the Reporting Limit. All other volatile compounds should be less than the Reporting Limit.

QUALITY CONTROL REPORT BLANKS

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	Blank Analysis	Units
1,2,4-Trichlorobenzene		2032	<5.0	ug/L
1,1,1-Trichloroethane		2032	<1.0	ug/L
1,1,2-Trichloroethane		2032	<1.0	ug/L
Trichloroethylene		2032	<1.0	ug/L
Trichlorofluoromethane		2032	<4.0	ug/L
1,2,3-Trichloropropane		2032	<1.0	ug/L
1,2,4-Trimethylbenzene		2032	<1.0	ug/L
1,3,5-Trimethylbenzene		2032	<1.0	ug/L
Vinyl Chloride		2032	<1.0	ug/L
Xylenes, Total		2032	<3.0	ug/L
EXTRACTABLE HYDROCARBONS-WATER				
Total Extractable Hydrocarbons	1740	2983	<380	ug/L
Diesel	1740	2983	<380	ug/L
Gasoline	1740	2983	<380	ug/L
Motor Oil	1740	2983	<380	ug/L
EXTRACTABLE HYDROCARBONS-WATER				
Total Extractable Hydrocarbons	1740	2987	<380	ug/L
Diesel	1740	2987	<380	ug/L
Gasoline	1740	2987	<380	ug/L
Motor Oil	1740	2987	<380	ug/L
EXTRACTABLE HYDROCARBONS-SOIL				
Total Extractable Hydrocarbons	2487	4080	<10	mg/kg
Diesel	2487	4080	<10	mg/kg

Advisory Control Limits for Blanks:

Metals/Wet Chemistry/ Conventionals/GC - all compounds should be less than the Reporting Limit.

GC/MS - Semi-Volatiles - all compounds should be less than the Reporting Limit except for phthalates which should be less than 5 times the reporting limit.

Volatiles - Toluene, methylene chloride, acetone and chloroform should be less than 5 times the Reporting Limit. All other volatile compounds should be less than the Reporting Limit.

QUALITY CONTROL REPORT BLANKS

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	Blank Analysis	Units
Gasoline	2487	4080	<10	mg/kg
Motor Oil	2487	4080	<10	mg/kg
VOLATILES - BTEX (NONAQUEOUS)				
Benzene		4037	<0.25	ug/g
Toluene		4037	<0.5	ug/g
Ethylbenzene		4037	<0.5	ug/g
Xylenes, Total		4037	<0.5	ug/g

Advisory Control Limits for Blanks:

Metals/Wet Chemistry/ Conventional/GC - all compounds should be less than the Reporting Limit.

GC/MS - Semi-Volatiles - all compounds should be less than the Reporting Limit except for phthalates which should be less than 5 times the reporting limit.

Volatiles - Toluene, methylene chloride, acetone and chloroform should be less than 5 times the Reporting Limit. All other volatile compounds should be less than the Reporting Limit.

QUALITY CONTROL REPORT SPIKES

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	Spiked Sample Result	Sample Result	Spike Added	Units	Percent Recovery
Barium, Dissolved (ICP)		945	2.66	0.152	2.50	mg/L	100.3
Arsenic, diss. (GFAA)		718	0.0234	<0.0010	0.0250	mg/L	93.6
Cadmium, diss. (GFAA)		590	0.00120	<0.0005	0.00125	mg/L	96.0
Chromium, diss. (GFAA)		571	0.0093	0.0031	0.00625	mg/L	99.2
Lead, diss. (GFAA)		843	0.0227	<0.0040	0.0250	mg/L	90.8
Selenium, diss. (GFAA)		407	0.0168	<0.0050	0.0250	mg/L	67.2
Silver, diss. (GFAA)		120	0.00238	<0.0010	0.0025	mg/L	95.2

NOTE: Spikes and Duplicates may not be samples from this job.

The values reported above are for post digestion/distillation spikes.

Advisory Control Limits for Spikes - Spike recovery should be 75 - 125%.

QUALITY CONTROL REPORT MATRIX SPIKE/MATRIX SPIKE DUPLICATE

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep	Run	Matrix	Sample	Spike	Units	Percent	MSD		Percent	MS/MSD
	Batch	Batch	Spike					MSD	Spike		
	Number	Number	Result	Result	Amount		Recovery	Result	Amount	Recovery	RPD
Arsenic, diss. (GFAA)		718	0.0259	0.0024	0.0250	mg/L	94.0	0.0268	0.0250	97.6	3.4
Lead, diss. (GFAA)		843	0.0180	<0.0040	0.0250	mg/L	72.0	0.0177	0.0250	70.8	1.7
Mercury, diss. Cold Vapor		2038	0.00179	<0.0002	0.0016	mg/L	107.2	0.0017	0.0016	106.0	1.1
Mercury, diss. Cold Vapor		2038	0.00177	<0.0002	0.0016	mg/L	106.0	0.0017	0.0016	106.6	0.6
Mercury, CVAA		1745	0.111	<0.020	0.0978	mg/kg	113.5	0.101	0.0931	108.5	9.4
ICP Metals-Solid		1297		Comple		mg/kg					
Arsenic, ICP	1057	1562	195	<4.0	196	mg/kg	99.5	197	197	100.0	1.0
Barium, ICP	1057	1556	187	80	97.9	mg/kg	109.3	192	98.5	113.7	2.6
Cadmium, ICP	1057	1559	91.7	<1.0	97.9	mg/kg	93.7	92.8	98.5	94.2	1.2
Chromium, ICP	1057	1560	105	8.3	97.9	mg/kg	98.8	106	98.5	99.2	0.9
Lead, ICP	1057	1569	193	7.3	196	mg/kg	94.7	197	197	96.3	2.1
Selenium, ICP	1057	1552	384	<7.5	392	mg/kg	98.0	386	394	98.0	0.5
Silver, ICP	1057	1560	48.5	<1.0	49.2	mg/kg	98.6				
EXTRACTABLE HYDROCARBONS-SOIL											
Gasoline	2487	4080	53.8	<10	66.2	mg/kg	81.3	45.7	66.4	68.8	16.3

