

A.G. Wassenaar

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Inc.

March 14, 2013

Great Western Oil and Gas Company
2005 Howard Smith Avenue East
Windsor, Colorado 80550

Attention: Mr. Tim Musgrave

Subject: Flessner 1-A, 9, 14 Tank Battery
Pit Soil Sampling
Washington County, Colorado
Project Number E13236.EC

Dear Mr. Musgrave:

As requested, A. G. Wassenaar, Inc. (AGW) collected a soil sample from the base of a pit at the Flessner 1-A, 9, 14 Tank Battery Site operated by Great Western Oil and Gas Company (GWOGCO) in Washington County, Colorado. This letter summarizes the project activities and sample analytical results.

The subject site is located in a relatively flat agricultural area in the SE1/4 of the SW1/4, Sec19, T1S, R56W. Figure 1 in Attachment A illustrates the site location and topography.

Equipment at the tank battery includes two 500 barrel aboveground storage tanks (ASTs) containing crude/petroleum condensate, and a separator shed with two adjacent ASTs labeled as containing production water (300 barrel and 180 barrel). A combustor is located west of the separator equipment. The former production water pit is at the northeast portion of the tank battery site. Except for the combustor, the above features are surrounded by soil berms. Figure 2 in Attachment A illustrates the site features.

The former production water pit is approximately 45 feet east of the separator area. It is surrounded by a soil berm approximately 3 feet high that measures approximately 25 by 22 feet across. To restrict wildlife access, a steel framework covered with wire mesh overlays the pit.

On March 6, 2013, AGW mobilized to the site to collect the soil sample from the base of the pit. Mr. Joe Pieterick of AGW met with Tim Musgrave and Chris Musgrave of GWOGCO. Prior to collecting the sample, the south portion of the wire mesh was opened to allow access. Approximately 3 inches of snow and ice covered the base of the pit.

Sampling Methods

To conduct the sampling, AGW utilized a clean posthole digger and steel sampling scoop to penetrate the snow and ice and retrieve a soil sample. Prior to use the sampling tools were washed in a solution of potable water and Alconox® detergent followed by a potable water rinse. The sample, designated 236-1, was collected from the lowest portion of the pit. It was collected from the surface to a depth of approximately 8 inches. Following collection, the sample was immediately transferred into five laboratory supplied glass containers, sealed, labeled, and placed into a cooler with ice (a preservative) for laboratory submission. On the day of collection, AGW delivered the sample to Accutest® Mountain States Laboratory, Inc. (Accutest®) in Wheat Ridge, Colorado for analysis. During this project, AGW followed chain-of-custody procedures in general accordance with U. S. Environmental Protection Agency (EPA) guidelines.

Following sample collection, the steel mesh was replaced over the pit.

Soil Analytical Methods and Results

Sample 236-1 was analyzed for the list of compounds and characteristics included in Table 910-1 of the Colorado Oil and Gas Commission (COGCC) 900 Series Rules (excluding boron). The following analyses were completed by Accutest®:

- Total Petroleum Hydrocarbons (TPH) consisting of Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) by EPA Method 8015B
- Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by EPA Method 8260B
- Semivolatile Organic Compounds (SVOCs), including the thirteen listed on COGCC Table 910-1, by EPA Method SW8270C
- Specific (Electrical) Conductivity by EPA Method SM2510B-1994Mod
- Sodium Adsorption Ratio (SAR) by USDA Handbook 60
- pH by EPA Method SW9045D
- Arsenic, Barium, Cadmium, Chromium (total), Copper, Lead, Nickel, Selenium, Silver, and Zinc by EPA Method SW6010C
- Chromium (hexavalent solid) by EPA Method SW846 7196A)
- Total Mercury by EPA Method SW7471B
- Hexavalent Chromium by EPA Method SW7196A

Table 1 summarizes the analytical results for the sample. A copy of the laboratory report is included in Attachment B.

Table 1
Flessner 1-A, 9, 14 Tank Battery
Washington County, Colorado
Water Pit Base Soil Analytical Results
March 6, 2013

Analyte	Sample 236-1*	Typical Colorado Background Values**	Regulatory Standards Table 910-1***
Organic Compounds in Soil			
TPH (C6-C28)	350 mg/kg	--	500 mg/kg
Benzene	ND	--	0.17 mg/kg
Toluene	ND	--	85 mg/kg
Ethylbenzene	ND	--	100 mg/kg
Xylenes (Total)	ND	--	175 mg/kg
Acenaphthene	ND	--	1,000 mg/kg
Anthracene	ND	--	1,000 mg/kg
Benzo(a)anthracene	ND	--	0.22 mg/kg
Benzo(b)fluoranthene	ND	--	0.22 mg/kg
Benzo(k)fluoranthene	ND	--	2.2 mg/kg
Benzo(a)pyrene	ND	--	0.022 mg/kg
Chrysene	ND	--	22 mg/kg
Dibenzo(a,h)anthracene	ND	--	0.022 mg/kg
Fluoranthene	ND	--	1,000 mg/kg
Fluorene	ND	--	1,000 mg/kg
Indeno(1,2,3-cd)pyrene	ND	--	0.22 mg/kg
Napthalene	ND	--	23 mg/kg
Pyrene	ND	--	1,000 mg/kg

Analyte	Sample 236-1*	Typical Colorado Background Values**	Regulatory Standards Table 910-1***
Inorganics in Soils			
Electrical Conductivity (Specific Conductance)	187 umhos/cm	--	< 4,000 umhos/cm (or 2 times background)
Sodium Adsorption Ratio	2.10	--	< 12
pH	9.75 SU	--	6-9 SU
Metals in Soils			
Arsenic	6.9 mg/kg	3 - 14 mg/kg	0.39 mg/kg
Barium	270 mg/kg	150 - 1,500 mg/kg	15,000 mg/kg
Cadmium	ND	<1 - 4 mg/kg	70 mg/kg
Chromium (III)	12.1 mg/kg	1 - 50 mg/kg	120,000 mg/kg
Chromium (VI) (Hexavalent)	ND	--	23 mg/kg
Copper	12.9 mg/kg	3 - 100 mg/kg	3,100 mg/kg
Lead	15.2 mg/kg	15 - 150 mg/kg	400 mg/kg
Mercury	ND	<0.01 - 0.42 mg/kg	23 mg/kg
Nickel	14.8 mg/kg	<5 - 30 mg/kg	1,600 mg/kg
Selenium	ND	--	390 mg/kg
Silver	ND	--	390 mg/kg
Zinc	97.9 mg/kg	16 - 300 mg/kg	23,000 mg/kg

* Results are in the following units: mg/kg: Milligrams per kilogram (parts per million); pH: SU, Standard pH units; umhos/cm: Micromhos per centimeter.

**From Connor and Shacklette 1975, and Shacklette and Boerngen 1984, except for arsenic. Arsenic background values from Colorado Department of Public Health and Environment (CDPHE) document titled "Risk Management Guidance for Evaluating Arsenic Concentrations in Soil" dated June 2011.

***From COGCC Table 910-1, May 30, 2011.

ND: Not detected.

Note: Values in **bold** font are greater than the default COGCC standard. May vary based on background values. Previous guidance from the COGCC indicated that analysis of boron using the hot water soluble method can be omitted due to limited laboratory use of this method.

To evaluate the analytical results, AGW compared the detected values to the standards listed on Table 910-1 of the COGCC regulations.

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Pit Soil Sampling
Project Number E13236.EC
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None of the values in sample 236-1 were greater than COGCC regulatory standards, with the exception of arsenic and pH.

Arsenic was present in the soil sample at a concentration of 6.9 mg/kg (the COGCC standard is 0.39 mg/kg). Based on a document published by the Colorado Department of Public Health and Environment (CDPHE) in June 2011 titled "Risk Management Guidance for Evaluating Arsenic Concentrations in Soil", an arsenic value of 11 mg/kg represents the average for all land uses in Colorado soils. Since there were no petroleum related impacts above regulatory standards from TPH, BTEX, SVOCs, or metals, AGW believes the detected arsenic concentration is due to natural soil characteristics.

The pH value in the soil sample was 9.75 Standard Units (SU), which represents an alkaline soil with a pH slightly greater than the COGCC standard of 9.0 SU. Based on the absence of TPH, BTEX, SVOCs, or metals contamination that would be expected if the soils were impacted by previous site activities, AGW believes the identified pH value is likely related to natural soil characteristics typically found in semi-arid areas.

Conclusions

In preparation for closure of the former production water pit at the Flessner tank battery, AGW collected one soil sample from the lowest portion of the pit on March 6, 2013. The sample was analyzed for parameters listed on Table 910-1 of the COGCC 900 series regulations.

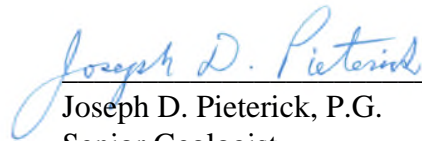
Based on the analytical results, all of the compounds and characteristics were either not detected, or had concentrations less than the respective COGCC regulatory standards, with the exception of arsenic and pH. However, the concentration of arsenic detected is typical for soils in Colorado, based on CDPHE guidance. The pH identified was slightly greater than the COGCC standard. However, pH value may be related to natural alkaline soil characteristics since there are no other indications of petroleum or metals impacts. A copy of this report should be submitted to the COGCC for review and concurrence.

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Thank you for the opportunity to assist you with this project. If you have any questions regarding pit closure or other environmental concerns, please call us at (303) 759-8373.

Sincerely,

A. G. WASSENAAR, INC.



Joseph D. Pieterick, P.G.
Senior Geologist



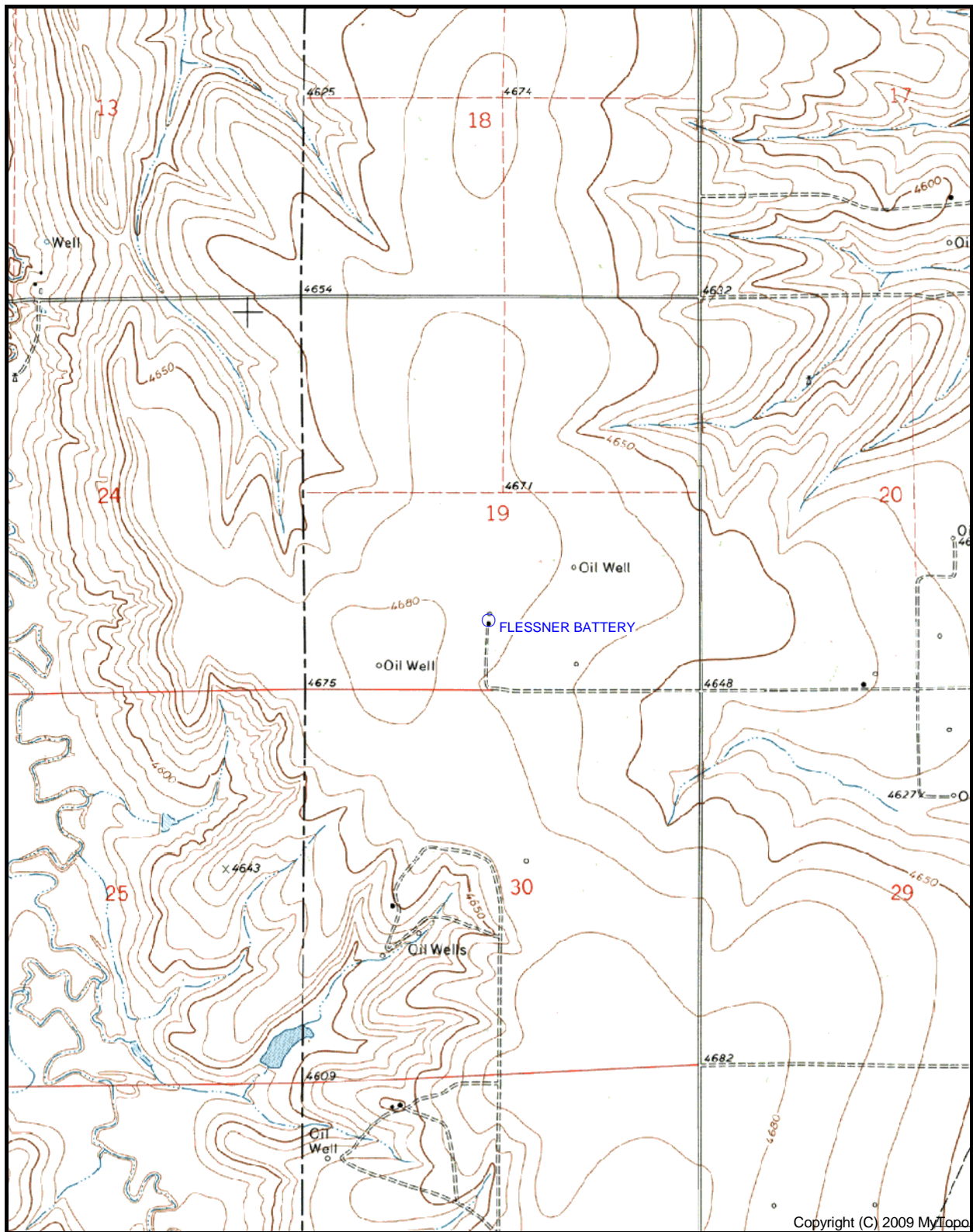
Brian J. Glade, P.E.
Vice President

JDP/BJG/dd

Attachments

ATTACHMENT A

FIGURES



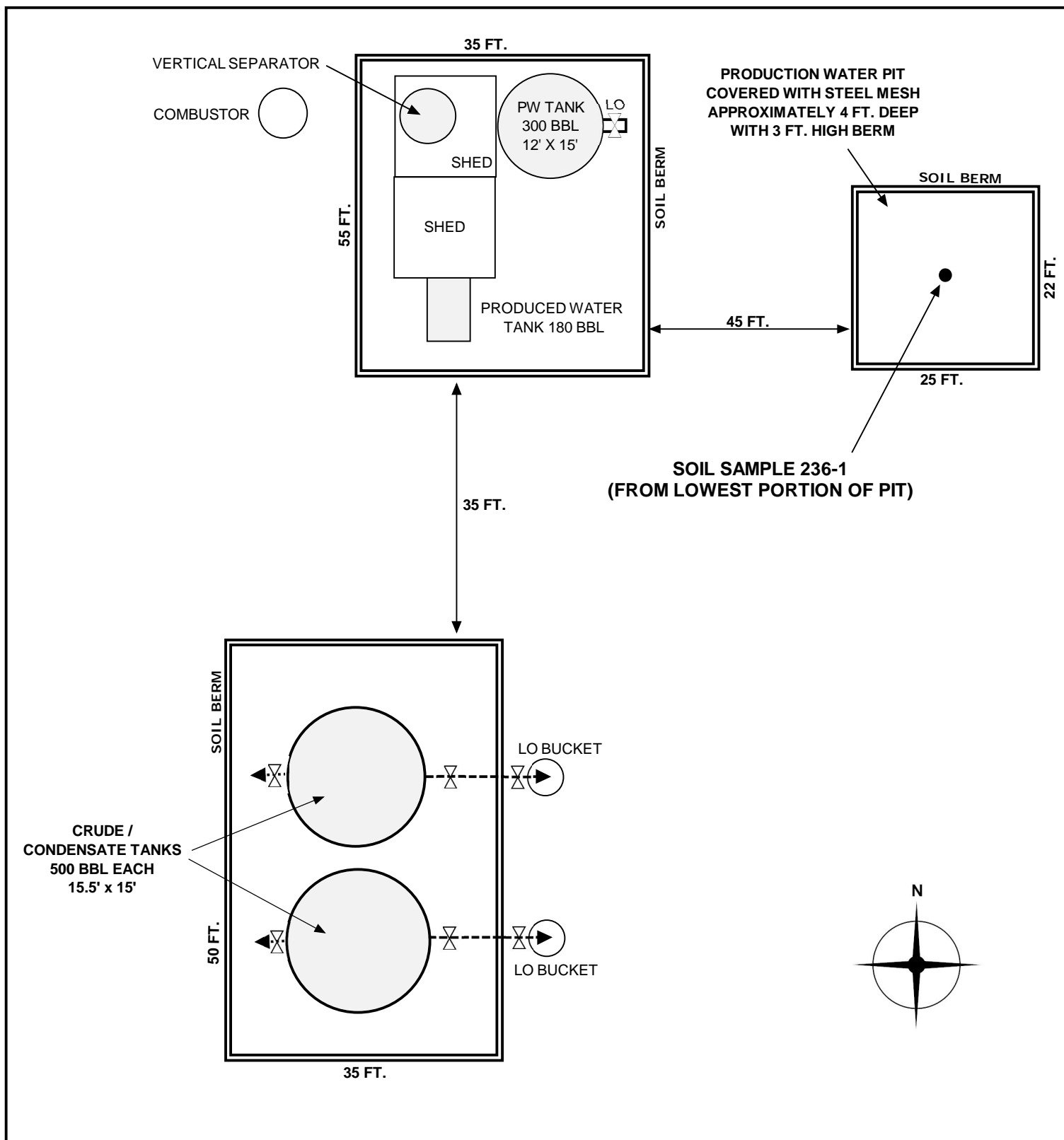
SCALE 1:24000
0 1000 2000 3000 4000 5000
FEET



A.G. Wassenaar | **Inc.**

FLESSNER BATTERY
SESW S19-T1S-R65W
MARCH 6, 2013

PROJECT NO. E13236.EC
SITE LOCATION &
TOPOGRAPHIC MAP
FIGURE 1



NOTE: NOT TO SCALE. LOCATIONS ARE APPROXIMATE.

ATTACHMENT B

LABORATORY REPORT



03/13/13

Technical Report for

A.G. Wassenaar, Inc.

Flessner 1-A, 9, 14

E13236.EC

Accutest Job Number: D44092

Sampling Date: 03/06/13

Report to:

**A.G. Wassenaar, Inc.
2180 S Ivanhoe Street Suite 5
Denver, CO 80222
pieterickj@agwassenaar.com**

ATTN: Joseph Pieterick

Total number of pages in report: 70



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.


Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

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Test results relate only to samples analyzed.

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Sample Summary

A.G. Wassenaar, Inc.

Job No: D44092

Flessner 1-A, 9, 14
Project No: E13236.EC

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D44092-1	03/06/13	10:31	JDP	03/06/13	SO	Soil	236-1
D44092-1A	03/06/13	10:31	JDP	03/06/13	SO	Soil	236-1

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: A.G. Wassenaar, Inc.

Job No D44092

Site: Flessner 1-A, 9, 14

Report Date 3/13/2013 1:17:50 PM

On 03/06/2013, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D44092 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: SO

Batch ID: V5V1577

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44140-1MS, D44140-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: SO

Batch ID: OP7511

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44226-1MS, D44226-1MSD were used as the QC samples indicated.
- The matrix spike (MS) recovery(s) of Anthracene, Benzo(a)anthracene, Chrysene, Fluoranthene, Naphthalene are outside control limits. Outside control limits due to possible matrix interference.
- The RPD(s) for the MS and MSD recoveries of Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-cd)pyrene, Naphthalene, Pyrene are outside control limits for sample OP7511-MSD. Variability of recovery may be due to sample matrix/homogeneity.
- D44092-1: Elevated reporting limits due to matrix interference, dilution required during sample prep.

Volatiles by GC By Method SW846 8015B

Matrix: SO

Batch ID: GGB1078

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44140-1MS, D44140-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix: SO

Batch ID: OP7493

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44076-1MS, D44076-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix: AQ

Batch ID: MP9630

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44226-2AMS, D44226-2AMSD, D44226-2ASDL were used as the QC samples for the metals analysis.

Matrix: SO

Batch ID: MP9605

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44092-1MS, D44092-1MSD, D44092-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Lead, Barium, Chromium, Nickel, Zinc are outside control limits for sample MP9605-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP9605-SD1 for Nickel, Barium, Chromium, Zinc: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix: SO

Batch ID: MP9606

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44092-1MS, D44092-1MSD, D44092-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix: SO

Batch ID: MP9623

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44091-1AMS, D44091-1AMSD were used as the QC samples for the metals analysis.
- The matrix spike duplicate (MSD) recovery(s) of Mercury are outside control limits. High RPD due to possible sample matrix or nonhomogeneity.

Wet Chemistry By Method ASTM D1498-76M

Matrix: SO

Batch ID: GN19271

- Sample(s) D44226-2DUP were used as the QC samples for the Redox Potential Vs H2 analysis.
- The duplicate RPD(s) for Redox Potential Vs H2 are outside control limits for sample GN19271-D1. High RPD due to possible sample nonhomogeneity.

Wet Chemistry By Method SM 2510B-2011 MOD

Matrix: SO

Batch ID: GP9535

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM19 2540B M

Matrix: SO

Batch ID: GN19187

- The data for SM19 2540B M meets quality control requirements.

Wet Chemistry By Method SW846 3060A/7196A

Matrix: SO

Batch ID: GP9538

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D44092-1DUP, D44092-1MS, D44092-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix: SO

Batch ID: R16316

- The data for SW846 3060A/7196A M meets quality control requirements.
- D44092-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method USDA HANDBOOK 60

Matrix: SO

Batch ID: MP9630

- D44092-1A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Summary of Hits

Page 1 of 1

Job Number: D44092
Account: A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14
Collected: 03/06/13

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D44092-1	236-1					
TPH-DRO (C10-C28)		350	62	37	mg/kg	SW846-8015B
Arsenic		6.9	0.15		mg/kg	SW846 6020A
Barium		270	1.7		mg/kg	SW846 6010C
Chromium		12.1	1.7		mg/kg	SW846 6010C
Copper		12.9	1.7		mg/kg	SW846 6010C
Lead		15.2	8.3		mg/kg	SW846 6010C
Nickel		14.8	5.0		mg/kg	SW846 6010C
Zinc		97.9	5.0		mg/kg	SW846 6010C
Specific Conductivity		187	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent ^a		12.1	2.7		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2		178			mv	ASTM D1498-76M
pH		9.75			su	SW846 9045D
D44092-1A	236-1					
Calcium		9.22	2.0		mg/l	SW846 6010C
Magnesium		3.96	1.0		mg/l	SW846 6010C
Sodium		30.3	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b		2.10			ratio	USDA HANDBOOK 60

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

(b) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Method:	SW846 8260B		
Project:	Flessner 1-A, 9, 14		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V25926.D	1	03/07/13	BD	n/a	n/a	V5V1577
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.01 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	110	55	ug/kg	
108-88-3	Toluene	ND	220	110	ug/kg	
100-41-4	Ethylbenzene	ND	220	42	ug/kg	
1330-20-7	Xylene (total)	ND	440	220	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	97%		64-130%
460-00-4	4-Bromofluorobenzene	102%		62-131%
17060-07-0	1,2-Dichloroethane-D4	88%		70-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Method:	SW846 8270C BY SIM SW846 3546		
Project:	Flessner 1-A, 9, 14		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3G13684.D	1	03/12/13	SM	03/11/13	OP7511	E3G663
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.09 g	1.0 ml
Run #2		

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	79	41	ug/kg	
120-12-7	Anthracene	ND	79	41	ug/kg	
56-55-3	Benzo(a)anthracene	ND	79	41	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	79	41	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	79	41	ug/kg	
50-32-8	Benzo(a)pyrene	ND	79	41	ug/kg	
218-01-9	Chrysene	ND	79	41	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	79	41	ug/kg	
206-44-0	Fluoranthene	ND	79	41	ug/kg	
86-73-7	Fluorene	ND	79	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	79	41	ug/kg	
91-20-3	Naphthalene	ND	110	98	ug/kg	
129-00-0	Pyrene	ND	79	41	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	65%		10-159%
321-60-8	2-Fluorobiphenyl	77%		19-131%
1718-51-0	Terphenyl-d14	87%		18-150%

(a) Elevated reporting limits due to matrix interference, dilution required during sample prep.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Method:	SW846 8015B		
Project:	Flessner 1-A, 9, 14		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB19748.D	1	03/08/13	BD	n/a	n/a	GGB1078
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	22	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	88%		60-140%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Method:	SW846-8015B SW846 3546		
Project:	Flessner 1-A, 9, 14		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD22564.D	1	03/07/13	AV	03/07/13	OP7493	GFD1128
Run #2							

Run #	Initial Weight	Final Volume
Run #1	5.2 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	350	62	37	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	75%		35-130%		

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Project:	Flessner 1-A, 9, 14		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.9	0.15	mg/kg	5	03/08/13	03/12/13 JM	SW846 6020A ³	SW846 3050B ⁵
Barium	270	1.7	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.7	1.7	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Chromium	12.1	1.7	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Copper	12.9	1.7	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Lead	15.2	8.3	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.14	0.14	mg/kg	1	03/11/13	03/11/13 JM	SW846 7471B ²	SW846 7471B ⁶
Nickel	14.8	5.0	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 8.3	8.3	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 5.0	5.0	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴
Zinc	97.9	5.0	mg/kg	1	03/08/13	03/08/13 JM	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA3349

(2) Instrument QC Batch: MA3353

(3) Instrument QC Batch: MA3358

(4) Prep QC Batch: MP9605

(5) Prep QC Batch: MP9606

(6) Prep QC Batch: MP9623

RL = Reporting Limit

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Project:	Flessner 1-A, 9, 14		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	187	1.0	umhos/cm	1	03/12/13	JK	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	03/11/13	RW	SW846 3060A/7196A
Chromium, Trivalent ^a	12.1	2.7	mg/kg	1	03/11/13	RW	SW846 3060A/7196A M
Redox Potential Vs H2	178		mv	1	03/12/13 11:30	AK	ASTM D1498-76M
Solids, Percent	62.4		%	1	03/07/13	SWT	SM19 2540B M
pH	9.75		su	1	03/07/13 09:25	AK	SW846 9045D

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1A	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Project:	Flessner 1-A, 9, 14		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	9.22	2.0	mg/l	1	03/12/13	03/12/13 JB	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	3.96	1.0	mg/l	1	03/12/13	03/12/13 JB	SW846 6010C ¹	SW846 3010A/M ²
Sodium	30.3	2.0	mg/l	1	03/12/13	03/12/13 JB	SW846 6010C ¹	SW846 3010A/M ²

- (1) Instrument QC Batch: MA3361
(2) Prep QC Batch: MP9630

RL = Reporting Limit

Report of Analysis

Client Sample ID:	236-1	Date Sampled:	03/06/13
Lab Sample ID:	D44092-1A	Date Received:	03/06/13
Matrix:	SO - Soil	Percent Solids:	62.4
Project:	Flessner 1-A, 9, 14		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	2.10		ratio	1	03/12/13 11:51	JB	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL 303-425-6021 877-737-4521
FAX 303-425-6021

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # D44092

Client / Reporting Information	Project Information	Requested Analysis (see TEST CODE sheet)	Matrix Codes
Company Name A.G. WASSENAAR, INC.	Project Name FLESSNER 1-A, 9, 14	<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> TABLE 910-1 (FOR SILE MINUS BORON) </div>	DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
Street Address 2180 S. IVANHOE ST. #5	Street:		
City State Zip DENVER, CO 80222	City:		
Project Contact Joe Pieterick	Project# E13236.EC		
Phone # 303-217-5710	Client PO# E13236.EC		
Supplier(s) Name(s) JOSEPH D. PIETERICK	Project Manager JOE PIETERICK	City State Zip	Attention: PO#

Accutest Sample #	Field ID / Point of Collection	MESH/ID Vial #	Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles										LAB USE ONLY
								HCl	NO ₂ H	HN ₃	H ₂ SO ₄	HNO ₃	None	DI Water	MEDH	ENKORE	Blank	
	236-1		3-6-13	10:31	JDP	SOIL	5											01

Turnaround Time (Business days) <input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day R/SH <input type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY	Approved By (Accutest PM): / Date: _____ _____ _____	<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Commercial "B" + Narrative <input type="checkbox"/> FULLT1 (Level 3+4) Commercial "A" = Results Only Commercial "B" = Results + QC Summary	<input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input type="checkbox"/> PDF	Comments / Special Instructions
---	---	--	---	---