NOTE: Matrix Spike Samples may not be samples from this job.

Advisory Control Limits for MS/MSDs

Inorganic Parameters and GC Volatiles

The spike recovery should be 75 - 125% if the spike added value was greater than or equal to one fourth of the sample result value. If not, the control limits are not established. The RPD for the MS/MSD pair should be less than 20.

RPD = Relative Percent Difference

QUALITY CONTROL REPORT MATRIX SPIKE/MATRIX SPIKE DUPLICATE

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep	Run	Matrix	Sample	Spike	Percent	MSD	MSD	Percent	MS/MSD
	Batch	Batch	Spike							
	Number	Number	Result	Result	Amount	Recovery	Result	Amount	Recovery	RPD
VOLATILES - BTEX (NONAQUEOUS)										
Benzene		4037	2.81	<0.25	2.35	ug/g	119.6	2.82	2.31	122.1
										0.4
Toluene		4037	2.60	<0.5	2.35	ug/g	110.6	2.60	2.31	112.6
										0.0
Ethylbenzene		4037	2.65	<0.5	2.35	ug/g	112.8	2.70	2.31	116.9
										1.9
Xylenes, Total		4037	7.83	<0.5	7.04	ug/g	111.2	7.95	6.92	114.9
										1.5

NOTE: Matrix Spike Samples may not be samples from this job.

Advisory Control Limits for MS/MSDs

Inorganic Parameters and GC Volatiles

The spike recovery should be 75 - 125% if the spike added value was greater than or equal to one fourth of the sample result value. If not, the control limits are not established. The RPD for the MS/MSD pair should be less than 20.

RPD = Relative Percent Difference

QUALITY CONTROL REPORT DUPLICATES

SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313
Jill Reams-Widder

08/29/2001

Job Number: 01.09679

Analyte	Prep Batch Number	Run Batch Number	Original Analysis	Duplicate Analysis	Units	RPD
Barium, Dissolved (ICP)		945	0.152	0.153	mg/L	0.7
Arsenic, diss. (GFAA)		718	<0.0010	<0.0010	mg/L	
Cadmium, diss. (GFAA)		590	<0.0005	<0.0005	mg/L	
Chromium, diss. (GFAA)		571	0.0031	0.0034	mg/L	9.2
Lead, diss. (GFAA)		843	<0.0040	<0.0040	mg/L	
Selenium, diss. (GFAA)		407	<0.0050	<0.0050	mg/L	
Silver, diss. (GFAA)		120	<0.0010	<0.0010	mg/L	

NOTE: Spikes and Duplicates may not be samples from this job.

RPD - Relative Percent Difference

Advisory Control Limits for Duplicates - RPD should be less than 20.