Emergency & Rush T/A data available VIA Link

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: Joe D. Pieterick	Date Time: 3-6-13/16:37	Received By: JDP	Date Time: 3/6/13	Relinquished By:	Date Time:	Received By:
Relinquished by Sampler:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:
Relinquished by:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:
Relinquished by:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:

Custody Seal: **F10** ☒ Intact ☐ Not intact Preserved where applicable On Ice ☒ Cooler Temp. **4.0**

D44092: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D44092

Client: A.G WASSENAAR

Immediate Client Services Action Required: No

Date / Time Received: 3/6/2013 4:37:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: FLESSNER 1-A, 9, 1Y

Airbill #'s: HD

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

 Accutest Laboratories
 V:(303) 425-6021

 4036 Youngfield Street
 F: (303) 425-6854

 Wheat Ridge, CO
 www.accutest.com

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D44092
Account: AGWCODN A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1577-MB	5V25921.D	1	03/07/13	BD	n/a	n/a	V5V1577

The QC reported here applies to the following samples:

Method: SW846 8260B

D44092-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	25	ug/kg	
100-41-4	Ethylbenzene	ND	100	19	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	96% 64-130%
460-00-4	4-Bromofluorobenzene	106% 62-131%
17060-07-0	1,2-Dichloroethane-D4	92% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D44092

Account: AGWCODN A.G. Wassenaar, Inc.

Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1577-BS	5V25922.D	1	03/07/13	BD	n/a	n/a	V5V1577

The QC reported here applies to the following samples:

Method: SW846 8260B

D44092-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.0	96	70-130
100-41-4	Ethylbenzene	50	50.9	102	70-130
108-88-3	Toluene	50	46.1	92	70-130
1330-20-7	Xylene (total)	150	155	103	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	96%	64-130%
460-00-4	4-Bromofluorobenzene	112%	62-131%
17060-07-0	1,2-Dichloroethane-D4	85%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D44092

Account: AGWCODN A.G. Wassenaar, Inc.

Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D44140-1MS	5V25924.D	1	03/07/13	BD	n/a	n/a	V5V1577
D44140-1MSD	5V25925.D	1	03/07/13	BD	n/a	n/a	V5V1577
D44140-1	5V25923.D	1	03/07/13	BD	n/a	n/a	V5V1577

The QC reported here applies to the following samples:

Method: SW846 8260B

D44092-1

CAS No.	Compound	D44140-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3290	3130	95	3160	96	1	64-139/30
100-41-4	Ethylbenzene	ND		3290	3430	104	3380	103	1	68-136/30
108-88-3	Toluene	ND		3290	3180	97	3100	94	3	60-130/30
1330-20-7	Xylene (total)	ND		9860	10300	105	10200	103	1	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D44140-1	Limits
2037-26-5	Toluene-D8	99%	96%	97%	64-130%
460-00-4	4-Bromofluorobenzene	112%	111%	104%	62-131%
17060-07-0	1,2-Dichloroethane-D4	84%	86%	90%	70-130%

* = Outside of Control Limits.

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: D44092
Account: AGWCODN A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7511-MB	3G13678.D	1	03/12/13	SM	03/11/13	OP7511	E3G663

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D44092-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.3	4.3	ug/kg	
120-12-7	Anthracene	ND	8.3	4.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.3	4.3	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.3	4.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.3	4.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	5.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	8.3	4.3	ug/kg	
91-20-3	Naphthalene	ND	12	10	ug/kg	
129-00-0	Pyrene	ND	8.3	4.3	ug/kg	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	100%	10-159%
321-60-8	2-Fluorobiphenyl	97%	19-131%
1718-51-0	Terphenyl-d14	129%	18-150%

Blank Spike Summary

Page 1 of 1

Job Number: D44092

Account: AGWCODN A.G. Wassenaar, Inc.

Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7511-BS	3G13679.D	1	03/12/13	SM	03/11/13	OP7511	E3G663

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D44092-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	70.5	85	68-130
120-12-7	Anthracene	83.3	70.2	84	67-130
56-55-3	Benzo(a)anthracene	83.3	70.9	85	65-130
205-99-2	Benzo(b)fluoranthene	83.3	61.4	74	44-130
207-08-9	Benzo(k)fluoranthene	83.3	83.4	100	56-131
50-32-8	Benzo(a)pyrene	83.3	67.4	81	62-130
218-01-9	Chrysene	83.3	79.9	96	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	59.2	71	55-130
206-44-0	Fluoranthene	83.3	66.2	79	70-130
86-73-7	Fluorene	83.3	65.2	78	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	66.0	79	56-130
91-20-3	Naphthalene	83.3	64.1	77	70-130
129-00-0	Pyrene	83.3	80.4	96	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	85%	10-159%
321-60-8	2-Fluorobiphenyl	85%	19-131%
1718-51-0	Terphenyl-d14	112%	18-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D44092
Account: AGWCODN A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7511-MS	3G13682.D	1	03/12/13	SM	03/11/13	OP7511	E3G663
OP7511-MSD	3G13683.D	1	03/12/13	SM	03/11/13	OP7511	E3G663
D44226-1	3G13680.D	1	03/12/13	SM	03/11/13	OP7511	E3G663

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D44092-1

CAS No.	Compound	D44226-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		108	30.4	28	68.0	63	76* a	25-151/30
120-12-7	Anthracene	ND		108	30.5	28* b	66.3	62	74* a	39-159/30
56-55-3	Benzo(a)anthracene	ND		108	30.0	28* b	68.0	63	78* a	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		108	29.4	27	56.2	52	63* a	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		108	29.2	27	64.0	59	75* a	10-188/30
50-32-8	Benzo(a)pyrene	ND		108	34.1	32	66.3	62	64* a	32-144/30
218-01-9	Chrysene	ND		108	30.0	28* b	65.0	60	74* a	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		108	25.3	23	58.3	54	79* a	21-152/30
206-44-0	Fluoranthene	ND		108	28.5	26* b	62.2	58	74* a	36-157/30
86-73-7	Fluorene	ND		108	29.0	27	62.4	58	73* a	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		108	35.6	33	67.0	62	61* a	20-154/30
91-20-3	Naphthalene	ND		108	228	212* b	63.0	58	113* a	10-163/30
129-00-0	Pyrene	ND		108	33.8	31	72.9	68	73* a	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D44226-1	Limits
4165-60-0	Nitrobenzene-d5	25%	53%	59%	10-159%
321-60-8	2-Fluorobiphenyl	30%	59%	67%	19-131%
1718-51-0	Terphenyl-d14	32%	70%	73%	18-150%

(a) Variability of recovery may be due to sample matrix/homogeneity.

(b) Outside control limits due to possible matrix interference.

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D44092
Account: AGWCODN A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1078-MB	GB19730.D	1	03/07/13	BD	n/a	n/a	GGB1078

The QC reported here applies to the following samples: Method: SW846 8015B

D44092-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	96% 60-140%

8.1.1
8

Blank Spike Summary

Page 1 of 1

Job Number: D44092

Account: AGWCODN A.G. Wassenaar, Inc.

Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1078-BS	GB19731.D	1	03/07/13	BD	n/a	n/a	GGB1078

The QC reported here applies to the following samples:

Method: SW846 8015B

D44092-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	119	108	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	101%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D44092

Account: AGWCODN A.G. Wassenaar, Inc.

Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D44140-1MS	GB19733.D	1	03/07/13	BD	n/a	n/a	GGB1078
D44140-1MSD	GB19734.D	1	03/07/13	BD	n/a	n/a	GGB1078
D44140-1	GB19732.D	1	03/07/13	BD	n/a	n/a	GGB1078

The QC reported here applies to the following samples:

Method: SW846 8015B

D44092-1

CAS No.	Compound	D44140-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		145	156	108	158	109	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D44140-1	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	104%	95%	60-140%

* = Outside of Control Limits.

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: D44092
Account: AGWCODN A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7493-MB	FD22573.D	1	03/08/13	AV	03/07/13	OP7493	GFD1129

The QC reported here applies to the following samples: Method: SW846-8015B

D44092-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	6.7	4.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	86% 35-130%

9.1.1
9

Blank Spike Summary

Page 1 of 1

Job Number: D44092

Account: AGWCODN A.G. Wassenaar, Inc.

Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7493-BS	FD22555.D	1	03/07/13	AV	03/07/13	OP7493	GFD1128

The QC reported here applies to the following samples:

Method: SW846-8015B

D44092-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	474	71	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	69%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D44092
Account: AGWCODN A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7493-MS	FD22556.D	1	03/07/13	AV	03/07/13	OP7493	GFD1128
OP7493-MSD	FD22557.D	1	03/07/13	AV	03/07/13	OP7493	GFD1128
D44076-1	FD22558.D	1	03/07/13	AV	03/07/13	OP7493	GFD1128

The QC reported here applies to the following samples:

Method: SW846-8015B

D44092-1

CAS No.	Compound	D44076-1 mg/kg	Spike Q	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	218	744	738	70	847	85	14	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D44076-1	Limits
84-15-1	o-Terphenyl	67%	70%	69%	35-130%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/08/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	2.1	.57		
Antimony	3.0	.36	.12		
Arsenic	2.5	.54	.56		
Barium	1.0	.08	.11	0.14	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.43	.06		
Cadmium	1.0	.06	.036	0.050	<1.0
Calcium	40	.84	9		
Chromium	1.0	.03	.03	0.070	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.10	<1.0
Iron	7.0	.19	.87		
Lead	5.0	.24	.24	0.070	<5.0
Lithium	0.20	.28	.054		
Magnesium	20	2.2	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	0.070	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	15	7		
Selenium	5.0	.61	.36	0.17	<5.0
Silicon	5.0	.65	.37		
Silver	3.0	.05	.06	-0.070	<3.0
Sodium	40	2.1	1.9		
Strontium	5.0	.02	.017		
Thallium	1.0	.29	.53		
Tin	5.0	1.2	2		
Titanium	1.0	.01	.038		
Uranium	5.0	.46	.26		
Vanadium	1.0	.03	.036		
Zinc	3.0	.08	.37	0.030	<3.0

Associated samples MP9605: D44092-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

10.1.1

10

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 03/08/13

Metal	D44092-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	270	541	305	88.8	75-125
Beryllium					
Boron					
Cadmium	0.23	66.5	76.3	86.7	75-125
Calcium					
Chromium	11.8	76.8	76.3	84.8	75-125
Cobalt					
Copper	13.0	85.1	76.3	94.6	75-125
Iron					
Lead	15.2	139	153	81.1	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	14.8	77.3	76.3	81.9	75-125
Phosphorus	anr				
Potassium	anr				
Selenium	0.0	130	153	85.2	75-125
Silicon					
Silver	0.0	27.3	30.5	89.4	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	97.9	175	76.3	101.0	75-125

Associated samples MP9605: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

10.1.2
10

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/08/13

Metal	D44092-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	270	540	327	82.6	0.2	20
Beryllium						
Boron						
Cadmium	0.23	71.0	81.8	86.4	6.5	20
Calcium						
Chromium	11.8	82.6	81.8	86.2	7.3	20
Cobalt						
Copper	13.0	90.2	81.8	94.5	5.8	20
Iron						
Lead	15.2	149	164	81.8	6.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	14.8	83.1	81.8	83.5	7.2	20
Phosphorus	anr					
Potassium	anr					
Selenium	0.0	141	164	86.2	8.1	20
Silicon						
Silver	0.0	29.1	32.7	89.0	6.4	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	97.9	190	81.8	112.6	8.2	20

Associated samples MP9605: D44092-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 03/08/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	209	200	104.5	80-120
Beryllium				
Boron				
Cadmium	49.0	50	98.0	80-120
Calcium				
Chromium	49.2	50	98.4	80-120
Cobalt				
Copper	50.1	50	100.2	80-120
Iron				
Lead	94.4	100	94.4	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	48.5	50	97.0	80-120
Phosphorus	anr			
Potassium	anr			
Selenium	99.7	100	99.7	80-120
Silicon				
Silver	19.8	20	99.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	51.3	50	102.6	80-120

Associated samples MP9605: D44092-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

10.1.3
10

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 03/08/13

Metal	D44092-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	1670	1910	18.0*(a)	0-10
Beryllium				
Boron				
Cadmium	1.90	0.00	100.0(b)	0-10
Calcium				
Chromium	70.6	81.5	12.9*(a)	0-10
Cobalt				
Copper	77.9	84.0	8.9	0-10
Iron				
Lead	91.1	117	28.4 (b)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	88.6	106	19.1*(a)	0-10
Phosphorus	anr			
Potassium	anr			
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	587	692	17.9*(a)	0-10

Associated samples MP9605: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

10.1.4
10

SERIAL DILUTION RESULTS SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9605
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

- (anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.
(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

10.1.4
10

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9606
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 03/08/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.0025	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP9606: D44092-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9606
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 03/08/13

Metal	D44092-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	6.9	162	153	101.6	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9606: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9606
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 03/08/13

Metal	D44092-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	6.9	180	164	105.9	10.5	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9606: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9606
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 03/08/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	106	100	106.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9606: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

10.2.3
10

SERIAL DILUTION RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9606
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 03/08/13

Metal	D44092-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	44.5	40.6	8.9	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9606: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

10.2.4
10

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9623
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 03/11/13

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.083	.00088	.00075	0.0016	<0.083

Associated samples MP9623: D44092-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9623
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 03/11/13

Metal	D44091-1A		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.035	0.83	0.656	121.1	75-125

Associated samples MP9623: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9623
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 03/11/13

Metal	D44091-1A Original MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.035	0.84	0.633	127.1N(a) 15.0 (b)	20

Associated samples MP9623: D44092-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

(b) High RPD due to possible sample matrix or nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9623
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 03/11/13

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.40	0.333	120.0	80-120

Associated samples MP9623: D44092-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 03/12/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	100	130		
Antimony	150	18	18		
Arsenic	130	27	42		
Barium	50	4	9		
Beryllium	50	6.5	16		
Boron	250	22	22		
Cadmium	50	3	3		
Calcium	2000	42	80	-20	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	9.5	100		
Lead	250	12	15		
Lithium	10	14			
Magnesium	1000	110	110	-78	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	730	750		
Selenium	250	31	55		
Silicon	250	33			
Silver	150	2.5	4.9		
Sodium	2000	110	490	-32	<2000
Strontium	25	1	7.5		
Thallium	50	15	43		
Tin	250	60			
Titanium	50	.5			
Uranium	250	23	23		
Vanadium	50	1.5	2.4		
Zinc	150	4	12		

Associated samples MP9630: D44092-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
 Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
 Units: ug/l

Prep Date: 03/12/13

Metal	D44226-2A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	29000	148000	125000	95.2	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	30600	154000	125000	98.7	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	187000	311000	125000	99.2	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9630: D44092-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

10.4.2
10

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
 Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
 Units: ug/l

Prep Date: 03/12/13

Metal	D44226-2A Original MSD		Spikelot ICPALL2 % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	29000	151000	125000	97.6	2.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	30600	156000	125000	100.3	1.3	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	187000	323000	125000	108.8	3.8	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9630: D44092-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

10.4.2
10

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date: 03/12/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	121000	125000	96.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	124000	125000	99.2	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	127000	125000	101.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9630: D44092-1A

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D44092
 Account: AGWCODN - A.G. Wassenaar, Inc.
 Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
 Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
 Units: ug/l

Prep Date: 03/12/13

D44226-2A		QC		
Metal	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	5800	5980	3.1	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	6130	6310	2.9	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	37500	38300	2.2	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9630: D44092-1A

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

QC Batch ID: MP9630
Matrix Type: AQUEOUS

Methods: SW846 6010C, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

10.4.4
10

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP9538/GN19264	1.0	0.0	mg/kg	92.9	87.6	94.3	80-120%
Specific Conductivity	GP9535/GN19260	1.0	<1.0	umhos/cm	9992	9400	94.1	90-110%
pH	GN19198			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:
Batch GP9535: D44092-1
Batch GP9538: D44092-1
Batch GN19198: D44092-1
(*) Outside of QC limits

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DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP9538/GN19264	D44092-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN19271	D44226-2	mv	21.6	29.0	29.0* (a)	0-20%

Associated Samples:

Batch GP9538: D44092-1

Batch GN19271: D44092-1

(*) Outside of QC limits

(a) High RPD due to possible sample nonhomogeneity.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP9538/GN19264	D44092-1	mg/kg	0.0	40	38.0	95.0	75-125%

Associated Samples:
Batch GP9538: D44092-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D44092
Account: AGWCODN - A.G. Wassenaar, Inc.
Project: Flessner 1-A, 9, 14

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP9538/GN19264	D44092-1	mg/kg	0.0	40	40.1	5.4	20%

Associated Samples:
Batch GP9538: D44092-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

11.4
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