QUALITY CONTROL REPORT LABORATORY CONTROL STANDARD

08/29/2001

Jill Reams-Widder
SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313

Job No: 01.09679

Analyte	Prep Batch Number	Run Batch Number	LCS Amount	Units	LCS Result	LCSD Result	LCS Percent Recovery	LCSD Percent Recovery	Relative Control Limits	Relative Percent Difference
Mercury, diss. Cold Vapor		2038	0.00167	mg/L	0.00166		99.4		89 - 112	
Mercury, CVAA		1745	0.0968	mg/kg	0.0923		95.4		85 - 115	
ICP Metals-Solid		1297	1.0	mg/L	1.0		100.0		80 - 120	
Arsenic, ICP	1057	1562	2.00	mg/L	2.03		101.5		80 - 120	
Barium, ICP	1057	1556	1.0	mg/L	0.9425		94.3		80 - 120	
Cadmium, ICP	1057	1559	1.0	mg/L	0.9740		97.4		80 - 120	
Chromium, ICP	1057	1560	1.0	mg/L	0.9651		96.5		80 - 120	
Lead, ICP	1057	1569	2.0	mg/L	1.97		98.5		80 - 120	
Selenium, ICP	1057	1552	4.0	mg/L	3.93		98.3		80 - 120	
Silver, ICP	1057	1560	1.0	mg/L	1.00		100.0		80 - 120	
VOLATILE COMPOUNDS - 8260										
Benzene		2032	20	ug/L	18.5	16.2	92.5	81.0	37 - 151	13.3
Chlorobenzene		2032	20	ug/L	18.1	18.5	90.5	92.5	37 - 160	2.2
1,1-Dichloroethene		2032	20	ug/L	16.4	16.3	82.0	81.5	1 - 234	0.6
Ethylbenzene		2032	20	ug/L	18.1	17.9	90.5	89.5	37 - 162	1.1
MTBE		2032	20	ug/L	14.8	16.5	74.0	82.5	70 - 130	10.9
Toluene		2032	20	ug/L	17.2	17.1	86.0	85.5	47 - 150	0.6
1,2,3-Trichlorobenzene		2032	20.0	ug/L	16.4	16.8	82.0	84.0	50 - 150	2.4
1,2,4-Trichlorobenzene		2032	20	ug/L	16.6	15.1	83.0	75.5	50 - 150	9.5
Trichloroethylene		2032	20	ug/L	19.8	19.2	99.0	96.0	71 - 157	3.1
1,2,4-Trimethylbenzene		2032	20	ug/L	16.8	16.5	84.0	82.5	70 - 130	1.8
1,3,5-Trimethylbenzene		2032	20	ug/L	18.6	16.8	93.0	84.0	70 - 130	10.2
Xylenes, Total		2032	60	ug/L	52.2	51.1	87.0	85.2	70 - 130	2.1
Dibromofluoromethane(surr)		2032	100	%	110.0	114	110.0	114.0	87 - 115	3.6
Toluene-d8(surr)		2032	100	%	98.5	106	98.5	106.0	81 - 113	7.3
4-Bromofluorobenzene(surr)		2032	100	%	95.8	103	95.8	103.0	80 - 109	7.2
EXTRACTABLE HYDROCARBONS-W										
Diesel	1740	2983	2,000	ug/L	NA	2,000		100.0	48 - 110	
Gasoline	1740	2983	2,000	ug/L	1,430	1,580	71.5	79.0		10.0
Motor Oil	1740	2983	2,000	ug/L	NA	2,000		100.0		
N-Octacosane (Surr.)	1740	2983	100	%	85	83	85.0	83.0	41 - 151	2.4
EXTRACTABLE HYDROCARBONS-S										
Diesel	2487	4080	1.	mg/kg	NA				59 - 119	
Gasoline	2487	4080	66.7	mg/kg	59.0		88.5			
Motor Oil	2487	4080	1.0	mg/kg	NA					
N-Octacosane (Surr.)	2487	4080	100	%	86		86.0		25 - 183	

QUALITY CONTROL REPORT LABORATORY CONTROL STANDARD

Page 25 of 26

Jill Reams-Widder
SENECA ENVIRONMENTAL
SERVICES, INC.
4140 N.E. 14th St.
Des Moines, IA 50313

08/29/2001

Job No: 01.09679

Analyte	Prep	Run					LCS	LCSD			Relative
	Batch	Batch	LCS		LCS	LCSD	Percent	Percent	Control	Percent	
	Number	Number	Amount	Units	Result	Result	Recovery	Recovery	Limits	Difference	
VOLATILES - BTEX (NONAQUEO)											
Benzene		4037	2.42	ug/g	2.66		109.9			49 - 160	
Toluene		4037	2.42	ug/g	2.48		102.5			54 - 156	
Ethylbenzene		4037	2.42	ug/g	2.40		99.2			53 - 158	
Xylenes, Total		4037	7.25	ug/g	7.41		102.2			54 - 158	
4-Bromofluorobenzene (surr		4037	100.	%	105		105.0			61 - 132	

TestAmerica Job Number: 01.09679

ATTACHMENTS

Following are the sample receipt log and the chain of custody applicable to this analytical report.

For questions regarding this report, please contact the individual who signed the analytical report.

Company: Seneca Environmental Services

Your PO #:

Send Report To: Till Beams Widdel

Invoice To:

Address: 4140 NE 14th ST.

TA Quote #:

City/State/Zip Code: Des Moines, Iowa 50313

Project Name: 1308 Grand Ave.

Telephone Number: 515-262-3900

Fax: 515-262-2469

Project Number: 6201406

Sampled by: (Print Name) James Goodrich

Project Manager: Jill Rose Widdow

(Signature)

Proj. Mgr. Telephone: 515-261-7718

[illegible]

NOTE: All turn around times are calculated from the time of receipt at TestAmerica.

NOTICE: Pre-Arrangements must be made **AT LEAST 48 Hours in ADVANCE** to receive results with RUSH turn around time commitments; *additional charges* may be assessed.

NOTE: There may be a charge assessed for TestAmerica disposing of sample remainders.

NOTES:

NOTES: No Mtb !!! Non-Filtered

Relinquished by:

G. Bolender

Date _____

8/16/01

Time

4pm

Received by:

Date _____

Time

Relinquished by:

Date _____

Time

Shipped Via:

Received for Test America by:

Wilene Jackson

Date _____

9/17/01

Time

8/5

Comments:

Temperature Upon Receipt: _____

Laboratory Comments:

Shipped Via: