#### **SECTION 00 31 00**

#### AVAILABLE PROJECT INFORMATION

#### 1.1 SUMMARY

A. This Document describes Reference Documents and the use of data resulting from the various investigations or from available information, including, hazardous materials survey reports, and environmental assessment information.

#### 1.2 HAZARDOUS MATERIALS REPORTS

- A. The City's environmental consultant has investigated the project site for the presence of various hazardous materials. Materials investigated may include contaminated soils and other hazardous materials. The survey findings are documented in the following:
  - 1. Technical Memorandum Report on Field Sampling and Results of Chemical Analyses for Soil Stockpiles at University Mount East Pipeline, San Francisco, CA., dated October 13, 2017.
- B. The Contractor shall contract and use qualified hazardous materials abatement subcontractors for the hazardous materials abatement at the site. The hazardous materials abatement information for this work is documented in the following Sections:
  - 1. Section 02 81 10 Environmental Management of Excavated Materials
- C. Hazardous materials surveys and reports were obtained only for the use of the City and its consultants for planning and design. Such documentation is not part of the Contract Documents, but the technical data contained in the referenced reports on which the Bidder is entitled to rely are incorporated in the Contract Documents by reference.
- Digital file/s in PDF of the above reference document is included with the digital Bid Documents.

#### 1.3 ENVIRONMENTAL REPORTS

- A. The City's environmental consultant has investigated the Project Site. The findings are documented in the following:
  - 1. San Francisco Public Works Environmental Commitment Record, Paul Ave, Woolsey St, and Salina Avenue PR and SR ECR, dated 7-22-20.
- B. Environmental assessment information was obtained only for the use of the City and its consultants for planning and design. Said information is not part of the Contract Documents, but the technical data or mandatory mitigation requirements contained therein on which Bidder is entitled to rely are incorporated in the Contract Documents by reference.
- Digital file/s in PDF of the above reference document is included with the digital Bid Documents.

#### 1.4 USE OF DATA

- A. The foregoing Reference Documents are not part of the Contract Documents. The City does not warrant the completeness of the Reference Documents.
- B. The City makes no representation, either express or implied, that the conditions indicated in the Reference Documents are representative of those existing at the Site, or that different

conditions may not occur or materials other than or in proportions different from those indicated may not be encountered. Refer to Paragraph 3.03, Unforeseen Or Differing Conditions, of the General Conditions.

C. Bidders shall visit the Site and familiarize themselves with existing conditions.

#### 1.5 PRE-BID VISIT TO WORK SITE

A. Prior to bidding, Bidders may make their own subsurface investigations to satisfy themselves as to Site conditions, but such investigations shall be performed only under the provisions of Section 00 21 13.

**END OF SECTION** 



#### SITE ASSESSMENT AND REMEDIATION I 30 VAN NESS AVE I SAN FRANCISCO, CA 94102

#### October 13, 2017

Mr. Jesus Almaguer
San Francisco Public Utilities Commission
Instruction Division Engineering Management Bureau
525 Golden Gate Avenue 12<sup>th</sup> Floor
San Francisco, CA 94102

Subject: Technical Memorandum Report on Field Sampling and Results of Chemical Analyses for Soil Stockpiles at University Mount East Pipeline, San Francisco, CA.

Dear Mr. Almaguer,

This Technical Memorandum Report is presented for the University Mound Pipeline project with results of soil characterization for eight (8) 2-point composite samples. Sample location map can be seen in this document. The primary objective of the sampling exercise was to characterize the chemical condition of the soils on the construction alignment for disposal to an off-site facility including permitted landfills and local recycling facilities. All samples were sent to McCampbell Analytical, Inc. of Pittsburg, California, a certified California laboratory, for chemical analyses. See chain of custody inserted in this document.

#### **Chemical Analytical Tests**

All composite samples were tested for the following waste disposal criteria.

- 1. Total Petroleum Hydrocarbons-Gasoline/BTEX/MTBE (EPA Method 8015 mod/8021).
- 2. TPH-Diesel/Motor Oil (EPA Method 8015 with silica gel cleanup).
- 3. Volatile Organic Carbons VOCs (EPA Method 8260).
- Semi-Volatile Organic Carbons SVOCs (EPA Method 8270) with organic cleanup to achieve the lowest extent possible detection limits below the current San Francisco Regional Water Quality Control's residential Environmental Screening Level (ESLs). Tier 1
  - (http://www.waterboards.ca.gov/rwqcb2/water issues/programs/esl.shtml).
- Organochlorine Pesticides (EPA Method 8081) and Polychlorinated Biphenyls (PCB's) by EPA Method 8082 with organic cleanup to achieve the lowest extent possible detection limits below the current San Francisco Regional Water Quality Control's residential Environmental Screening Level (ESLs), Tier 1 (http://www.waterboards.ca.gov/rwqcb2/water\_issues/programs/esl.shtml).
- 6. Title 22 Metals (EPA Methods 6000/7000 Series) and soluble Total Concentration Leaching Potential (TCLP) and Soluble Threshold Limit Concentration (STLC) metals (as warranted 10x STLC & 20x TCLP).
- 7. pH and Corrosivity tests.
- 8. Asbestos (CARB Method 435).
- 9. Chromium +6 (EPA Method 7199).
- 10. Methane (using field instruments).



SITE ASSESSMENT AND REMEDIATION | 30 VAN NESS AVE | SAN FRANCISCO, CA 94102

#### **Results and Conclusion**

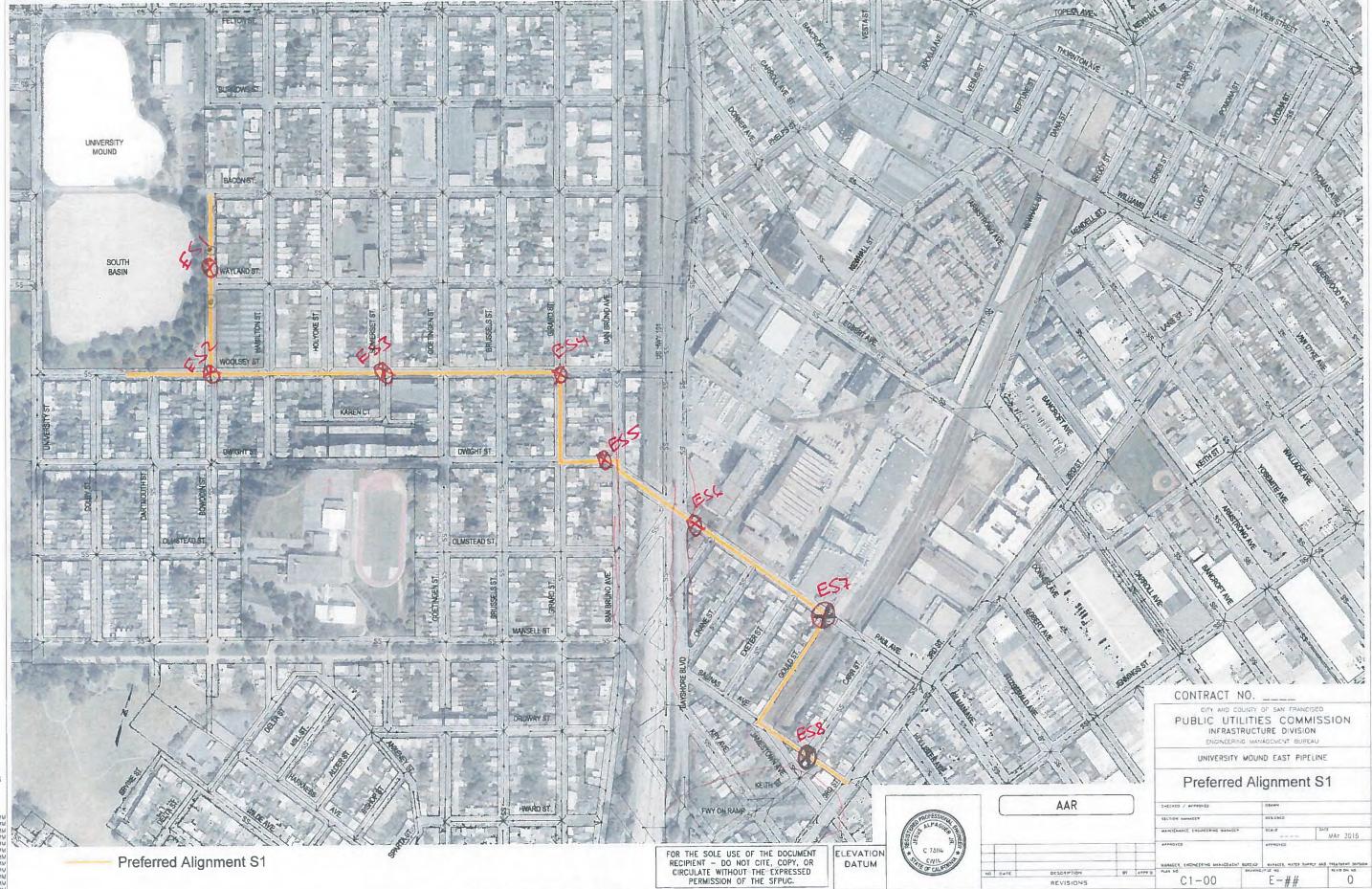
Result summary of chemical analyses performed on the soil samples collected at the site taken August 11, 2017 detected levels of TPHs, BTEX, MTBE, VOCs, SVOCs, Pesticides and PCBs were found at levels below the detection limit. Title 22 Metals and Asbestos also detected under the detection limit with the exception of Chromium. Soluble chromium analysis under WET extraction was below the respective STCL of 5 mg/L and 5mg/L for TCLP. Materials may be reused on site if engineering criteria is met. Surplus material shall be classified, transported and disposed of as Class II/III Non-Hazardous Waste.

Sincerely,

Geremy Lobo

Environmental Assistant City and County of San Francisco – Public Works 30 Van Ness Avenue, San Francisco, CA 94102

Cell: 415-694-3328 Work: 415-558-4571



PLOT: EXTENTS SCALE: 1:1 BORDER: 22,34 COLOR: No. RED 0 70MM VILLOW 0 20MM GREEN 0 25MM GREEN 0 35MM GRAV 0 15MM G

FILE: 0:\CLW5003'4\AAR\C #L\ACTIVE\C 1 DD DWG





# McCampbell Analytical, Inc.

"When Quality Counts"

# **Analytical Report**

**WorkOrder:** 1708536

Report Created for: AGS, Inc.

5 Freelon Street

San Francisco, CA 94107

**Project Contact:** Michelle Shriro

**Project P.O.:** 

**Project Name:** University Mound East Pipeline; AGS 14-027/24

**Project Received:** 08/11/2017

Analytical Report reviewed & approved for release on 08/22/2017 by:

Angela Rydelius,

Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.



1534 Willow Pass Rd. Pittsburg, CA 94565 ♦ TEL: (877) 252-9262 ♦ FAX: (925) 252-9269 ♦ www.mccampbell.com

CA ELAP 1644 ♦ NELAP 4033ORELAP



### **Glossary of Terms & Qualifier Definitions**

Client: AGS, Inc.

**Project:** University Mound East Pipeline; AGS 14-027/24

WorkOrder: 1708536

#### **Glossary Abbreviation**

%D Serial Dilution Percent Difference

95% Interval 95% Confident Interval

DF Dilution Factor

DI WET (DISTLC) Waste Extraction Test using DI water

DISS Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)

DLT Dilution Test (Serial Dilution)

DUP Duplicate

EDL Estimated Detection Limit

ERS External reference sample. Second source calibration verification.

ITEF International Toxicity Equivalence Factor

LCS Laboratory Control Sample

MB Method Blank

MB % Rec % Recovery of Surrogate in Method Blank, if applicable

MDL Method Detection Limit

ML Minimum Level of Quantitation

MS Matrix Spike

MSD Matrix Spike Duplicate

N/A Not Applicable

ND Not detected at or above the indicated MDL or RL

NR Data Not Reported due to matrix interference or insufficient sample amount.

PDS Post Digestion Spike

PDSD Post Digestion Spike Duplicate

PF Prep Factor

RD Relative Difference

RL Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)

RPD Relative Percent Deviation
RRT Relative Retention Time

SPK Val Spike Value

SPKRef Val Spike Reference Value

SPLP Synthetic Precipitation Leachate Procedure

ST Sorbent Tube

TCLP Toxicity Characteristic Leachate Procedure

TEQ Toxicity Equivalents

WET (STLC) Waste Extraction Test (Soluble Threshold Limit Concentration)

### **Glossary of Terms & Qualifier Definitions**

Client: AGS, Inc.

**Project:** University Mound East Pipeline; AGS 14-027/24

**WorkOrder:** 1708536

#### **Analytical Qualifiers**

S Surrogate spike recovery outside accepted recovery limits

a1 Sample diluted due to matrix interference

c2 Surrogate recovery outside of the control limits due to matrix interference.

e2 Diesel range compounds are significant; no recognizable pattern

e7 Oil range compounds are significant

k10 CARB 435 Exception 1 - No asbestos detected

#### **Quality Control Qualifiers**

F10 MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix.



Client:AGS, Inc.WorkOrder:1708536Date Received:8/11/17 13:10Extraction Method:SW3060ADate Prepared:8/14/17Analytical Method:SW7199Project:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Hexavalent chromium by Alkaline Digestion and IC Analysi
--

Client ID	Lab ID	Matrix	Dat	e Collected Instrum	nent Batch ID
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil	08/0	9/2017 10:02 IC2	143680
Analytes	Result	MD	<u> RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Hexavalent chromium	0.38	0.10	0.20	1	08/15/2017 14:10

#### Analyst(s): AO

Client ID	Lab ID	Matrix	Date (	Collected Instrument	Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil	08/09/2	2017 12:16 IC2	143680
<u>Analytes</u>	Result	MDL	<u>RL</u>	<u>DF</u>	Date Analyzed
Hexavalent chromium	0.32	0.10	0.20	1	08/15/2017 14:28

#### Analyst(s): AO

Client ID	Lab ID	Matrix	Date (	Collected Instrument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil	08/09/2	2017 13:32 IC2	143680
<u>Analytes</u>	Result	<u>MDL</u>	<u>RL</u>	<u>DF</u>	Date Analyzed
Hexavalent chromium	0.25	0.10	0.20	1	08/15/2017 14:43

#### Analyst(s): AO

Client ID	Lab ID	Matrix	Date C	Collected Instrument	Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil	08/10/2	017 08:35 IC2	143680
<u>Analytes</u>	Result	<u>MDL</u>	<u>RL</u>	<u>DF</u>	Date Analyzed
Hexavalent chromium	0.36	0.10	0.20	1	08/15/2017 15:02

Analyst(s): AO

Angela Rydelius, Lab Manager



Client:AGS, Inc.WorkOrder:1708536Date Received:8/11/17 13:10Extraction Method:SW3060ADate Prepared:8/14/17Analytical Method:SW7199Project:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix	Date	Collected Instrument	Batch ID
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A	Soil	08/10/	2017 10:06 IC2	143680
<u>Analytes</u>	Result	MDL	<u>RL</u>	<u>DF</u>	Date Analyzed
Hexavalent chromium	0.42	0.10	0.20	1	08/15/2017 15:20

#### Analyst(s): AO

Client ID	Lab ID	Matrix	Date	Collected Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil	08/10/2	2017 11:11 IC2	143680
<u>Analytes</u>	Result	<u>MDL</u>	<u>RL</u>	<u>DF</u>	Date Analyzed
Hexavalent chromium	0.30	0.10	0.20	1	08/15/2017 15:38

#### Analyst(s): AO

Client ID	Lab ID	Matrix	Date (	Collected Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	1708536-007A	Soil	08/10/2	2017 11:48 IC2	143680
<u>Analytes</u>	Result	<u>MDL</u>	<u>RL</u>	<u>DF</u>	Date Analyzed
Hexavalent chromium	0.22	0.10	0.20	1	08/15/2017 16:33

#### Analyst(s): AO

Client ID	Lab ID	Matrix	Date C	collected Instrument	Batch ID
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	1708536-008A	Soil	08/10/20	017 12:42 IC2	143680
<u>Analytes</u>	Result	MDL	<u>RL</u>	<u>DF</u>	Date Analyzed
Hexavalent chromium	0.48	0.10	0.20	1	08/15/2017 16:15

#### Analyst(s): AO



Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix		<b>Date Collected</b>		Instrument	Batch ID
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil		08/09/20	17 10:02	GC17	143626
<u>Analytes</u>	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acenaphthene	ND		0.14	0.25	1		08/15/2017 13:09
Acenaphthylene	ND		0.14	0.25	1		08/15/2017 13:09
Acetochlor	ND		0.25	0.25	1		08/15/2017 13:09
Anthracene	ND		0.14	0.25	1		08/15/2017 13:09
Benzidine	ND		0.23	1.3	1		08/15/2017 13:09
Benzo (a) anthracene	ND		0.050	0.050	1		08/15/2017 13:09
Benzo (a) pyrene	ND		0.0025	0.0025	1		08/15/2017 13:09
Benzo (b) fluoranthene	ND		0.012	0.012	1		08/15/2017 13:09
Benzo (g,h,i) perylene	ND		0.15	0.25	1		08/15/2017 13:09
Benzo (k) fluoranthene	ND		0.16	0.25	1		08/15/2017 13:09
Benzyl Alcohol	ND		0.51	1.3	1		08/15/2017 13:09
1,1-Biphenyl	ND		0.15	0.25	1		08/15/2017 13:09
Bis (2-chloroethoxy) Methane	ND		0.14	0.25	1		08/15/2017 13:09
Bis (2-chloroethyl) Ether	ND		0.0012	0.0012	1		08/15/2017 13:09
Bis (2-chloroisopropyl) Ether	ND		0.0012	0.0012	1		08/15/2017 13:09
Bis (2-ethylhexyl) Adipate	ND		0.25	0.25	1		08/15/2017 13:09
Bis (2-ethylhexyl) Phthalate	ND		0.13	0.25	1		08/15/2017 13:09
4-Bromophenyl Phenyl Ether	ND		0.16	0.25	1		08/15/2017 13:09
Butylbenzyl Phthalate	ND		0.13	0.25	1		08/15/2017 13:09
4-Chloroaniline	ND		0.0012	0.0012	1		08/15/2017 13:09
4-Chloro-3-methylphenol	ND		0.12	0.25	1		08/15/2017 13:09
2-Chloronaphthalene	ND		0.16	0.25	1		08/15/2017 13:09
2-Chlorophenol	0.0058		0.0050	0.0050	1		08/15/2017 13:09
4-Chlorophenyl Phenyl Ether	ND		0.15	0.25	1		08/15/2017 13:09
Chrysene	ND		0.14	0.25	1		08/15/2017 13:09
Dibenzo (a,h) anthracene	ND		0.0025	0.0025	1		08/15/2017 13:09
Dibenzofuran	ND		0.13	0.25	1		08/15/2017 13:09
Di-n-butyl Phthalate	ND		0.13	0.25	1		08/15/2017 13:09
1,2-Dichlorobenzene	ND		0.12	0.25	1		08/15/2017 13:09
1,3-Dichlorobenzene	ND		0.14	0.25	1		08/15/2017 13:09
1,4-Dichlorobenzene	ND		0.025	0.025	1		08/15/2017 13:09
3,3-Dichlorobenzidine	ND		0.0050	0.0050	1		08/15/2017 13:09
2,4-Dichlorophenol	ND		0.0025	0.0025	1		08/15/2017 13:09
Diethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 13:09
2,4-Dimethylphenol	ND		0.025	0.025	1		08/15/2017 13:09
Dimethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 13:09
4,6-Dinitro-2-methylphenol	ND		0.13	1.3	1		08/15/2017 13:09

(Cont.)





Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected Instrume	ent Batch ID
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil		08/09/20	17 10:02 GC17	143626
<u>Analytes</u>	<u>Result</u>		<u>MDL</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
2,4-Dinitrophenol	ND		0.62	0.62	1	08/15/2017 13:09
2,4-Dinitrotoluene	ND		0.025	0.025	1	08/15/2017 13:09
2,6-Dinitrotoluene	ND		0.14	0.25	1	08/15/2017 13:09
Di-n-octyl Phthalate	ND		0.14	0.50	1	08/15/2017 13:09
1,2-Diphenylhydrazine	ND		0.16	0.25	1	08/15/2017 13:09
Fluoranthene	ND		0.13	0.25	1	08/15/2017 13:09
Fluorene	ND		0.14	0.25	1	08/15/2017 13:09
Hexachlorobenzene	ND		0.025	0.025	1	08/15/2017 13:09
Hexachlorobutadiene	ND		0.025	0.025	1	08/15/2017 13:09
Hexachlorocyclopentadiene	ND		0.73	1.3	1	08/15/2017 13:09
Hexachloroethane	ND		0.14	0.25	1	08/15/2017 13:09
Indeno (1,2,3-cd) pyrene	ND		0.012	0.012	1	08/15/2017 13:09
Isophorone	ND		0.12	0.25	1	08/15/2017 13:09
2-Methylnaphthalene	ND		0.025	0.025	1	08/15/2017 13:09
2-Methylphenol (o-Cresol)	ND		0.14	0.25	1	08/15/2017 13:09
3 & 4-Methylphenol (m,p-Cresol)	ND		0.12	0.25	1	08/15/2017 13:09
Naphthalene	ND		0.0025	0.0025	1	08/15/2017 13:09
2-Nitroaniline	ND		0.62	1.3	1	08/15/2017 13:09
3-Nitroaniline	ND		0.59	1.3	1	08/15/2017 13:09
4-Nitroaniline	ND		0.55	1.3	1	08/15/2017 13:09
Nitrobenzene	ND		0.14	0.25	1	08/15/2017 13:09
2-Nitrophenol	ND		0.64	1.3	1	08/15/2017 13:09
4-Nitrophenol	ND		0.41	1.3	1	08/15/2017 13:09
N-Nitrosodiphenylamine	ND		0.16	0.25	1	08/15/2017 13:09
N-Nitrosodi-n-propylamine	ND		0.012	0.012	1	08/15/2017 13:09
Pentachlorophenol	ND		0.32	1.3	1	08/15/2017 13:09
Phenanthrene	ND		0.14	0.25	1	08/15/2017 13:09
Phenol	0.018		0.0050	0.0050	1	08/15/2017 13:09
Pyrene	ND		0.13	0.25	1	08/15/2017 13:09
Pyridine	ND		0.25	0.25	1	08/15/2017 13:09
1,2,4-Trichlorobenzene	ND		0.14	0.25	1	08/15/2017 13:09
2,4,5-Trichlorophenol	ND		0.012	0.012	1	08/15/2017 13:09
2,4,6-Trichlorophenol	ND		0.012	0.012	1	08/15/2017 13:09



# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix	Date C	ollected Instrument	Batch ID	
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil	08/09/20	017 10:02 GC17	143626	
<u>Analytes</u>	Result	MDL	<u>RL</u>	<u>DF</u>	Date Analyzed	
Surrogates	REC (%)		<u>Limits</u>			
2-Fluorophenol	110		30-130		08/15/2017 13:09	
Phenol-d5	111		30-130		08/15/2017 13:09	
Nitrobenzene-d5	118		30-130		08/15/2017 13:09	
2-Fluorobiphenyl	102		30-130		08/15/2017 13:09	
2,4,6-Tribromophenol	37		16-130		08/15/2017 13:09	
4-Terphenyl-d14	127		30-130		08/15/2017 13:09	

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil		08/09/20	17 12:16	GC17	143626
<u>Analytes</u>	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acenaphthene	ND		0.28	0.50	2		08/15/2017 13:37
Acenaphthylene	ND		0.28	0.50	2		08/15/2017 13:37
Acetochlor	ND		0.50	0.50	2		08/15/2017 13:37
Anthracene	ND		0.28	0.50	2		08/15/2017 13:37
Benzidine	ND		0.46	2.6	2		08/15/2017 13:37
Benzo (a) anthracene	ND		0.10	0.10	2		08/15/2017 13:37
Benzo (a) pyrene	ND		0.0050	0.0050	2		08/15/2017 13:37
Benzo (b) fluoranthene	ND		0.025	0.025	2		08/15/2017 13:37
Benzo (g,h,i) perylene	ND		0.30	0.50	2		08/15/2017 13:37
Benzo (k) fluoranthene	ND		0.32	0.50	2		08/15/2017 13:37
Benzyl Alcohol	ND		1.0	2.6	2		08/15/2017 13:37
1,1-Biphenyl	ND		0.30	0.50	2		08/15/2017 13:37
Bis (2-chloroethoxy) Methane	ND		0.28	0.50	2		08/15/2017 13:37
Bis (2-chloroethyl) Ether	ND		0.0025	0.0025	2		08/15/2017 13:37
Bis (2-chloroisopropyl) Ether	ND		0.0025	0.0025	2		08/15/2017 13:37
Bis (2-ethylhexyl) Adipate	ND		0.50	0.50	2		08/15/2017 13:37
Bis (2-ethylhexyl) Phthalate	ND		0.26	0.50	2		08/15/2017 13:37
4-Bromophenyl Phenyl Ether	ND		0.32	0.50	2		08/15/2017 13:37
Butylbenzyl Phthalate	ND		0.26	0.50	2		08/15/2017 13:37
4-Chloroaniline	ND		0.0025	0.0025	2		08/15/2017 13:37
4-Chloro-3-methylphenol	ND		0.24	0.50	2		08/15/2017 13:37
2-Chloronaphthalene	ND		0.32	0.50	2		08/15/2017 13:37
2-Chlorophenol	ND		0.010	0.010	2		08/15/2017 13:37
4-Chlorophenyl Phenyl Ether	ND		0.30	0.50	2		08/15/2017 13:37
Chrysene	ND		0.28	0.50	2		08/15/2017 13:37
Dibenzo (a,h) anthracene	ND		0.0050	0.0050	2		08/15/2017 13:37
Dibenzofuran	ND		0.26	0.50	2		08/15/2017 13:37
Di-n-butyl Phthalate	ND		0.26	0.50	2		08/15/2017 13:37
1,2-Dichlorobenzene	ND		0.24	0.50	2		08/15/2017 13:37
1,3-Dichlorobenzene	ND		0.28	0.50	2		08/15/2017 13:37
1,4-Dichlorobenzene	ND		0.050	0.050	2		08/15/2017 13:37
3,3-Dichlorobenzidine	ND		0.010	0.010	2		08/15/2017 13:37
2,4-Dichlorophenol	ND		0.0050	0.0050	2		08/15/2017 13:37
Diethyl Phthalate	ND		0.0050	0.0050	2		08/15/2017 13:37
2,4-Dimethylphenol	ND		0.050	0.050	2		08/15/2017 13:37
Dimethyl Phthalate	ND		0.0050	0.0050	2		08/15/2017 13:37
4,6-Dinitro-2-methylphenol	ND	<del>.</del>	0.26	2.6	2		08/15/2017 13:37

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Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil		08/09/20	17 12:16	GC17	143626
Analytes	<u>Result</u>		MDL	<u>RL</u>	<u>DF</u>		Date Analyzed
2,4-Dinitrophenol	ND		1.2	1.2	2		08/15/2017 13:37
2,4-Dinitrotoluene	ND		0.050	0.050	2		08/15/2017 13:37
2,6-Dinitrotoluene	ND		0.28	0.50	2		08/15/2017 13:37
Di-n-octyl Phthalate	ND		0.28	1.0	2		08/15/2017 13:37
1,2-Diphenylhydrazine	ND		0.32	0.50	2		08/15/2017 13:37
Fluoranthene	ND		0.26	0.50	2		08/15/2017 13:37
Fluorene	ND		0.28	0.50	2		08/15/2017 13:37
Hexachlorobenzene	ND		0.050	0.050	2		08/15/2017 13:37
Hexachlorobutadiene	ND		0.050	0.050	2		08/15/2017 13:37
Hexachlorocyclopentadiene	ND		1.5	2.6	2		08/15/2017 13:37
Hexachloroethane	ND		0.28	0.50	2		08/15/2017 13:37
Indeno (1,2,3-cd) pyrene	ND		0.025	0.025	2		08/15/2017 13:37
Isophorone	ND		0.24	0.50	2		08/15/2017 13:37
2-Methylnaphthalene	ND		0.050	0.050	2		08/15/2017 13:37
2-Methylphenol (o-Cresol)	ND		0.28	0.50	2		08/15/2017 13:37
3 & 4-Methylphenol (m,p-Cresol)	ND		0.24	0.50	2		08/15/2017 13:37
Naphthalene	ND		0.0050	0.0050	2		08/15/2017 13:37
2-Nitroaniline	ND		1.2	2.6	2		08/15/2017 13:37
3-Nitroaniline	ND		1.2	2.6	2		08/15/2017 13:37
4-Nitroaniline	ND		1.1	2.6	2		08/15/2017 13:37
Nitrobenzene	ND		0.28	0.50	2		08/15/2017 13:37
2-Nitrophenol	ND		1.3	2.6	2		08/15/2017 13:37
4-Nitrophenol	ND		0.82	2.6	2		08/15/2017 13:37
N-Nitrosodiphenylamine	ND		0.32	0.50	2		08/15/2017 13:37
N-Nitrosodi-n-propylamine	ND		0.025	0.025	2		08/15/2017 13:37
Pentachlorophenol	ND		0.65	2.6	2		08/15/2017 13:37
Phenanthrene	ND		0.28	0.50	2		08/15/2017 13:37
Phenol	0.010		0.010	0.010	2		08/15/2017 13:37
Pyrene	ND		0.26	0.50	2		08/15/2017 13:37
Pyridine	ND		0.50	0.50	2		08/15/2017 13:37
1,2,4-Trichlorobenzene	ND		0.28	0.50	2		08/15/2017 13:37
2,4,5-Trichlorophenol	ND	<del></del>	0.025	0.025	2		08/15/2017 13:37
2,4,6-Trichlorophenol	ND		0.025	0.025	2		08/15/2017 13:37

# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix	Date C	Batch ID 143626	
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	1708536-002A Soil			
<u>Analytes</u>	Result	MDL	<u>RL</u>	<u>DF</u>	Date Analyzed
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
2-Fluorophenol	98		30-130		08/15/2017 13:37
Phenol-d5	95		30-130		08/15/2017 13:37
Nitrobenzene-d5	98		30-130		08/15/2017 13:37
2-Fluorobiphenyl	87		30-130		08/15/2017 13:37
2,4,6-Tribromophenol	39		16-130		08/15/2017 13:37
4-Terphenyl-d14	115		30-130		08/15/2017 13:37



Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil		08/09/20	17 13:32	GC17	143626
Analytes	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acenaphthene	ND		0.14	0.25	1		08/15/2017 14:06
Acenaphthylene	ND		0.14	0.25	1		08/15/2017 14:06
Acetochlor	ND		0.25	0.25	1		08/15/2017 14:06
Anthracene	ND		0.14	0.25	1		08/15/2017 14:06
Benzidine	ND		0.23	1.3	1		08/15/2017 14:06
Benzo (a) anthracene	ND		0.050	0.050	1		08/15/2017 14:06
Benzo (a) pyrene	ND		0.0025	0.0025	1		08/15/2017 14:06
Benzo (b) fluoranthene	ND		0.012	0.012	1		08/15/2017 14:06
Benzo (g,h,i) perylene	ND		0.15	0.25	1		08/15/2017 14:06
Benzo (k) fluoranthene	ND		0.16	0.25	1		08/15/2017 14:06
Benzyl Alcohol	ND		0.51	1.3	1		08/15/2017 14:06
1,1-Biphenyl	ND		0.15	0.25	1		08/15/2017 14:06
Bis (2-chloroethoxy) Methane	ND		0.14	0.25	1		08/15/2017 14:06
Bis (2-chloroethyl) Ether	ND		0.0012	0.0012	1		08/15/2017 14:06
Bis (2-chloroisopropyl) Ether	ND		0.0012	0.0012	1		08/15/2017 14:06
Bis (2-ethylhexyl) Adipate	ND		0.25	0.25	1		08/15/2017 14:06
Bis (2-ethylhexyl) Phthalate	ND		0.13	0.25	1		08/15/2017 14:06
4-Bromophenyl Phenyl Ether	ND		0.16	0.25	1		08/15/2017 14:06
Butylbenzyl Phthalate	ND		0.13	0.25	1		08/15/2017 14:06
4-Chloroaniline	ND		0.0012	0.0012	1		08/15/2017 14:06
4-Chloro-3-methylphenol	ND		0.12	0.25	1		08/15/2017 14:06
2-Chloronaphthalene	ND		0.16	0.25	1		08/15/2017 14:06
2-Chlorophenol	0.0056		0.0050	0.0050	1		08/15/2017 14:06
4-Chlorophenyl Phenyl Ether	ND		0.15	0.25	1		08/15/2017 14:06
Chrysene	ND		0.14	0.25	1		08/15/2017 14:06
Dibenzo (a,h) anthracene	ND		0.0025	0.0025	1		08/15/2017 14:06
Dibenzofuran	ND		0.13	0.25	1		08/15/2017 14:06
Di-n-butyl Phthalate	ND		0.13	0.25	1		08/15/2017 14:06
1,2-Dichlorobenzene	ND		0.12	0.25	1		08/15/2017 14:06
1,3-Dichlorobenzene	ND		0.14	0.25	1		08/15/2017 14:06
1,4-Dichlorobenzene	ND		0.025	0.025	1		08/15/2017 14:06
3,3-Dichlorobenzidine	ND		0.0050	0.0050	1		08/15/2017 14:06
2,4-Dichlorophenol	ND		0.0025	0.0025	1		08/15/2017 14:06
Diethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 14:06
2,4-Dimethylphenol	ND		0.025	0.025	1		08/15/2017 14:06
Dimethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 14:06
4,6-Dinitro-2-methylphenol	ND		0.13	1.3	1		08/15/2017 14:06

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Angela Rydelius, Lab Manager

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected In	strument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil		08/09/20	17 13:32 GC	:17	143626
<u>Analytes</u>	<u>Result</u>		MDL	<u>RL</u>	<u>DF</u>		<u>Date Analyzed</u>
2,4-Dinitrophenol	ND		0.62	0.62	1		08/15/2017 14:06
2,4-Dinitrotoluene	ND		0.025	0.025	1		08/15/2017 14:06
2,6-Dinitrotoluene	ND		0.14	0.25	1		08/15/2017 14:06
Di-n-octyl Phthalate	ND		0.14	0.50	1		08/15/2017 14:06
1,2-Diphenylhydrazine	ND		0.16	0.25	1		08/15/2017 14:06
Fluoranthene	ND		0.13	0.25	1		08/15/2017 14:06
Fluorene	ND		0.14	0.25	1		08/15/2017 14:06
Hexachlorobenzene	ND		0.025	0.025	1		08/15/2017 14:06
Hexachlorobutadiene	ND		0.025	0.025	1		08/15/2017 14:06
Hexachlorocyclopentadiene	ND		0.73	1.3	1		08/15/2017 14:06
Hexachloroethane	ND		0.14	0.25	1		08/15/2017 14:06
Indeno (1,2,3-cd) pyrene	ND		0.012	0.012	1		08/15/2017 14:06
Isophorone	ND		0.12	0.25	1		08/15/2017 14:06
2-Methylnaphthalene	ND		0.025	0.025	1		08/15/2017 14:06
2-Methylphenol (o-Cresol)	ND		0.14	0.25	1		08/15/2017 14:06
3 & 4-Methylphenol (m,p-Cresol)	ND		0.12	0.25	1		08/15/2017 14:06
Naphthalene	ND		0.0025	0.0025	1		08/15/2017 14:06
2-Nitroaniline	ND		0.62	1.3	1		08/15/2017 14:06
3-Nitroaniline	ND		0.59	1.3	1		08/15/2017 14:06
4-Nitroaniline	ND		0.55	1.3	1		08/15/2017 14:06
Nitrobenzene	ND		0.14	0.25	1		08/15/2017 14:06
2-Nitrophenol	ND		0.64	1.3	1		08/15/2017 14:06
4-Nitrophenol	ND		0.41	1.3	1		08/15/2017 14:06
N-Nitrosodiphenylamine	ND		0.16	0.25	1		08/15/2017 14:06
N-Nitrosodi-n-propylamine	ND		0.012	0.012	1		08/15/2017 14:06
Pentachlorophenol	ND		0.32	1.3	1		08/15/2017 14:06
Phenanthrene	ND		0.14	0.25	1		08/15/2017 14:06
Phenol	ND		0.0050	0.0050	1		08/15/2017 14:06
Pyrene	ND		0.13	0.25	1		08/15/2017 14:06
Pyridine	ND		0.25	0.25	1		08/15/2017 14:06
1,2,4-Trichlorobenzene	ND		0.14	0.25	1		08/15/2017 14:06
2,4,5-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 14:06
2,4,6-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 14:06



# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix	Date C	Collected Instrument	Batch ID	
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil	08/09/2	017 13:32 GC17	143626	
<u>Analytes</u>	Result	MDL	<u>RL</u>	<u>DF</u>	Date Analyzed	
Surrogates	REC (%)		<u>Limits</u>			
2-Fluorophenol	88		30-130		08/15/2017 14:06	
Phenol-d5	89		30-130		08/15/2017 14:06	
Nitrobenzene-d5	94		30-130		08/15/2017 14:06	
2-Fluorobiphenyl	81		30-130		08/15/2017 14:06	
2,4,6-Tribromophenol	28		16-130		08/15/2017 14:06	
4-Terphenyl-d14	97		30-130		08/15/2017 14:06	



Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil		08/10/20	17 08:35	GC17	143626
<u>Analytes</u>	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acenaphthene	ND		0.14	0.25	1		08/15/2017 14:34
Acenaphthylene	ND		0.14	0.25	1		08/15/2017 14:34
Acetochlor	ND		0.25	0.25	1		08/15/2017 14:34
Anthracene	ND		0.14	0.25	1		08/15/2017 14:34
Benzidine	ND		0.23	1.3	1		08/15/2017 14:34
Benzo (a) anthracene	ND		0.050	0.050	1		08/15/2017 14:34
Benzo (a) pyrene	0.015		0.0025	0.0025	1		08/15/2017 14:34
Benzo (b) fluoranthene	0.017		0.012	0.012	1		08/15/2017 14:34
Benzo (g,h,i) perylene	ND		0.15	0.25	1		08/15/2017 14:34
Benzo (k) fluoranthene	ND		0.16	0.25	1		08/15/2017 14:34
Benzyl Alcohol	ND		0.51	1.3	1		08/15/2017 14:34
1,1-Biphenyl	ND		0.15	0.25	1		08/15/2017 14:34
Bis (2-chloroethoxy) Methane	ND		0.14	0.25	1		08/15/2017 14:34
Bis (2-chloroethyl) Ether	ND		0.0012	0.0012	1		08/15/2017 14:34
Bis (2-chloroisopropyl) Ether	ND		0.0012	0.0012	1		08/15/2017 14:34
Bis (2-ethylhexyl) Adipate	ND		0.25	0.25	1		08/15/2017 14:34
Bis (2-ethylhexyl) Phthalate	ND		0.13	0.25	1		08/15/2017 14:34
4-Bromophenyl Phenyl Ether	ND		0.16	0.25	1		08/15/2017 14:34
Butylbenzyl Phthalate	ND		0.13	0.25	1		08/15/2017 14:34
4-Chloroaniline	ND		0.0012	0.0012	1		08/15/2017 14:34
4-Chloro-3-methylphenol	ND		0.12	0.25	1		08/15/2017 14:34
2-Chloronaphthalene	ND		0.16	0.25	1		08/15/2017 14:34
2-Chlorophenol	0.0050		0.0050	0.0050	1		08/15/2017 14:34
4-Chlorophenyl Phenyl Ether	ND		0.15	0.25	1		08/15/2017 14:34
Chrysene	ND		0.14	0.25	1		08/15/2017 14:34
Dibenzo (a,h) anthracene	0.0027		0.0025	0.0025	1		08/15/2017 14:34
Dibenzofuran	ND		0.13	0.25	1		08/15/2017 14:34
Di-n-butyl Phthalate	ND		0.13	0.25	1		08/15/2017 14:34
1,2-Dichlorobenzene	ND		0.12	0.25	1		08/15/2017 14:34
1,3-Dichlorobenzene	ND		0.14	0.25	1		08/15/2017 14:34
1,4-Dichlorobenzene	ND		0.025	0.025	1		08/15/2017 14:34
3,3-Dichlorobenzidine	ND		0.0050	0.0050	1		08/15/2017 14:34
2,4-Dichlorophenol	ND		0.0025	0.0025	1		08/15/2017 14:34
Diethyl Phthalate	0.0077		0.0025	0.0025	1		08/15/2017 14:34
2,4-Dimethylphenol	ND		0.025	0.025	1		08/15/2017 14:34
Dimethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 14:34
4,6-Dinitro-2-methylphenol	ND		0.13	1.3	1		08/15/2017 14:34

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Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected Instrument	t Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil		08/10/20	17 08:35 GC17	143626
<u>Analytes</u>	<u>Result</u>		MDL	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
2,4-Dinitrophenol	ND		0.62	0.62	1	08/15/2017 14:34
2,4-Dinitrotoluene	ND		0.025	0.025	1	08/15/2017 14:34
2,6-Dinitrotoluene	ND		0.14	0.25	1	08/15/2017 14:34
Di-n-octyl Phthalate	ND		0.14	0.50	1	08/15/2017 14:34
1,2-Diphenylhydrazine	ND		0.16	0.25	1	08/15/2017 14:34
Fluoranthene	ND		0.13	0.25	1	08/15/2017 14:34
Fluorene	ND		0.14	0.25	1	08/15/2017 14:34
Hexachlorobenzene	ND		0.025	0.025	1	08/15/2017 14:34
Hexachlorobutadiene	ND		0.025	0.025	1	08/15/2017 14:34
Hexachlorocyclopentadiene	ND		0.73	1.3	1	08/15/2017 14:34
Hexachloroethane	ND		0.14	0.25	1	08/15/2017 14:34
Indeno (1,2,3-cd) pyrene	ND		0.012	0.012	1	08/15/2017 14:34
Isophorone	ND		0.12	0.25	1	08/15/2017 14:34
2-Methylnaphthalene	ND		0.025	0.025	1	08/15/2017 14:34
2-Methylphenol (o-Cresol)	ND		0.14	0.25	1	08/15/2017 14:34
3 & 4-Methylphenol (m,p-Cresol)	ND		0.12	0.25	1	08/15/2017 14:34
Naphthalene	ND		0.0025	0.0025	1	08/15/2017 14:34
2-Nitroaniline	ND		0.62	1.3	1	08/15/2017 14:34
3-Nitroaniline	ND		0.59	1.3	1	08/15/2017 14:34
4-Nitroaniline	ND		0.55	1.3	1	08/15/2017 14:34
Nitrobenzene	ND		0.14	0.25	1	08/15/2017 14:34
2-Nitrophenol	ND		0.64	1.3	1	08/15/2017 14:34
4-Nitrophenol	ND		0.41	1.3	1	08/15/2017 14:34
N-Nitrosodiphenylamine	ND		0.16	0.25	1	08/15/2017 14:34
N-Nitrosodi-n-propylamine	ND		0.012	0.012	1	08/15/2017 14:34
Pentachlorophenol	ND		0.32	1.3	1	08/15/2017 14:34
Phenanthrene	ND		0.14	0.25	1	08/15/2017 14:34
Phenol	ND		0.0050	0.0050	1	08/15/2017 14:34
Pyrene	ND		0.13	0.25	1	08/15/2017 14:34
Pyridine	ND		0.25	0.25	1	08/15/2017 14:34
1,2,4-Trichlorobenzene	ND		0.14	0.25	1	08/15/2017 14:34
2,4,5-Trichlorophenol	ND		0.012	0.012	1	08/15/2017 14:34
2,4,6-Trichlorophenol	ND		0.012	0.012	1	08/15/2017 14:34



# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID Matrix		Date C	Collected Instrument	Batch ID	
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil	08/10/20	143626		
<u>Analytes</u>	Result	MDI	RL_	<u>DF</u>	Date Analyzed	
Surrogates	<u>REC (%)</u>		<u>Limits</u>			
2-Fluorophenol	84		30-130		08/15/2017 14:34	
Phenol-d5	84		30-130		08/15/2017 14:34	
Nitrobenzene-d5	87		30-130		08/15/2017 14:34	
2-Fluorobiphenyl	79		30-130		08/15/2017 14:34	
2,4,6-Tribromophenol	21		16-130		08/15/2017 14:34	
4-Terphenyl-d14	93		30-130		08/15/2017 14:34	

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A	Soil		08/10/20	17 10:06	GC17	143626
Analytes	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acenaphthene	ND		0.14	0.25	1		08/15/2017 15:02
Acenaphthylene	ND		0.14	0.25	1		08/15/2017 15:02
Acetochlor	ND		0.25	0.25	1		08/15/2017 15:02
Anthracene	ND		0.14	0.25	1		08/15/2017 15:02
Benzidine	ND		0.23	1.3	1		08/15/2017 15:02
Benzo (a) anthracene	ND		0.050	0.050	1		08/15/2017 15:02
Benzo (a) pyrene	0.0030		0.0025	0.0025	1		08/15/2017 15:02
Benzo (b) fluoranthene	ND		0.012	0.012	1		08/15/2017 15:02
Benzo (g,h,i) perylene	ND		0.15	0.25	1		08/15/2017 15:02
Benzo (k) fluoranthene	ND		0.16	0.25	1		08/15/2017 15:02
Benzyl Alcohol	ND		0.51	1.3	1		08/15/2017 15:02
1,1-Biphenyl	ND		0.15	0.25	1		08/15/2017 15:02
Bis (2-chloroethoxy) Methane	ND		0.14	0.25	1		08/15/2017 15:02
Bis (2-chloroethyl) Ether	ND		0.0012	0.0012	1		08/15/2017 15:02
Bis (2-chloroisopropyl) Ether	ND		0.0012	0.0012	1		08/15/2017 15:02
Bis (2-ethylhexyl) Adipate	ND		0.25	0.25	1		08/15/2017 15:02
Bis (2-ethylhexyl) Phthalate	ND		0.13	0.25	1		08/15/2017 15:02
4-Bromophenyl Phenyl Ether	ND		0.16	0.25	1		08/15/2017 15:02
Butylbenzyl Phthalate	ND		0.13	0.25	1		08/15/2017 15:02
4-Chloroaniline	ND		0.0012	0.0012	1		08/15/2017 15:02
4-Chloro-3-methylphenol	ND		0.12	0.25	1		08/15/2017 15:02
2-Chloronaphthalene	ND		0.16	0.25	1		08/15/2017 15:02
2-Chlorophenol	0.0055		0.0050	0.0050	1		08/15/2017 15:02
4-Chlorophenyl Phenyl Ether	ND		0.15	0.25	1		08/15/2017 15:02
Chrysene	ND		0.14	0.25	1		08/15/2017 15:02
Dibenzo (a,h) anthracene	ND		0.0025	0.0025	1		08/15/2017 15:02
Dibenzofuran	ND		0.13	0.25	1		08/15/2017 15:02
Di-n-butyl Phthalate	ND		0.13	0.25	1		08/15/2017 15:02
1,2-Dichlorobenzene	ND		0.12	0.25	1		08/15/2017 15:02
1,3-Dichlorobenzene	ND		0.14	0.25	1		08/15/2017 15:02
1,4-Dichlorobenzene	ND		0.025	0.025	1		08/15/2017 15:02
3,3-Dichlorobenzidine	ND		0.0050	0.0050	1		08/15/2017 15:02
2,4-Dichlorophenol	ND		0.0025	0.0025	1		08/15/2017 15:02
Diethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 15:02
2,4-Dimethylphenol	ND		0.025	0.025	1		08/15/2017 15:02
Dimethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 15:02
4,6-Dinitro-2-methylphenol	ND		0.13	1.3	1		08/15/2017 15:02

(Cont.)





Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected 1	Instrument	Batch ID
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A	Soil		08/10/20	17 10:06	GC17	143626
<u>Analytes</u>	<u>Result</u>		<u>MDL</u>	<u>RL</u>	<u>DF</u>		<u>Date Analyzed</u>
2,4-Dinitrophenol	ND		0.62	0.62	1		08/15/2017 15:02
2,4-Dinitrotoluene	ND		0.025	0.025	1		08/15/2017 15:02
2,6-Dinitrotoluene	ND		0.14	0.25	1		08/15/2017 15:02
Di-n-octyl Phthalate	ND		0.14	0.50	1		08/15/2017 15:02
1,2-Diphenylhydrazine	ND		0.16	0.25	1		08/15/2017 15:02
Fluoranthene	ND		0.13	0.25	1		08/15/2017 15:02
Fluorene	ND		0.14	0.25	1		08/15/2017 15:02
Hexachlorobenzene	ND		0.025	0.025	1		08/15/2017 15:02
Hexachlorobutadiene	ND		0.025	0.025	1		08/15/2017 15:02
Hexachlorocyclopentadiene	ND		0.73	1.3	1		08/15/2017 15:02
Hexachloroethane	ND		0.14	0.25	1		08/15/2017 15:02
Indeno (1,2,3-cd) pyrene	ND		0.012	0.012	1		08/15/2017 15:02
Isophorone	ND		0.12	0.25	1		08/15/2017 15:02
2-Methylnaphthalene	ND		0.025	0.025	1		08/15/2017 15:02
2-Methylphenol (o-Cresol)	ND		0.14	0.25	1		08/15/2017 15:02
3 & 4-Methylphenol (m,p-Cresol)	ND		0.12	0.25	1		08/15/2017 15:02
Naphthalene	ND		0.0025	0.0025	1		08/15/2017 15:02
2-Nitroaniline	ND		0.62	1.3	1		08/15/2017 15:02
3-Nitroaniline	ND		0.59	1.3	1		08/15/2017 15:02
4-Nitroaniline	ND		0.55	1.3	1		08/15/2017 15:02
Nitrobenzene	ND		0.14	0.25	1		08/15/2017 15:02
2-Nitrophenol	ND		0.64	1.3	1		08/15/2017 15:02
4-Nitrophenol	ND		0.41	1.3	1		08/15/2017 15:02
N-Nitrosodiphenylamine	ND		0.16	0.25	1		08/15/2017 15:02
N-Nitrosodi-n-propylamine	ND		0.012	0.012	1		08/15/2017 15:02
Pentachlorophenol	ND		0.32	1.3	1		08/15/2017 15:02
Phenanthrene	ND		0.14	0.25	1		08/15/2017 15:02
Phenol	0.057		0.0050	0.0050	1		08/15/2017 15:02
Pyrene	ND		0.13	0.25	1		08/15/2017 15:02
Pyridine	ND		0.25	0.25	1		08/15/2017 15:02
1,2,4-Trichlorobenzene	ND		0.14	0.25	1		08/15/2017 15:02
2,4,5-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 15:02
2,4,6-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 15:02



# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date C	Collected Instrument	Batch ID
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A	Soil		08/10/2	017 10:06 GC17	143626
<u>Analytes</u>	Result	<u>N</u>	MDL_	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Surrogates	REC (%)			<u>Limits</u>		
2-Fluorophenol	93			30-130		08/15/2017 15:02
Phenol-d5	96			30-130		08/15/2017 15:02
Nitrobenzene-d5	100			30-130		08/15/2017 15:02
2-Fluorobiphenyl	87			30-130		08/15/2017 15:02
2,4,6-Tribromophenol	24			16-130		08/15/2017 15:02
4-Terphenyl-d14	103			30-130		08/15/2017 15:02

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Acenaphthene         ND         0.14         0.25         1         08/15/2017 15:3           Acenaphthylene         ND         0.14         0.25         1         08/15/2017 15:3           Acelochlor         ND         0.25         0.25         1         08/15/2017 15:3           Anthracene         ND         0.14         0.25         1         08/15/2017 15:3           Benzo (a) purpene         ND         0.050         0.050         1         08/15/2017 15:3           Benzo (a) pyrene         0.0050         0.0025         0.0050         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.012         0.012         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.015         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (a) pyrene         .005         0.012         0.012         0.12         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.15         0.25         1         08/15/2017 15:3           Benzo (a) fluoranthene         ND         0.16         0.25         1	Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
Acenaphthene         ND         0.14         0.25         1         08/15/2017 15:3           Acenaphthylene         ND         0.14         0.25         1         08/15/2017 15:3           Acetochlor         ND         0.25         0.25         1         08/15/2017 15:3           Anthracene         ND         0.14         0.25         1         08/15/2017 15:3           Benzo (a) pyrene         ND         0.050         0.050         1         08/15/2017 15:3           Benzo (a) pyrene         0.0050         0.0025         0.0025         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.012         0.012         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.015         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (a) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3<	ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil		08/10/20	17 11:11	GC17	143626
Acetaphthylene         ND         0.14         0.25         1         08/15/2017 15:3           Acetochlor         ND         0.25         0.25         1         08/15/2017 15:3           Acetochlor         ND         0.14         0.25         1         08/15/2017 15:3           Anthracene         ND         0.23         1.3         1         08/15/2017 15:3           Benzo (a) anthracene         ND         0.050         0.050         0.005         0.005         0.012         1         0.015/2017 15:3           Benzo (a) pyrene         0.0050         0.0025         0.0025         1         0.015/2017 15:3           Benzo (b) fluoranthene         ND         0.012         0.012         1         0.015/2017 15:3           Benzo (k) fluoranthene         ND         0.15         0.25         1         0.015/2017 15:3           Benzo (k) fluoranthene         ND         0.15         0.25         1         0.015/2017 15:3           Benzo (k) fluoranthene         ND         0.15         0.25         1         0.015/2017 15:3           Benzo (k) fluoranthene         ND         0.15         0.25         1         0.015/2017 15:3           Benzo (a) fluoranthene         ND         0.15	Analytes	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acetochlor         ND         0.25         0.25         1         08/15/2017 15:3           Anthracene         ND         0.14         0.25         1         08/15/2017 15:3           Benzo (a) anthracene         ND         0.23         1.3         1         08/15/2017 15:3           Benzo (a) anthracene         ND         0.050         0.050         1         08/15/2017 15:3           Benzo (a) pyrene         0.0050         0.0025         0.0025         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.15         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzyl Alcohol         ND         0.16         0.25         1         08/15/2017 15:3           Benzyl Alcohol         ND         0.15         0.25         1         08/15/2017 15:3           Bis (2-chloroethoxy) Methane         ND         0.15         0.25         1         08/15/2017 15:3           Bis (2-chloroethoxy) Methane         ND         0.012         0.0012         0.012         <	Acenaphthene	ND		0.14	0.25	1		08/15/2017 15:31
Anthracene         ND         0.14         0.25         1         08/15/2017 15:3           Benzidine         ND         0.23         1.3         1         08/15/2017 15:3           Benzo (a) anthracene         ND         0.050         0.050         1         08/15/2017 15:3           Benzo (b) pyrene         0.0050         0.0025         0.0025         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.012         0.012         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.15         0.25         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzyl Alcohol         ND         0.15         0.25         1         08/15/2017 15:3           Benzyl Alcohol         ND         0.15         0.25         1         08/15/2017 15:3           Benzyl Alcohol         ND         0.15         0.25         1         08/15/2017 15:3           Bis (2-chlorothyl) Ether         ND         0.15         0.25         1         08/15/2017 15:3           Bis (2-chlorothyl) Ether         ND         0.0012         0.0012         1         08/15/2017 15	Acenaphthylene	ND		0.14	0.25	1		08/15/2017 15:31
Benzidine         ND         0.23         1.3         1         08/15/2017 15:3           Benzo (a) anthracene         ND         0.050         0.050         1         08/15/2017 15:3           Benzo (a) pyrene         0.0050         0.0025         0.0025         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.012         0.012         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.15         0.25         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.15         0.25         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.15         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.14         0.25         1         08/15/2017 15:3           Benzo (b) fluoranthene         ND         0.14         0.25         1 <td>Acetochlor</td> <td>ND</td> <td></td> <td>0.25</td> <td>0.25</td> <td>1</td> <td></td> <td>08/15/2017 15:31</td>	Acetochlor	ND		0.25	0.25	1		08/15/2017 15:31
Benzo (a) anthracene         ND         0.0550         0.0550         1         0.8/15/2017 15:3           Benzo (a) pyrene         0.0050         0.0025         0.0025         1         0.8/15/2017 15:3           Benzo (b) fluoranthene         ND         0.012         0.012         1         0.8/15/2017 15:3           Benzo (b) fluoranthene         ND         0.16         0.25         1         0.8/15/2017 15:3           Benzo (k) fluoranthene         ND         0.16         0.25         1         0.8/15/2017 15:3           Benzy (k) fluoranthene         ND         0.16         0.25         1         0.8/15/2017 15:3           Benzy (k) fluoranthene         ND         0.16         0.25         1         0.8/15/2017 15:3           Benzy (A) kochol         ND         0.15         0.25         1         0.8/15/2017 15:3           Bis (2-chylhexyl) Methane         ND         0.14         0.25         1         0.8/15/2017 15:3           Bis (2-chylhexyl) Ether         ND         0.0012         0.0012         1         0.8/15/2017 15:3           Bis (2-chylhexyl) Adipate         ND         0.025         1         0.8/15/2017 15:3           Bis (2-chylhexyl) Phthalate         ND         0.13         0.25	Anthracene	ND		0.14	0.25	1		08/15/2017 15:31
Benzo (a) pyrene   0.0050   0.0025   0.0025   1   0.88/15/2017 15:3	Benzidine	ND		0.23	1.3	1		08/15/2017 15:31
Benzo (b) fluoranthene         ND         0.012         0.012         1         08/15/2017 15:3           Benzo (g),h.l) perylene         ND         0.15         0.25         1         08/15/2017 15:3           Benzo (k) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzyl Alcohol         ND         0.51         1.3         1         08/15/2017 15:3           1,1-Biphenyl         ND         0.15         0.25         1         08/15/2017 15:3           Bis (2-chloroethoxy) Methane         ND         0.14         0.25         1         08/15/2017 15:3           Bis (2-chloroethoxy) Ether         ND         0.0012         0.0012         1         08/15/2017 15:3           Bis (2-chloroethyl) Ether         ND         0.0012         0.012         1         08/15/2017 15:3           Bis (2-ethylhexyl) Adipate         ND         0.012         0.012         1         08/15/2017 15:3           Bis (2-ethylhexyl) Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           Bis (2-ethylhexyl) Phthalate         ND         0.16         0.25         1         08/15/2017 15:3           Bis (2-ethylhexyl) Phthalate         ND         0.13	Benzo (a) anthracene	ND		0.050	0.050	1		08/15/2017 15:31
Benzo (g,h,i) perylene   ND	Benzo (a) pyrene	0.0050		0.0025	0.0025	1		08/15/2017 15:31
Benzo (k) fluoranthene         ND         0.16         0.25         1         08/15/2017 15:3           Benzyl Alcohol         ND         0.51         1.3         1         08/15/2017 15:3           1.1-Biphenyl         ND         0.15         0.25         1         08/15/2017 15:3           Bis (2-chloroethoxy) Methane         ND         0.14         0.25         1         08/15/2017 15:3           Bis (2-chloroethoxy) Ether         ND         0.0012         0.0012         1         08/15/2017 15:3           Bis (2-chlorosthyry) Ether         ND         0.0012         0.0012         1         08/15/2017 15:3           Bis (2-chloroisopropyl) Ether         ND         0.0012         0.0012         1         08/15/2017 15:3           Bis (2-chlyflexyl) Adipate         ND         0.25         0.25         1         08/15/2017 15:3           Bis (2-chlyflexyl) Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           Bis (2-chlyflexyl) Phthalate         ND         0.16         0.25         1         08/15/2017 15:3           Butylbenzyl Phthalate         ND         0.18         0.25         1         08/15/2017 15:3           L-Chlorophenyl Phthalate         ND         0.012 </td <td>Benzo (b) fluoranthene</td> <td>ND</td> <td></td> <td>0.012</td> <td>0.012</td> <td>1</td> <td></td> <td>08/15/2017 15:31</td>	Benzo (b) fluoranthene	ND		0.012	0.012	1		08/15/2017 15:31
Benzyl Alcohol   ND   0.51   1.3   1   08/15/2017 15:3	Benzo (g,h,i) perylene	ND		0.15	0.25	1		08/15/2017 15:31
1,1-Biphenyl         ND         0.15         0.25         1         08/15/2017 15:3           Bis (2-chloroethxy) Methane         ND         0.14         0.25         1         08/15/2017 15:3           Bis (2-chloroethyl) Ether         ND         0.0012         0.0012         1         08/15/2017 15:3           Bis (2-chlorospropyl) Ether         ND         0.0012         0.0012         1         08/15/2017 15:3           Bis (2-ethylkexyl) Adipate         ND         0.25         0.25         1         08/15/2017 15:3           Bis (2-ethylkexyl) Adipate         ND         0.13         0.25         1         08/15/2017 15:3           Bis (2-ethylkexyl) Adipate         ND         0.13         0.25         1         08/15/2017 15:3           4-Bromophenyl Phenyl Ether         ND         0.16         0.25         1         08/15/2017 15:3           4-Bromophenyl Phenyl Ether         ND         0.13         0.25         1         08/15/2017 15:3           4-Chloro-3-methylphenol         ND         0.13         0.25         1         08/15/2017 15:3           4-Chloro-3-methylphenol         ND         0.12         0.25         1         08/15/2017 15:3           2-Chlorophenol         0.000         0.12	Benzo (k) fluoranthene	ND		0.16	0.25	1		08/15/2017 15:31
Bis (2-chloroethoxy) Methane   ND   0.14   0.25   1   0.8/15/2017 15:3	Benzyl Alcohol	ND		0.51	1.3	1		08/15/2017 15:31
Bis (2-chloroethyl) Ether   ND   0.0012   0.0012   1   08/15/2017 15:3	1,1-Biphenyl	ND		0.15	0.25	1		08/15/2017 15:31
Bis (2-chloroisopropyl) Ether         ND         0.0012         0.0012         1         08/15/2017 15:3           Bis (2-ethylhexyl) Adipate         ND         0.25         0.25         1         08/15/2017 15:3           Bis (2-ethylhexyl) Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           4-Bromophenyl Phenyl Ether         ND         0.16         0.25         1         08/15/2017 15:3           4-Bromophenyl Phenyl Ether         ND         0.13         0.25         1         08/15/2017 15:3           4-Chloroanlline         ND         0.012         0.0012         1         08/15/2017 15:3           4-Chloro-3-methylphenol         ND         0.12         0.25         1         08/15/2017 15:3           2-Chlorophenol         ND         0.16         0.25         1         08/15/2017 15:3           2-Chlorophenol         0.0074         0.0050         0.0050         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzofuran         ND         0.014         0.25	Bis (2-chloroethoxy) Methane	ND		0.14	0.25	1		08/15/2017 15:31
Bis (2-ethylhexyl) Adipate ND 0.25 0.25 1 08/15/2017 15:3  Bis (2-ethylhexyl) Phthalate ND 0.13 0.25 1 08/15/2017 15:3  4-Bromophenyl Phenyl Ether ND 0.16 0.25 1 08/15/2017 15:3  Butylbenzyl Phthalate ND 0.13 0.25 1 08/15/2017 15:3  Butylbenzyl Phthalate ND 0.13 0.25 1 08/15/2017 15:3  4-Chloroaniline ND 0.0012 0.0012 1 08/15/2017 15:3  4-Chloroanylphenol ND 0.12 0.25 1 08/15/2017 15:3  4-Chloroanylphenol ND 0.16 0.25 1 08/15/2017 15:3  4-Chlorophenol ND 0.16 0.25 1 08/15/2017 15:3  4-Chlorophenol 0.0074 0.0050 0.0050 1 08/15/2017 15:3  4-Chlorophenyl Phenyl Ether ND 0.15 0.25 1 08/15/2017 15:3  Chrysene ND 0.14 0.25 1 08/15/2017 15:3  Dibenzo (a,h) anthracene ND 0.0025 0.0025 1 08/15/2017 15:3  Dibenzofuran ND 0.13 0.25 1 08/15/2017 15:3  Dibenzofuran ND 0.13 0.25 1 08/15/2017 15:3  Di-butyl Phthalate ND 0.13 0.25 1 08/15/2017 15:3  1,2-Dichlorobenzene ND 0.14 0.25 1 08/15/2017 15:3  1,3-Dichlorobenzene ND 0.14 0.25 1 08/15/2017 15:3  3,3-Dichlorobenzene ND 0.025 0.0025 1 08/15/2017 15:3  3,3-Dichlorobenzene ND 0.025 0.0025 1 08/15/2017 15:3  2,4-Dichlorobenzene ND 0.0025 0.0025 1 08/15/2017 15:3  2,4-Dichlorobenzene ND 0.0025 0.0025 1 08/15/2017 15:3  Diethyl Phthalate ND 0.0025 0.0025 1 08/15/2017 15:3	Bis (2-chloroethyl) Ether	ND		0.0012	0.0012	1		08/15/2017 15:31
Bis (2-ethylhexyl) Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           4-Bromophenyl Phenyl Ether         ND         0.16         0.25         1         08/15/2017 15:3           Butylbenzyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           4-Chloroaniline         ND         0.0012         0.0012         1         08/15/2017 15:3           4-Chloro-3-methylphenol         ND         0.12         0.25         1         08/15/2017 15:3           2-Chloroaphthalene         ND         0.16         0.25         1         08/15/2017 15:3           2-Chlorophenol         ND         0.16         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.13         0.25	Bis (2-chloroisopropyl) Ether	ND		0.0012	0.0012	1		08/15/2017 15:31
4-Bromophenyl Phenyl Ether         ND         0.16         0.25         1         08/15/2017 15:3           Butylbenzyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           4-Chloroaniline         ND         0.0012         0.0012         1         08/15/2017 15:3           4-Chloro-3-methylphenol         ND         0.12         0.25         1         08/15/2017 15:3           2-Chloroaphthalene         ND         0.16         0.25         1         08/15/2017 15:3           2-Chlorophenol         0.0074         0.0050         0.0050         1         08/15/2017 15:3           2-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo furan         ND         0.13         0.25         1         08/15/2017 15:3           Di-n-butyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1 <td< td=""><td>Bis (2-ethylhexyl) Adipate</td><td>ND</td><td></td><td>0.25</td><td>0.25</td><td>1</td><td></td><td>08/15/2017 15:31</td></td<>	Bis (2-ethylhexyl) Adipate	ND		0.25	0.25	1		08/15/2017 15:31
Butylbenzyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           4-Chloroanilline         ND         0.0012         0.0012         1         08/15/2017 15:3           4-Chloro-3-methylphenol         ND         0.12         0.25         1         08/15/2017 15:3           2-Chlorophenol         ND         0.16         0.25         1         08/15/2017 15:3           2-Chlorophenol         0.0074         0.0050         0.0050         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.14         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.14         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.14         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.13         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.13         <	Bis (2-ethylhexyl) Phthalate	ND		0.13	0.25	1		08/15/2017 15:31
4-Chloroaniline         ND         0.0012         0.0012         1         08/15/2017 15:3           4-Chloro-3-methylphenol         ND         0.12         0.25         1         08/15/2017 15:3           2-Chloronaphthalene         ND         0.16         0.25         1         08/15/2017 15:3           2-Chlorophenol         0.0074         0.0050         0.0050         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.14         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.14         0.25         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.0025         0.0025         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.13         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.13         0.25         1         08/15/2017 15:3           Dibenzo (uran         ND         0.13	4-Bromophenyl Phenyl Ether	ND		0.16	0.25	1		08/15/2017 15:31
4-Chloro-3-methylphenol         ND         0.12         0.25         1         08/15/2017 15:3           2-Chloronaphthalene         ND         0.16         0.25         1         08/15/2017 15:3           2-Chlorophenol         0.0074         0.0050         0.0050         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.0025         0.0025         1         08/15/2017 15:3           Dibenzofuran         ND         0.13         0.25         1         08/15/2017 15:3           Di-n-butyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           3,3-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1 <td< td=""><td>Butylbenzyl Phthalate</td><td>ND</td><td></td><td>0.13</td><td>0.25</td><td>1</td><td></td><td>08/15/2017 15:31</td></td<>	Butylbenzyl Phthalate	ND		0.13	0.25	1		08/15/2017 15:31
2-Chloronaphthalene         ND         0.16         0.25         1         08/15/2017 15:3           2-Chlorophenol         0.0074         0.0050         0.0050         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.0025         0.0025         1         08/15/2017 15:3           Dibenzofuran         ND         0.13         0.25         1         08/15/2017 15:3           Di-n-butyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         <	4-Chloroaniline	ND		0.0012	0.0012	1		08/15/2017 15:31
2-Chlorophenol         0.0074         0.0050         0.0050         1         08/15/2017 15:3           4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.0025         0.0025         1         08/15/2017 15:3           Dibenzofuran         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1	4-Chloro-3-methylphenol	ND		0.12	0.25	1		08/15/2017 15:31
4-Chlorophenyl Phenyl Ether         ND         0.15         0.25         1         08/15/2017 15:3           Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.0025         0.0025         1         08/15/2017 15:3           Dibenzofuran         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           0iethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           0imethyl Phthalate         ND         0.0025         0.0025         1	2-Chloronaphthalene	ND		0.16	0.25	1		08/15/2017 15:31
Chrysene         ND         0.14         0.25         1         08/15/2017 15:3           Dibenzo (a,h) anthracene         ND         0.0025         0.0025         1         08/15/2017 15:3           Dibenzofuran         ND         0.13         0.25         1         08/15/2017 15:3           Di-n-butyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1	2-Chlorophenol	0.0074		0.0050	0.0050	1		08/15/2017 15:31
Dibenzo (a,h) anthracene         ND         0.0025         0.0025         1         08/15/2017 15:3           Dibenzofuran         ND         0.13         0.25         1         08/15/2017 15:3           Di-n-butyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	4-Chlorophenyl Phenyl Ether	ND		0.15	0.25	1		08/15/2017 15:31
Dibenzofuran         ND         0.13         0.25         1         08/15/2017 15:3           Di-n-butyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethyl Phthalate         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	Chrysene	ND		0.14	0.25	1		08/15/2017 15:31
Di-n-butyl Phthalate         ND         0.13         0.25         1         08/15/2017 15:3           1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethyl Phthalate         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	Dibenzo (a,h) anthracene	ND		0.0025	0.0025	1		08/15/2017 15:31
1,2-Dichlorobenzene         ND         0.12         0.25         1         08/15/2017 15:3           1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethyl Phthalate         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	Dibenzofuran	ND		0.13	0.25	1		08/15/2017 15:31
1,3-Dichlorobenzene         ND         0.14         0.25         1         08/15/2017 15:3           1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethylphenol         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	Di-n-butyl Phthalate	ND		0.13	0.25	1		08/15/2017 15:31
1,4-Dichlorobenzene         ND         0.025         0.025         1         08/15/2017 15:3           3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethylphenol         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	1,2-Dichlorobenzene	ND		0.12	0.25	1		08/15/2017 15:31
3,3-Dichlorobenzidine         ND         0.0050         0.0050         1         08/15/2017 15:3           2,4-Dichlorophenol         ND         0.0025         0.0025         1         08/15/2017 15:3           Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethylphenol         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	1,3-Dichlorobenzene	ND		0.14	0.25	1		08/15/2017 15:31
2,4-Dichlorophenol       ND       0.0025       0.0025       1       08/15/2017 15:3         Diethyl Phthalate       ND       0.0025       0.0025       1       08/15/2017 15:3         2,4-Dimethylphenol       ND       0.025       0.025       1       08/15/2017 15:3         Dimethyl Phthalate       ND       0.0025       0.0025       1       08/15/2017 15:3	1,4-Dichlorobenzene	ND		0.025	0.025	1		08/15/2017 15:31
Diethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3           2,4-Dimethylphenol         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	3,3-Dichlorobenzidine	ND		0.0050	0.0050	1		08/15/2017 15:31
2,4-Dimethylphenol         ND         0.025         0.025         1         08/15/2017 15:3           Dimethyl Phthalate         ND         0.0025         0.0025         1         08/15/2017 15:3	2,4-Dichlorophenol	ND		0.0025	0.0025	1		08/15/2017 15:31
Dimethyl Phthalate ND 0.0025 0.0025 1 08/15/2017 15:3	Diethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 15:31
	2,4-Dimethylphenol	ND	<del>.</del>	0.025	0.025	1		08/15/2017 15:31
4,6-Dinitro-2-methylphenol ND 0.13 1.3 1 08/15/2017 15:3	Dimethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 15:31
	4,6-Dinitro-2-methylphenol	ND		0.13	1.3	1		08/15/2017 15:31

(Cont.)

Angela Rydelius, Lab Manager



Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil		08/10/20	17 11:11	GC17	143626
<u>Analytes</u>	<u>Result</u>		<u>MDL</u>	<u>RL</u>	<u>DF</u>		<u>Date Analyzed</u>
2,4-Dinitrophenol	ND		0.62	0.62	1		08/15/2017 15:31
2,4-Dinitrotoluene	ND		0.025	0.025	1		08/15/2017 15:31
2,6-Dinitrotoluene	ND		0.14	0.25	1		08/15/2017 15:31
Di-n-octyl Phthalate	ND		0.14	0.50	1		08/15/2017 15:31
1,2-Diphenylhydrazine	ND		0.16	0.25	1		08/15/2017 15:31
Fluoranthene	ND		0.13	0.25	1		08/15/2017 15:31
Fluorene	ND		0.14	0.25	1		08/15/2017 15:31
Hexachlorobenzene	ND		0.025	0.025	1		08/15/2017 15:31
Hexachlorobutadiene	ND		0.025	0.025	1		08/15/2017 15:31
Hexachlorocyclopentadiene	ND		0.73	1.3	1		08/15/2017 15:31
Hexachloroethane	ND		0.14	0.25	1		08/15/2017 15:31
Indeno (1,2,3-cd) pyrene	ND		0.012	0.012	1		08/15/2017 15:31
Isophorone	ND		0.12	0.25	1		08/15/2017 15:31
2-Methylnaphthalene	ND		0.025	0.025	1		08/15/2017 15:31
2-Methylphenol (o-Cresol)	ND		0.14	0.25	1		08/15/2017 15:31
3 & 4-Methylphenol (m,p-Cresol)	ND		0.12	0.25	1		08/15/2017 15:31
Naphthalene	ND		0.0025	0.0025	1		08/15/2017 15:31
2-Nitroaniline	ND		0.62	1.3	1		08/15/2017 15:31
3-Nitroaniline	ND		0.59	1.3	1		08/15/2017 15:31
4-Nitroaniline	ND		0.55	1.3	1		08/15/2017 15:31
Nitrobenzene	ND		0.14	0.25	1		08/15/2017 15:31
2-Nitrophenol	ND		0.64	1.3	1		08/15/2017 15:31
4-Nitrophenol	ND		0.41	1.3	1		08/15/2017 15:31
N-Nitrosodiphenylamine	ND		0.16	0.25	1		08/15/2017 15:31
N-Nitrosodi-n-propylamine	ND		0.012	0.012	1		08/15/2017 15:31
Pentachlorophenol	ND		0.32	1.3	1		08/15/2017 15:31
Phenanthrene	ND		0.14	0.25	1		08/15/2017 15:31
Phenol	ND		0.0050	0.0050	1		08/15/2017 15:31
Pyrene	ND		0.13	0.25	1		08/15/2017 15:31
Pyridine	ND		0.25	0.25	1		08/15/2017 15:31
1,2,4-Trichlorobenzene	ND		0.14	0.25	1		08/15/2017 15:31
2,4,5-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 15:31
2,4,6-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 15:31



# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix	Date Collected Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil	08/10/2017 11:11 GC17	143626
<u>Analytes</u>	Result	<u>MDL</u>	<u>RL</u> <u>DF</u>	Date Analyzed
<u>Surrogates</u>	REC (%)	<u>Qualifiers</u>	<u>Limits</u>	
2-Fluorophenol	118		30-130	08/15/2017 15:31
Phenol-d5	124		30-130	08/15/2017 15:31
Nitrobenzene-d5	126		30-130	08/15/2017 15:31
2-Fluorobiphenyl	108		30-130	08/15/2017 15:31
2,4,6-Tribromophenol	37		16-130	08/15/2017 15:31
4-Terphenyl-d14	135	S	30-130	08/15/2017 15:31
Analyst(s): REB		Aı	nalytical Comments: c2	

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	1708536-007A	Soil		08/10/20	17 11:48	GC17	143626
<u>Analytes</u>	<u>Result</u>		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acenaphthene	ND		0.14	0.25	1		08/15/2017 15:59
Acenaphthylene	ND		0.14	0.25	1		08/15/2017 15:59
Acetochlor	ND		0.25	0.25	1		08/15/2017 15:59
Anthracene	ND		0.14	0.25	1		08/15/2017 15:59
Benzidine	ND		0.23	1.3	1		08/15/2017 15:59
Benzo (a) anthracene	ND		0.050	0.050	1		08/15/2017 15:59
Benzo (a) pyrene	0.029		0.0025	0.0025	1		08/15/2017 15:59
Benzo (b) fluoranthene	0.026		0.012	0.012	1		08/15/2017 15:59
Benzo (g,h,i) perylene	ND		0.15	0.25	1		08/15/2017 15:59
Benzo (k) fluoranthene	ND		0.16	0.25	1		08/15/2017 15:59
Benzyl Alcohol	ND		0.51	1.3	1		08/15/2017 15:59
1,1-Biphenyl	ND		0.15	0.25	1		08/15/2017 15:59
Bis (2-chloroethoxy) Methane	ND		0.14	0.25	1		08/15/2017 15:59
Bis (2-chloroethyl) Ether	ND		0.0012	0.0012	1		08/15/2017 15:59
Bis (2-chloroisopropyl) Ether	ND		0.0012	0.0012	1		08/15/2017 15:59
Bis (2-ethylhexyl) Adipate	ND		0.25	0.25	1		08/15/2017 15:59
Bis (2-ethylhexyl) Phthalate	ND		0.13	0.25	1		08/15/2017 15:59
4-Bromophenyl Phenyl Ether	ND		0.16	0.25	1		08/15/2017 15:59
Butylbenzyl Phthalate	ND		0.13	0.25	1		08/15/2017 15:59
4-Chloroaniline	ND		0.0012	0.0012	1		08/15/2017 15:59
4-Chloro-3-methylphenol	ND		0.12	0.25	1		08/15/2017 15:59
2-Chloronaphthalene	ND		0.16	0.25	1		08/15/2017 15:59
2-Chlorophenol	0.0056		0.0050	0.0050	1		08/15/2017 15:59
4-Chlorophenyl Phenyl Ether	ND		0.15	0.25	1		08/15/2017 15:59
Chrysene	ND		0.14	0.25	1		08/15/2017 15:59
Dibenzo (a,h) anthracene	0.0054		0.0025	0.0025	1		08/15/2017 15:59
Dibenzofuran	ND		0.13	0.25	1		08/15/2017 15:59
Di-n-butyl Phthalate	ND		0.13	0.25	1		08/15/2017 15:59
1,2-Dichlorobenzene	ND		0.12	0.25	1		08/15/2017 15:59
1,3-Dichlorobenzene	ND		0.14	0.25	1		08/15/2017 15:59
1,4-Dichlorobenzene	ND		0.025	0.025	1		08/15/2017 15:59
3,3-Dichlorobenzidine	ND		0.0050	0.0050	1		08/15/2017 15:59
2,4-Dichlorophenol	ND		0.0025	0.0025	1		08/15/2017 15:59
Diethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 15:59
2,4-Dimethylphenol	ND	<del>.</del>	0.025	0.025	1		08/15/2017 15:59
Dimethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 15:59
4,6-Dinitro-2-methylphenol	ND		0.13	1.3	1		08/15/2017 15:59

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Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	1708536-007A	Soil		08/10/20	17 11:48	GC17	143626
<u>Analytes</u>	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
2,4-Dinitrophenol	ND		0.62	0.62	1		08/15/2017 15:59
2,4-Dinitrotoluene	ND		0.025	0.025	1		08/15/2017 15:59
2,6-Dinitrotoluene	ND		0.14	0.25	1		08/15/2017 15:59
Di-n-octyl Phthalate	ND		0.14	0.50	1		08/15/2017 15:59
1,2-Diphenylhydrazine	ND		0.16	0.25	1		08/15/2017 15:59
Fluoranthene	ND		0.13	0.25	1		08/15/2017 15:59
Fluorene	ND		0.14	0.25	1		08/15/2017 15:59
Hexachlorobenzene	ND		0.025	0.025	1		08/15/2017 15:59
Hexachlorobutadiene	ND		0.025	0.025	1		08/15/2017 15:59
Hexachlorocyclopentadiene	ND		0.73	1.3	1		08/15/2017 15:59
Hexachloroethane	ND		0.14	0.25	1		08/15/2017 15:59
Indeno (1,2,3-cd) pyrene	0.018		0.012	0.012	1		08/15/2017 15:59
Isophorone	ND		0.12	0.25	1		08/15/2017 15:59
2-Methylnaphthalene	ND		0.025	0.025	1		08/15/2017 15:59
2-Methylphenol (o-Cresol)	ND		0.14	0.25	1		08/15/2017 15:59
3 & 4-Methylphenol (m,p-Cresol)	ND		0.12	0.25	1		08/15/2017 15:59
Naphthalene	ND		0.0025	0.0025	1		08/15/2017 15:59
2-Nitroaniline	ND		0.62	1.3	1		08/15/2017 15:59
3-Nitroaniline	ND		0.59	1.3	1		08/15/2017 15:59
4-Nitroaniline	ND		0.55	1.3	1		08/15/2017 15:59
Nitrobenzene	ND		0.14	0.25	1		08/15/2017 15:59
2-Nitrophenol	ND		0.64	1.3	1		08/15/2017 15:59
4-Nitrophenol	ND		0.41	1.3	1		08/15/2017 15:59
N-Nitrosodiphenylamine	ND		0.16	0.25	1		08/15/2017 15:59
N-Nitrosodi-n-propylamine	ND		0.012	0.012	1		08/15/2017 15:59
Pentachlorophenol	ND		0.32	1.3	1		08/15/2017 15:59
Phenanthrene	ND		0.14	0.25	1		08/15/2017 15:59
Phenol	ND		0.0050	0.0050	1		08/15/2017 15:59
Pyrene	ND		0.13	0.25	1		08/15/2017 15:59
Pyridine	ND		0.25	0.25	1		08/15/2017 15:59
1,2,4-Trichlorobenzene	ND		0.14	0.25	1		08/15/2017 15:59
2,4,5-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 15:59
2,4,6-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 15:59



# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date C	Collected Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6") <u>Analytes</u>	1708536-007A	Soil		08/10/2017 11:48 GC17 14		
	Result	<u>N</u>	<u>/IDL</u>	<u>RL</u>	<u>DF</u>	Date Analyzed
Surrogates	REC (%)			<u>Limits</u>		
2-Fluorophenol	86			30-130		08/15/2017 15:59
Phenol-d5	85			30-130		08/15/2017 15:59
Nitrobenzene-d5	91			30-130		08/15/2017 15:59
2-Fluorobiphenyl	78			30-130		08/15/2017 15:59
2,4,6-Tribromophenol	21			16-130		08/15/2017 15:59
4-Terphenyl-d14	94			30-130		08/15/2017 15:59



Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	1708536-008A	Soil		08/10/20	17 12:42	GC17	143626
<u>Analytes</u>	Result		<u>MDL</u>	<u>RL</u>	<u>DF</u>		Date Analyzed
Acenaphthene	ND		0.14	0.25	1		08/15/2017 16:27
Acenaphthylene	ND		0.14	0.25	1		08/15/2017 16:27
Acetochlor	ND		0.25	0.25	1		08/15/2017 16:27
Anthracene	ND		0.14	0.25	1		08/15/2017 16:27
Benzidine	ND		0.23	1.3	1		08/15/2017 16:27
Benzo (a) anthracene	ND		0.050	0.050	1		08/15/2017 16:27
Benzo (a) pyrene	ND		0.0025	0.0025	1		08/15/2017 16:27
Benzo (b) fluoranthene	ND		0.012	0.012	1		08/15/2017 16:27
Benzo (g,h,i) perylene	ND		0.15	0.25	1		08/15/2017 16:27
Benzo (k) fluoranthene	ND		0.16	0.25	1		08/15/2017 16:27
Benzyl Alcohol	ND		0.51	1.3	1		08/15/2017 16:27
1,1-Biphenyl	ND		0.15	0.25	1		08/15/2017 16:27
Bis (2-chloroethoxy) Methane	ND		0.14	0.25	1		08/15/2017 16:27
Bis (2-chloroethyl) Ether	ND		0.0012	0.0012	1		08/15/2017 16:27
Bis (2-chloroisopropyl) Ether	ND		0.0012	0.0012	1		08/15/2017 16:27
Bis (2-ethylhexyl) Adipate	ND		0.25	0.25	1		08/15/2017 16:27
Bis (2-ethylhexyl) Phthalate	ND		0.13	0.25	1		08/15/2017 16:27
4-Bromophenyl Phenyl Ether	ND		0.16	0.25	1		08/15/2017 16:27
Butylbenzyl Phthalate	ND		0.13	0.25	1		08/15/2017 16:27
4-Chloroaniline	ND		0.0012	0.0012	1		08/15/2017 16:27
4-Chloro-3-methylphenol	ND		0.12	0.25	1		08/15/2017 16:27
2-Chloronaphthalene	ND		0.16	0.25	1		08/15/2017 16:27
2-Chlorophenol	ND		0.0050	0.0050	1		08/15/2017 16:27
4-Chlorophenyl Phenyl Ether	ND		0.15	0.25	1		08/15/2017 16:27
Chrysene	ND		0.14	0.25	1		08/15/2017 16:27
Dibenzo (a,h) anthracene	ND		0.0025	0.0025	1		08/15/2017 16:27
Dibenzofuran	ND		0.13	0.25	1		08/15/2017 16:27
Di-n-butyl Phthalate	ND		0.13	0.25	1		08/15/2017 16:27
1,2-Dichlorobenzene	ND		0.12	0.25	1		08/15/2017 16:27
1,3-Dichlorobenzene	ND		0.14	0.25	1		08/15/2017 16:27
1,4-Dichlorobenzene	ND		0.025	0.025	1		08/15/2017 16:27
3,3-Dichlorobenzidine	ND		0.0050	0.0050	1		08/15/2017 16:27
2,4-Dichlorophenol	ND		0.0025	0.0025	1		08/15/2017 16:27
Diethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 16:27
2,4-Dimethylphenol	ND		0.025	0.025	1		08/15/2017 16:27
Dimethyl Phthalate	ND		0.0025	0.0025	1		08/15/2017 16:27
4,6-Dinitro-2-methylphenol	ND		0.13	1.3	1		08/15/2017 16:27

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Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix		Date Co	ollected	Instrument	Batch ID
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	1708536-008A	Soil		08/10/20	17 12:42	GC17	143626
<u>Analytes</u>	Result		MDL	<u>RL</u>	<u>DF</u>		Date Analyzed
2,4-Dinitrophenol	ND		0.62	0.62	1		08/15/2017 16:27
2,4-Dinitrotoluene	ND		0.025	0.025	1		08/15/2017 16:27
2,6-Dinitrotoluene	ND		0.14	0.25	1		08/15/2017 16:27
Di-n-octyl Phthalate	ND		0.14	0.50	1		08/15/2017 16:27
1,2-Diphenylhydrazine	ND		0.16	0.25	1		08/15/2017 16:27
Fluoranthene	ND		0.13	0.25	1		08/15/2017 16:27
Fluorene	ND		0.14	0.25	1		08/15/2017 16:27
Hexachlorobenzene	ND		0.025	0.025	1		08/15/2017 16:27
Hexachlorobutadiene	ND		0.025	0.025	1		08/15/2017 16:27
Hexachlorocyclopentadiene	ND		0.73	1.3	1		08/15/2017 16:27
Hexachloroethane	ND		0.14	0.25	1		08/15/2017 16:27
Indeno (1,2,3-cd) pyrene	ND		0.012	0.012	1		08/15/2017 16:27
Isophorone	ND		0.12	0.25	1		08/15/2017 16:27
2-Methylnaphthalene	ND		0.025	0.025	1		08/15/2017 16:27
2-Methylphenol (o-Cresol)	ND		0.14	0.25	1		08/15/2017 16:27
3 & 4-Methylphenol (m,p-Cresol)	ND		0.12	0.25	1		08/15/2017 16:27
Naphthalene	ND		0.0025	0.0025	1		08/15/2017 16:27
2-Nitroaniline	ND		0.62	1.3	1		08/15/2017 16:27
3-Nitroaniline	ND		0.59	1.3	1		08/15/2017 16:27
4-Nitroaniline	ND		0.55	1.3	1		08/15/2017 16:27
Nitrobenzene	ND		0.14	0.25	1		08/15/2017 16:27
2-Nitrophenol	ND		0.64	1.3	1		08/15/2017 16:27
4-Nitrophenol	ND		0.41	1.3	1		08/15/2017 16:27
N-Nitrosodiphenylamine	ND		0.16	0.25	1		08/15/2017 16:27
N-Nitrosodi-n-propylamine	ND		0.012	0.012	1		08/15/2017 16:27
Pentachlorophenol	ND		0.32	1.3	1		08/15/2017 16:27
Phenanthrene	ND		0.14	0.25	1		08/15/2017 16:27
Phenol	ND		0.0050	0.0050	1		08/15/2017 16:27
Pyrene	ND		0.13	0.25	1		08/15/2017 16:27
Pyridine	ND		0.25	0.25	1		08/15/2017 16:27
1,2,4-Trichlorobenzene	ND		0.14	0.25	1		08/15/2017 16:27
2,4,5-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 16:27
2,4,6-Trichlorophenol	ND		0.012	0.012	1		08/15/2017 16:27

# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** SW3550B/3640A

Date Prepared:8/14/17Analytical Method:SW8270CProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Client ID	Lab ID	Matrix	D	ate (	Collected Instrument	Batch ID		
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6") <u>Analytes</u>	1708536-008A	Soil	0	08/10/2017 12:42 GC17				
	Result	MD	_ <u>RL</u>	=	<u>DF</u>	<u>Date Analyzed</u>		
Surrogates	REC (%)		<u>Li</u>	<u>imits</u>				
2-Fluorophenol	88		30	0-130		08/15/2017 16:27		
Phenol-d5	87		30	0-130		08/15/2017 16:27		
Nitrobenzene-d5	93		30	0-130		08/15/2017 16:27		
2-Fluorobiphenyl	78		30	0-130		08/15/2017 16:27		
2,4,6-Tribromophenol	25		10	6-130		08/15/2017 16:27		
4-Terphenyl-d14	94		30	0-130		08/15/2017 16:27		

1708536

# **Analytical Report**

 Client:
 AGS, Inc.

 Date Received:
 8/11/17 13:10

 Date Prepared:
 8/11/17

**Extraction Method:** SW3050B **Analytical Method:** SW6020

WorkOrder:

**Project:** University Mound East Pipeline; AGS 14-027/24

Unit: mg/Kg

CAM / CCR 17 Metals								
Client ID	Lab ID	Matrix	Date C	Collected Instrument	Batch ID			
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil	08/09/20	017 10:02 ICP-MS2	143537			
Analytes	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed			
Antimony	ND		5.0	10	08/14/2017 22:57			
Arsenic	ND		5.0	10	08/14/2017 22:57			
Barium	98		50	10	08/14/2017 22:57			
Beryllium	ND		5.0	10	08/14/2017 22:57			
Cadmium	ND		2.5	10	08/14/2017 22:57			
Chromium	140		5.0	10	08/14/2017 22:57			
Cobalt	27		5.0	10	08/14/2017 22:57			
Copper	41		5.0	10	08/14/2017 22:57			
Lead	ND		5.0	10	08/14/2017 22:57			
Mercury	ND		0.50	10	08/14/2017 22:57			
Molybdenum	ND		5.0	10	08/14/2017 22:57			
Nickel	78		5.0	10	08/14/2017 22:57			
Selenium	ND		5.0	10	08/14/2017 22:57			
Silver	ND		5.0	10	08/14/2017 22:57			
Thallium	ND		5.0	10	08/14/2017 22:57			
Vanadium	170		5.0	10	08/14/2017 22:57			
Zinc	ND		50	10	08/14/2017 22:57			
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>					
Terbium	102		70-130		08/14/2017 22:57			
Analyst(s): ND			Analytical Com	nments: a1				

# **Analytical Report**

 Client:
 AGS, Inc.

 Date Received:
 8/11/17 13:10

 Date Prepared:
 8/11/17

WorkOrder: 1708536
Extraction Method: SW3050B
Analytical Method: SW6020

**Project:** University Mound East Pipeline; AGS 14-027/24

Unit: mg/Kg

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil	08/09/20	017 12:16 ICP-MS2	143575
Analytes	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Antimony	ND		0.50	1	08/14/2017 21:01
Arsenic	3.6		0.50	1	08/14/2017 21:01
Barium	80		5.0	1	08/14/2017 21:01
Beryllium	ND		0.50	1	08/14/2017 21:01
Cadmium	ND		0.25	1	08/14/2017 21:01
Chromium	96		0.50	1	08/14/2017 21:01
Cobalt	12		0.50	1	08/14/2017 21:01
Copper	16		0.50	1	08/14/2017 21:01
Lead	8.6		0.50	1	08/14/2017 21:01
Mercury	0.099		0.050	1	08/14/2017 21:01
Molybdenum	ND		0.50	1	08/14/2017 21:01
Nickel	46		0.50	1	08/14/2017 21:01
Selenium	ND		0.50	1	08/14/2017 21:01
Silver	ND		0.50	1	08/14/2017 21:01
Thallium	ND		0.50	1	08/14/2017 21:01
Vanadium	110		0.50	1	08/14/2017 21:01
Zinc	46		5.0	1	08/14/2017 21:01
Surrogates	<u>REC (%)</u>		<u>Limits</u>		
Terbium	112		70-130		08/14/2017 21:01
Analyst(s): MIG					

1708536

# **Analytical Report**

 Client:
 AGS, Inc.

 Date Received:
 8/11/17 13:10

 Date Prepared:
 8/11/17

Extraction Method: SW3050B
Analytical Method: SW6020

WorkOrder:

**Project:** University Mound East Pipeline; AGS 14-027/24

Unit: mg/Kg

Client ID	Lab ID	Matrix	Date Col	lected Instrument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil	08/09/2017	7 13:32 ICP-MS2	143575
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Antimony	ND		5.0	10	08/15/2017 14:37
Arsenic	ND		5.0	10	08/15/2017 14:37
Barium	66		50	10	08/15/2017 14:37
Beryllium	ND		5.0	10	08/15/2017 14:37
Cadmium	ND		2.5	10	08/15/2017 14:37
Chromium	220		5.0	10	08/15/2017 14:37
Cobalt	36		5.0	10	08/15/2017 14:37
Copper	69		5.0	10	08/15/2017 14:37
Lead	ND		5.0	10	08/15/2017 14:37
Mercury	ND		0.50	10	08/15/2017 14:37
Molybdenum	ND		5.0	10	08/15/2017 14:37
Nickel	130		5.0	10	08/15/2017 14:37
Selenium	ND		5.0	10	08/15/2017 14:37
Silver	ND		5.0	10	08/15/2017 14:37
Thallium	ND		5.0	10	08/15/2017 14:37
Vanadium	200		5.0	10	08/15/2017 14:37
Zinc	ND		50	10	08/15/2017 14:37
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
Terbium	99		70-130		08/15/2017 14:37
Analyst(s): ND			Analytical Comm	ents: a1	

# **Analytical Report**

**Client:** AGS, Inc. **Date Received:** 8/11/17 13:10 **Date Prepared:** 8/11/17

**Project:** 

University Mound East Pipeline; AGS 14-027/24

**WorkOrder:** 1708536 **Extraction Method:** SW3050B

Analytical Method: SW6020

**Unit:** mg/Kg

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil	08/10/201	17 08:35 ICP-MS2	143575
Analytes	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Antimony	ND		0.50	1	08/14/2017 21:32
Arsenic	3.5		0.50	1	08/14/2017 21:32
Barium	45		5.0	1	08/14/2017 21:32
Beryllium	ND		0.50	1	08/14/2017 21:32
Cadmium	ND		0.25	1	08/14/2017 21:32
Chromium	62		0.50	1	08/14/2017 21:32
Cobalt	7.6		0.50	1	08/14/2017 21:32
Copper	11		0.50	1	08/14/2017 21:32
Lead	25		0.50	1	08/14/2017 21:32
Mercury	0.12		0.050	1	08/14/2017 21:32
Molybdenum	ND		0.50	1	08/14/2017 21:32
Nickel	48		0.50	1	08/14/2017 21:32
Selenium	ND		0.50	1	08/14/2017 21:32
Silver	ND		0.50	1	08/14/2017 21:32
Thallium	ND		0.50	1	08/14/2017 21:32
Vanadium	52		0.50	1	08/14/2017 21:32
Zinc	39		5.0	1	08/14/2017 21:32
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Terbium	105		70-130		08/14/2017 21:32
Analyst(s): ND					

# **Analytical Report**

 Client:
 AGS, Inc.

 Date Received:
 8/11/17 13:10

 Date Prepared:
 8/11/17

**Project:** 

University Mound East Pipeline; AGS 14-027/24

**WorkOrder:** 1708536

**Extraction Method:** SW3050B **Analytical Method:** SW6020

**Unit:** mg/Kg

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A	Soil	08/10/201	17 10:06 ICP-MS1	143575
Analytes	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Antimony	ND		0.50	1	08/14/2017 11:47
Arsenic	2.2		0.50	1	08/14/2017 11:47
Barium	310		5.0	1	08/14/2017 11:47
Beryllium	ND		0.50	1	08/14/2017 11:47
Cadmium	ND		0.25	1	08/14/2017 11:47
Chromium	51		0.50	1	08/14/2017 11:47
Cobalt	10		0.50	1	08/14/2017 11:47
Copper	52		0.50	1	08/14/2017 11:47
Lead	31		0.50	1	08/14/2017 11:47
Mercury	1.1		0.050	1	08/14/2017 11:47
Molybdenum	ND		0.50	1	08/14/2017 11:47
Nickel	29		0.50	1	08/14/2017 11:47
Selenium	ND		0.50	1	08/14/2017 11:47
Silver	ND		0.50	1	08/14/2017 11:47
Thallium	ND		0.50	1	08/14/2017 11:47
Vanadium	54		0.50	1	08/14/2017 11:47
Zinc	48		5.0	1	08/14/2017 11:47
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Terbium	110		70-130		08/14/2017 11:47
Analyst(s): ND					

1708536

# **Analytical Report**

 Client:
 AGS, Inc.

 Date Received:
 8/11/17 13:10

 Date Prepared:
 8/11/17

Extraction Method: SW3050B
Analytical Method: SW6020

WorkOrder:

**Project:** University Mound East Pipeline; AGS 14-027/24

**Unit:** mg/Kg

CAM / CCR 17 Metals					
Client ID	Lab ID	Matrix	Date C	Collected Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil	08/10/2	017 11:11 ICP-MS2	143575
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Antimony	ND		0.50	1	08/14/2017 21:44
Arsenic	2.8		0.50	1	08/14/2017 21:44
Barium	120		5.0	1	08/14/2017 21:44
Beryllium	ND		0.50	1	08/14/2017 21:44
Cadmium	ND		0.25	1	08/14/2017 21:44
Chromium	71		0.50	1	08/14/2017 21:44
Cobalt	9.8		0.50	1	08/14/2017 21:44
Copper	18		0.50	1	08/14/2017 21:44
Lead	44		0.50	1	08/14/2017 21:44
Mercury	0.15		0.050	1	08/14/2017 21:44
Molybdenum	ND		0.50	1	08/14/2017 21:44
Nickel	34		0.50	1	08/14/2017 21:44
Selenium	ND		0.50	1	08/14/2017 21:44
Silver	ND		0.50	1	08/14/2017 21:44
Thallium	ND		0.50	1	08/14/2017 21:44
Vanadium	68		0.50	1	08/14/2017 21:44
Zinc	55		5.0	1	08/14/2017 21:44
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Terbium	103		70-130		08/14/2017 21:44

Analyst(s): ND

# **Analytical Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Received:
 8/11/17 13:10
 Extraction Method:
 SW3050B

 Date Prepared:
 8/11/17
 Analytical Method:
 SW6020

**Project:** University Mound East Pipeline; AGS 14-027/24 Unit: mg/Kg

Client ID	Lab ID	Matrix	Date C	ollected Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	1708536-007A	Soil	08/10/20	017 11:48 ICP-MS2	143575
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed
Antimony	ND		0.50	1	08/14/2017 21:38
Arsenic	4.9		0.50	1	08/14/2017 21:38
Barium	21		5.0	1	08/14/2017 21:38
Beryllium	ND		0.50	1	08/14/2017 21:38
Cadmium	ND		0.25	1	08/14/2017 21:38
Chromium	34		0.50	1	08/14/2017 21:38
Cobalt	5.7		0.50	1	08/14/2017 21:38
Copper	5.6		0.50	1	08/14/2017 21:38
Lead	3.9		0.50	1	08/14/2017 21:38
Mercury	ND		0.050	1	08/14/2017 21:38
Molybdenum	ND		0.50	1	08/14/2017 21:38
Nickel	34		0.50	1	08/14/2017 21:38
Selenium	ND		0.50	1	08/14/2017 21:38
Silver	ND		0.50	1	08/14/2017 21:38
Thallium	ND		0.50	1	08/14/2017 21:38
Vanadium	25		0.50	1	08/14/2017 21:38
Zinc	21		5.0	1	08/14/2017 21:38
Surrogates	<u>REC (%)</u>		<u>Limits</u>		
Terbium	107		70-130		08/14/2017 21:38
Analyst(s): ND					

1708536

### **Analytical Report**

**Client:** AGS, Inc. **Date Received:** 8/11/17 13:10 **Date Prepared:** 8/11/17

**Project:** University Mound East Pipeline; AGS 14-027/24

ND

ND

ND

ND

22

Extraction Method: SW3050B Analytical Method: SW6020

WorkOrder:

Unit: mg/Kg

1

1

0.50

0.50

0.50

0.50

#### CAM / CCR 17 Metals Client ID Lab ID **Matrix Date Collected Instrument Batch ID** ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6") 1708536-008A 08/10/2017 12:42 ICP-MS2 143575 Soil Result <u>DF</u> **Date Analyzed Analytes** <u>RL</u> Antimony ND 0.50 08/14/2017 21:50 Arsenic 0.50 08/14/2017 21:50 1.5 Barium 79 5.0 1 08/14/2017 21:50 Beryllium ND 0.50 1 08/14/2017 21:50 0.25 Cadmium ND 1 08/14/2017 21:50 Chromium 0.50 08/14/2017 21:50 69 08/14/2017 21:50 Cobalt 3.3 0.50 1 Copper 10 0.50 08/14/2017 21:50 0.50 Lead 3.6 1 08/14/2017 21:50 0.050 Mercury 0.058 08/14/2017 21:50 0.50 08/14/2017 21:50

Vanadium 0.50 08/14/2017 21:50 38 1 Zinc 21 08/14/2017 21:50 5.0 **REC (%)** Surrogates **Limits** Terbium 98 70-130 08/14/2017 21:50 Analyst(s):

Molybdenum

Nickel

Silver

Selenium

Thallium

08/14/2017 21:50

08/14/2017 21:50

08/14/2017 21:50

08/14/2017 21:50

# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** CARB 435 Asbestos

**Date Prepared:** 8/11/17 **Analytical Method:** 435 CARB

**Project:** University Mound East Pipeline; AGS 14-027/24 Unit: %

Asbestos (	CARB	435) 400	Point	Count

Client ID	Lab ID	Matrix	Date C	ollected Instrument	Batch ID
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil	08/09/20	017 10:02 WetChem	143747
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Asbestos	ND		0.25	1	08/15/2017 10:00

Analyst(s): DA Analystical Comments: k10

Client ID	Lab ID	Matrix	Date Co	llected Instrument	Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil	08/09/201	7 12:16 WetChem	143747
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed
Asbestos	ND		0.25	1	08/15/2017 10:50

Analyst(s): DA Analytical Comments: k10

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil	08/09/20	17 13:32 WetChem	143747
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Asbestos	ND		0.25	1	08/15/2017 11:15

Analyst(s): DA Analytical Comments: k10

Client ID	Lab ID	Matrix	Date Co	llected Instrument	Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil	08/10/201	7 08:35 WetChem	143747
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Asbestos	ND		0.25	1	08/15/2017 11:40

Analyst(s): DA Analytical Comments: k10

Angela Rydelius, Lab Manager

# **Analytical Report**

Client: AGS, Inc. WorkOrder: 1708536

**Date Received:** 8/11/17 13:10 **Extraction Method:** CARB 435 Asbestos

**Date Prepared:** 8/11/17 **Analytical Method:** 435 CARB

**Project:** University Mound East Pipeline; AGS 14-027/24 Unit: %

Asbestos (CARB 435) 40	) Point Count
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Client ID	Lab ID	Matrix	Date C	ollected Instrument	Batch ID
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A	Soil	08/10/20	17 10:06 WetChem	143747
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Asbestos	ND		0.25	1	08/15/2017 12:05

Analyst(s): DA Analystical Comments: k10

Client ID	Lab ID	Matrix	Date Collected Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil	08/10/2017 11:11 WetChem	143747
<u>Analytes</u>	<u>Result</u>		<u>RL</u> <u>DF</u>	Date Analyzed
Asbestos	ND		0.25 1	08/15/2017 12:30

Analyst(s): DA Analytical Comments: k10

Client ID	Lab ID	Matrix	Date Co	llected Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	1708536-007A	Soil	08/10/20	17 11:48 WetChem	143747
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Asbestos	ND		0.25	1	08/15/2017 12:55

Analyst(s): DA Analystical Comments: k10

Client ID	Lab ID	Matrix	Date Co	llected Instrument	Batch ID
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	1708536-008A	Soil	08/10/201	17 12:42 WetChem	143747
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Asbestos	ND		0.25	1	08/15/2017 13:20

Analyst(s): DA Analytical Comments: k10

# **Analytical Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Received:** 8/11/17 13:10 **Extraction Method: SW5030B** 

**Date Prepared:** 8/11/17 Analytical Method: SW8021B/8015Bm

**Project:** University Mound East Pipeline; AGS 14-027/24 Unit: mg/Kg

#### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	A Soil	08/09/20	17 10:02 GC19	143542
Analytes	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 06:37
MTBE	ND		0.050	1	08/12/2017 06:37
Benzene	ND		0.0050	1	08/12/2017 06:37
Toluene	ND		0.0050	1	08/12/2017 06:37
Ethylbenzene	ND		0.0050	1	08/12/2017 06:37
Xylenes	ND		0.015	1	08/12/2017 06:37
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
2-Fluorotoluene	77		62-126		08/12/2017 06:37
Analyst(s): IA					

Analyst(s):

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil	08/09/20	17 12:16 GC19	143542
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 08:38
MTBE	ND		0.050	1	08/12/2017 08:38
Benzene	ND		0.0050	1	08/12/2017 08:38
Toluene	ND		0.0050	1	08/12/2017 08:38
Ethylbenzene	ND		0.0050	1	08/12/2017 08:38
Xylenes	ND		0.015	1	08/12/2017 08:38
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
2-Fluorotoluene	83		62-126		08/12/2017 08:38
Analyst(s): IA					

# **Analytical Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Received:
 8/11/17 13:10
 Extraction Method:
 SW5030B

**Date Prepared:** 8/11/17 **Analytical Method:** SW8021B/8015Bm

**Project:** University Mound East Pipeline; AGS 14-027/24 Unit: mg/Kg

#### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil	08/09/20	17 13:32 GC19	143572
Analytes	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 09:08
MTBE	ND		0.050	1	08/12/2017 09:08
Benzene	ND		0.0050	1	08/12/2017 09:08
Toluene	ND		0.0050	1	08/12/2017 09:08
Ethylbenzene	ND		0.0050	1	08/12/2017 09:08
Xylenes	ND		0.015	1	08/12/2017 09:08
Surrogates	<u>REC (%)</u>		<u>Limits</u>		
2-Fluorotoluene	84		62-126		08/12/2017 09:08
Analyst(s): IA					

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil	08/10/20	17 08:35 GC19	143572
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 09:39
MTBE	ND		0.050	1	08/12/2017 09:39
Benzene	ND		0.0050	1	08/12/2017 09:39
Toluene	ND		0.0050	1	08/12/2017 09:39
Ethylbenzene	ND		0.0050	1	08/12/2017 09:39
Xylenes	ND		0.015	1	08/12/2017 09:39
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
2-Fluorotoluene	79		62-126		08/12/2017 09:39
Analyst(s): IA					

# **Analytical Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Received:** 8/11/17 13:10 **Extraction Method: SW5030B** 

**Date Prepared:** 8/11/17 Analytical Method: SW8021B/8015Bm

**Project:** University Mound East Pipeline; AGS 14-027/24 Unit: mg/Kg

#### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID	
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A Soil		08/10/20	17 10:06 GC19	143572	
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed	
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 10:40	
MTBE	ND		0.050	1	08/12/2017 10:40	
Benzene	ND		0.0050	1	08/12/2017 10:40	
Toluene	ND		0.0050	1	08/12/2017 10:40	
Ethylbenzene	ND		0.0050	1	08/12/2017 10:40	
Xylenes	ND		0.015	1	08/12/2017 10:40	
<u>Surrogates</u>	REC (%)		<u>Limits</u>			
2-Fluorotoluene	79		62-126		08/12/2017 10:40	
Analyst(s): IA						

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil	08/10/20	17 11:11 GC7	143572
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 07:38
MTBE	ND		0.050	1	08/12/2017 07:38
Benzene	ND		0.0050	1	08/12/2017 07:38
Toluene	ND		0.0050	1	08/12/2017 07:38
Ethylbenzene	ND		0.0050	1	08/12/2017 07:38
Xylenes	ND		0.015	1	08/12/2017 07:38
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
2-Fluorotoluene	79		62-126		08/12/2017 07:38
Analyst(s): IA					

# **Analytical Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Received:
 8/11/17 13:10
 Extraction Method:
 SW5030B

**Date Prepared:** 8/11/17 **Analytical Method:** SW8021B/8015Bm

**Project:** University Mound East Pipeline; AGS 14-027/24 Unit: mg/Kg

#### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	1708536-007A	Soil	08/10/20	17 11:48 GC7	143572
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 08:08
MTBE	ND		0.050	1	08/12/2017 08:08
Benzene	ND		0.0050	1	08/12/2017 08:08
Toluene	ND		0.0050	1	08/12/2017 08:08
Ethylbenzene	ND		0.0050	1	08/12/2017 08:08
Xylenes	ND		0.015	1	08/12/2017 08:08
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
2-Fluorotoluene	86		62-126		08/12/2017 08:08
Analyst(s): IA					

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	1708536-008A	Soil	08/10/20	17 12:42 GC7	143572
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH(g) (C6-C12)	ND		1.0	1	08/12/2017 08:39
MTBE	ND		0.050	1	08/12/2017 08:39
Benzene	ND		0.0050	1	08/12/2017 08:39
Toluene	ND		0.0050	1	08/12/2017 08:39
Ethylbenzene	ND		0.0050	1	08/12/2017 08:39
Xylenes	ND		0.015	1	08/12/2017 08:39
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
2-Fluorotoluene	82		62-126		08/12/2017 08:39
Analyst(s): IA					



# **Analytical Report**

Client:AGS, Inc.WorkOrder:1708536Date Received:8/11/17 13:10Extraction Method:SW3550BDate Prepared:8/11/17Analytical Method:SW8015BProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Total I	Extractable Petro	leum Hyd	lrocarbons w/out SC	G Clean-Up	
Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil	08/09/2017 10:02	GC6B	143560
<u>Analytes</u>	Result		<u>RL</u> <u>DF</u>		<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	2.0		1.0 1		08/12/2017 01:16
TPH-Motor Oil (C18-C36)	26		5.0 1		08/12/2017 01:16
Surrogates	REC (%)		<u>Limits</u>		
C9	95		78-109		08/12/2017 01:16
Analyst(s): TK			Analytical Comments: e	7,e2	
Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil	08/09/2017 12:16	GC11B	143560
<u>Analytes</u>	Result		<u>RL</u> <u>DF</u>		Date Analyzed
TPH-Diesel (C10-C23)	1.4		1.0 1		08/15/2017 05:24
TPH-Motor Oil (C18-C36)	41		5.0 1		08/15/2017 05:24
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
C9	86		78-109		08/15/2017 05:24
Analyst(s): TK			Analytical Comments: e	7,e2	
Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil	08/09/2017 13:32	GC9b	143560
<u>Analytes</u>	Result		<u>RL</u> <u>DF</u>		Date Analyzed
TPH-Diesel (C10-C23)	ND		1.0 1		08/12/2017 14:54
TPH-Motor Oil (C18-C36)	ND		5.0 1		08/12/2017 14:54
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
C9	91		78-109		08/12/2017 14:54
Analyst(s): TK					



# **Analytical Report**

Client:AGS, Inc.WorkOrder:1708536Date Received:8/11/17 13:10Extraction Method:SW3550BDate Prepared:8/11/17Analytical Method:SW8015BProject:University Mound East Pipeline; AGS 14-027/24Unit:mg/Kg

Total E	xtractable Petro	leum Hyd	rocarbons w/out SG Clean-Up	
Client ID	Lab ID	Matrix	Date Collected Instrument	Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil	08/10/2017 08:35 GC6A	143560
Analytes	Result		<u>RL</u> <u>DF</u>	Date Analyzed
TPH-Diesel (C10-C23)	1.2		1.0 1	08/15/2017 09:28
TPH-Motor Oil (C18-C36)	17		5.0 1	08/15/2017 09:28
Surrogates	REC (%)		<u>Limits</u>	
C26	97		70-130	08/15/2017 09:28
Analyst(s): TK			Analytical Comments: e7,e2	
Client ID	Lab ID	Matrix	Date Collected Instrument	Batch ID
ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	1708536-005A	Soil	08/10/2017 10:06 GC6B	143560
<u>Analytes</u>	Result		<u>RL</u> <u>DF</u>	Date Analyzed
TPH-Diesel (C10-C23)	3.1		1.0 1	08/12/2017 08:12
TPH-Motor Oil (C18-C36)	17		5.0 1	08/12/2017 08:12
Surrogates	<u>REC (%)</u>		<u>Limits</u>	
C9	100		78-109	08/12/2017 08:12
Analyst(s): TK			Analytical Comments: e7,e2	
Client ID	Lab ID	Matrix	Date Collected Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil	08/10/2017 11:11 GC6A	143560
Analytes	Result		<u>RL</u> <u>DF</u>	Date Analyzed
TPH-Diesel (C10-C23)	ND		1.0 1	08/12/2017 12:05
TPH-Motor Oil (C18-C36)	11		5.0 1	08/12/2017 12:05
Surrogates	REC (%)		<u>Limits</u>	
C9	92		78-109	08/12/2017 12:05
Analyst(s): TK			Analytical Comments: e7	

1708536

# **Analytical Report**

 Client:
 AGS, Inc.

 Date Received:
 8/11/17 13:10

 Date Prepared:
 8/11/17

**Extraction Method:** SW3550B **Analytical Method:** SW8015B

**Project:** University Mound East Pipeline; AGS 14-027/24

Unit: mg/Kg

WorkOrder:

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date C	Collected Instrument	Batch ID
ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	1708536-007A	Soil	08/10/2	017 11:48 GC9b	143560
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH-Diesel (C10-C23)	ND		1.0	1	08/12/2017 16:11
TPH-Motor Oil (C18-C36)	ND		5.0	1	08/12/2017 16:11
Surrogates	<u>REC (%)</u>		<u>Limits</u>		
C9	92		78-109		08/12/2017 16:11
Analyst(s): TK					

Analyst(s): TK

Client ID	Lab ID	Matrix	Date C	Collected Instrument	Batch ID
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	1708536-008A	Soil	08/10/20	017 12:42 GC9b	143560
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
TPH-Diesel (C10-C23)	ND		1.0	1	08/12/2017 13:36
TPH-Motor Oil (C18-C36)	ND		5.0	1	08/12/2017 13:36
<u>Surrogates</u>	REC (%)		<u>Limits</u>		
C9	92		78-109		08/12/2017 13:36
Analyst(s): TK					

# **Quality Control Report**

Client: AGS, Inc.

Date Prepared: 8/14/17

**Date Analyzed:** 8/14/17 - 8/15/17

Instrument: IC2
Matrix: Soil

Project: University Mound East Pipeline; AGS 14-027/24

WorkOrder: 1708536
BatchID: 143680
Extraction Method: SW3060A

Analytical Method: SW7199

**Unit:** mg/Kg

Sample ID: MB/LCS-143680

1708536-006AMS/MSD

#### QC Summary Report for SW7199 (Hexavalent chromium)

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Hexavalent chromium	ND	17.9	0.10	0.20	20	-	90	70-130

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Hexavalent chromium	21.2	18.8	20	0.3040	105	92	70-130	12.2	20



# **Quality Control Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Prepared:
 8/14/17
 BatchID:
 143626

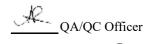
**Date Analyzed:** 8/15/17 **Extraction Method:** SW3550B/3640A

Instrument:GC17Analytical Method:SW8270CMatrix:SoilUnit:mg/Kg

Project: University Mound East Pipeline; AGS 14-027/24 Sample ID: MB/LCS-143626

#### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acenaphthene	ND	2.87	0.14	0.25	5	-	57	32-118
Acenaphthylene	ND	3.02	0.14	0.25	5	-	60	32-122
Acetochlor	ND	-	0.25	0.25	-	-	-	-
Anthracene	ND	2.83	0.14	0.25	5	-	57	36-125
Benzidine	ND	1.11	0.23	1.3	5	-	22	4-83
Benzo (a) anthracene	ND	3.11	0.050	0.050	5	-	62	35-117
Benzo (a) pyrene	ND	3.85	0.0025	0.0025	5	-	77	42-138
Benzo (b) fluoranthene	ND	3.51	0.012	0.012	5	-	70	37-125
Benzo (g,h,i) perylene	ND	3.59	0.15	0.25	5	-	72	45-146
Benzo (k) fluoranthene	ND	4.08	0.16	0.25	5	-	82	39-124
Benzyl Alcohol	ND	3.21	0.51	1.3	5	-	64	5-105
1,1-Biphenyl	ND	-	0.15	0.25	-	-	-	-
Bis (2-chloroethoxy) Methane	ND	3.09	0.14	0.25	5	-	62	35-115
Bis (2-chloroethyl) Ether	ND	3.24	0.0012	0.0012	5	-	65	35-105
Bis (2-chloroisopropyl) Ether	ND	3.56	0.0012	0.0012	5	-	71	34-119
Bis (2-ethylhexyl) Adipate	ND	3.58	0.25	0.25	5	-	72	27-117
Bis (2-ethylhexyl) Phthalate	ND	3.00	0.13	0.25	5	-	60	34-124
4-Bromophenyl Phenyl Ether	ND	3.11	0.16	0.25	5	-	62	33-112
Butylbenzyl Phthalate	ND	3.56	0.13	0.25	5	-	71	35-127
4-Chloroaniline	ND	2.53	0.0012	0.0012	5	-	51	12-77
4-Chloro-3-methylphenol	ND	3.39	0.12	0.25	5	-	68	35-123
2-Chloronaphthalene	ND	2.73	0.16	0.25	5	-	55	28-109
2-Chlorophenol	ND	3.22	0.0050	0.0050	5	-	64	38-116
4-Chlorophenyl Phenyl Ether	ND	3.34	0.15	0.25	5	-	67	33-122
Chrysene	ND	3.21	0.14	0.25	5	-	64	37-116
Dibenzo (a,h) anthracene	ND	3.59	0.0025	0.0025	5	-	72	43-141
Dibenzofuran	ND	3.28	0.13	0.25	5	-	66	33-117
Di-n-butyl Phthalate	ND	2.98	0.13	0.25	5	-	60	38-126
1,2-Dichlorobenzene	ND	3.26	0.12	0.25	5	-	65	34-105
1,3-Dichlorobenzene	ND	3.20	0.14	0.25	5	-	64	33-104
1,4-Dichlorobenzene	ND	2.95	0.025	0.025	5	-	59	31-102
3,3-Dichlorobenzidine	ND	2.42	0.0050	0.0050	5	-	48	14-84
2,4-Dichlorophenol	ND	3.43	0.0025	0.0025	5	-	69	31-124
Diethyl Phthalate	ND	3.14	0.0025	0.0025	5	-	63	35-118
2,4-Dimethylphenol	ND	2.98	0.025	0.025	5	-	60	30-120
Dimethyl Phthalate	ND	3.09	0.0025	0.0025	5	-	62	33-118
4,6-Dinitro-2-methylphenol	ND	2.45	0.13	1.3	5	-	49	12-126





# **Quality Control Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Prepared:
 8/14/17
 BatchID:
 143626

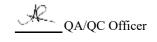
**Date Analyzed:** 8/15/17 **Extraction Method:** SW3550B/3640A

Instrument:GC17Analytical Method:SW8270CMatrix:SoilUnit:mg/Kg

Project: University Mound East Pipeline; AGS 14-027/24 Sample ID: MB/LCS-143626

#### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
2,4-Dinitrophenol	ND	1.81	0.62	0.62	5	-	36	8-130
2,4-Dinitrotoluene	ND	3.18	0.025	0.025	5	-	64	38-117
2,6-Dinitrotoluene	ND	3.48	0.14	0.25	5	-	70	35-121
Di-n-octyl Phthalate	ND	3.46	0.14	0.50	5	-	69	42-150
1,2-Diphenylhydrazine	ND	3.18	0.16	0.25	5	-	64	0-117
Fluoranthene	ND	3.04	0.13	0.25	5	-	61	38-126
Fluorene	ND	3.00	0.14	0.25	5	-	60	34-118
Hexachlorobenzene	ND	3.19	0.025	0.025	5	-	64	30-130
Hexachlorobutadiene	ND	3.54	0.025	0.025	5	-	71	33-121
Hexachlorocyclopentadiene	ND	1.62	0.73	1.3	5	-	32	8-89
Hexachloroethane	ND	3.05	0.14	0.25	5	-	61	32-106
Indeno (1,2,3-cd) pyrene	ND	3.45	0.012	0.012	5	-	69	43-138
Isophorone	ND	2.58	0.12	0.25	5	-	52	26-92
2-Methylnaphthalene	ND	3.24	0.025	0.025	5	-	65	30-121
2-Methylphenol (o-Cresol)	ND	3.43	0.14	0.25	5	-	69	34-114
3 & 4-Methylphenol (m,p-Cresol)	ND	3.02	0.12	0.25	5	-	60	26-130
Naphthalene	ND	2.98	0.0025	0.0025	5	-	60	33-113
2-Nitroaniline	ND	3.03	0.62	1.3	5	-	61	29-115
3-Nitroaniline	ND	3.08	0.59	1.3	5	-	62	25-93
4-Nitroaniline	ND	3.62	0.55	1.3	5	-	72	31-108
Nitrobenzene	ND	3.54	0.14	0.25	5	-	71	33-122
2-Nitrophenol	ND	3.00	0.64	1.3	5	-	60	32-121
4-Nitrophenol	ND	2.38	0.41	1.3	5	-	48	27-102
N-Nitrosodiphenylamine	ND	-	0.16	0.25	-	-	-	-
N-Nitrosodi-n-propylamine	ND	2.94	0.012	0.012	5	-	59	25-108
Pentachlorophenol	ND	3.38	0.32	1.3	5	-	68	28-134
Phenanthrene	ND	2.88	0.14	0.25	5	-	58	36-123
Phenol	ND	3.12	0.0050	0.0050	5	-	62	33-107
Pyrene	ND	3.44	0.13	0.25	5	-	69	38-124
Pyridine	ND	4.20	0.25	0.25	5	-	84	30-130
1,2,4-Trichlorobenzene	ND	3.35	0.14	0.25	5	-	67	34-121
2,4,5-Trichlorophenol	ND	3.20	0.012	0.012	5	-	64	31-126
2,4,6-Trichlorophenol	ND	2.85	0.012	0.012	5	-	57	32-128



# **Quality Control Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Prepared:
 8/14/17
 BatchID:
 143626

**Date Analyzed:** 8/15/17 **Extraction Method:** SW3550B/3640A

Instrument:GC17Analytical Method:SW8270CMatrix:SoilUnit:mg/Kg

Project: University Mound East Pipeline; AGS 14-027/24 Sample ID: MB/LCS-143626

QC Summary Report for SW8270C (Low Level) w/ GPC									
Analyte	MB Result	LCS Result	MDL	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits	
Surrogate Recovery									
2-Fluorophenol	3.5	3.15			5	70	63	31-108	
Phenol-d5	3.524	3.23			5	70	65	32-106	
Nitrobenzene-d5	3.694	3.46			5	74	69	27-109	
2-Fluorobiphenyl	3.217	3.16			5	64	63	26-100	
2,4,6-Tribromophenol	1.803	2.33			5	36	47	25-106	
4-Terphenyl-d14	3.946	3.67			5	79	73	27-113	



### **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 8/11/17 BatchID: 143537 **Date Analyzed:** 8/11/17 **Extraction Method: SW3050B Instrument:** ICP-MS1 **Analytical Method:** SW6020 **Matrix:** Soil Unit: mg/Kg

**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143537

1708514-012AMS/MSD

#### **QC Summary Report for Metals** Analyte MB LCS RL **SPK** MB SS LCS **LCS** %REC Result Result Val %REC Limits ND 54.8 0.50 50 110 75-125 Antimony ND 102 51.1 0.50 50 75-125 Arsenic ND 500 75-125 Barium 503 5.0 101 Beryllium ND 50.8 0.50 50 102 75-125 Cadmium ND 50.1 0.25 50 100 75-125 Chromium ND 49.8 0.50 50 100 75-125 Cobalt ND 49.5 0.50 50 99 75-125 Copper ND 50.2 0.50 50 100 75-125 ND Lead 50.6 0.50 50 101 75-125 ND 1.28 0.050 1.25 102 75-125 Mercury ND 0.50 105 75-125 Molybdenum 52.4 50 ND 50.5 50 101 75-125 Nickel 0.50 100 Selenium ND 49.8 0.50 50 75-125 Silver ND 50 101 75-125 50.3 0.50 Thallium ND 47.6 50 95 75-125 0.50 Vanadium ND 48.7 0.50 50 97 75-125 Zinc ND 495 5.0 500 99 75-125 **Surrogate Recovery** 500 Terbium 502.7 527 101 105 70-130



# **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 8/11/17 **BatchID:** 143537 **Date Analyzed:** 8/11/17 **Extraction Method: SW3050B Instrument:** ICP-MS1 **Analytical Method:** SW6020 **Matrix:** Soil **Unit:** mg/Kg

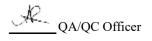
**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143537

1708514-012AMS/MSD

#### **QC Summary Report for Metals**

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	55.6	55.6	50	ND	111	111	75-125	0	20
Arsenic	53.0	54.1	50	2.635	101	103	75-125	2.09	20
Barium	514	530	500	13.94	100	103	75-125	3.11	20
Beryllium	47.9	49.7	50	ND	95	99	75-125	3.79	20
Cadmium	48.9	50.2	50	ND	98	100	75-125	2.70	20
Chromium	80.2	83.6	50	32.64	95	102	75-125	4.26	20
Cobalt	51.0	52.3	50	3.996	94	97	75-125	2.63	20
Copper	53.9	55.1	50	5.015	98	100	75-125	2.09	20
Lead	63.4	62.9	50	15.00	97	96	75-125	0.665	20
Mercury	1.32	1.35	1.25	ND	103	105	75-125	1.65	20
Molybdenum	52.5	53.0	50	ND	105	106	75-125	1.10	20
Nickel	70.7	71.0	50	18.32	105	105	75-125	0	20
Selenium	47.4	49.9	50	ND	95	100	75-125	5.20	20
Silver	49.0	50.0	50	ND	98	100	75-125	2.20	20
Thallium	46.2	47.7	50	ND	92	95	75-125	3.15	20
Vanadium	82.0	80.8	50	30.71	102	100	75-125	1.40	20
Zinc	512	521	500	33.23	96	98	75-125	1.70	20
Surrogate Recovery									
Terbium	531	534	500		106	107	70-130	0.470	20

Analyte	DLT	DLTRef	%D %D
	Result	Val	Limit
Antimony	ND<2.5	ND	
Arsenic	2.95	2.635	12.0 -
Barium	ND<25	13.94	
Beryllium	ND<2.5	ND	
Cadmium	ND<1.2	ND	
Chromium	33.2	32.64	1.72 20
Cobalt	4.10	3.996	2.60 -
Copper	4.96	5.015	1.10 -
Lead	14.9	15.00	0.667 20
Mercury	ND<0.25	ND	
Molybdenum	ND<2.5	ND	
Nickel	18.9	18.32	3.17 20
Selenium	ND<2.5	ND	



### **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 8/11/17 **BatchID:** 143537 **Date Analyzed:** 8/11/17 **Extraction Method: SW3050B Instrument:** ICP-MS1 **Analytical Method:** SW6020 **Matrix:** Soil **Unit:** mg/Kg

**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143537

1708514-012AMS/MSD

	QC Summary Report for Metals								
Analyte	DLT Result	DLTRef Val	%D %D Limit						
Silver	ND<2.5	ND							
Thallium	ND<2.5	ND							
Vanadium	31.1	30.71	1.27 20						
Zinc	32.9	33.23	0.993 -						

<sup>%</sup>D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

### **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 8/11/17 BatchID: 143575 **Date Analyzed:** 8/14/17 **Extraction Method: SW3050B Instrument:** ICP-MS1 **Analytical Method: SW6020 Matrix:** Soil Unit: mg/Kg

**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143575

1708536-005AMS/MSD

#### **QC Summary Report for Metals** Analyte MB LCS RL **SPK** MB SS LCS **LCS** Result Result Val %REC %REC Limits ND 52.2 0.50 50 104 75-125 Antimony ND 51.1 0.50 50 102 75-125 Arsenic ND 500 101 75-125 Barium 504 5.0 Beryllium ND 50.4 0.50 50 101 75-125 Cadmium ND 49.1 0.25 50 98 75-125 Chromium ND 50.1 0.50 50 100 75-125 Cobalt ND 0.50 50 98 75-125 48.8 Copper ND 50.3 0.50 50 101 75-125 ND Lead 50.5 0.50 50 101 75-125 ND 1.33 0.050 1.25 106 75-125 Mercury ND 0.50 100 75-125 Molybdenum 50.1 50 ND 49.9 50 100 75-125 Nickel 0.50 100 Selenium ND 50.0 0.50 50 75-125 Silver ND 50 99 75-125 49.4 0.50 Thallium ND 47.7 50 95 75-125 0.50 Vanadium ND 50.0 0.50 50 100 75-125 Zinc ND 499 5.0 500 100 75-125 **Surrogate Recovery** 520.1 500 106 Terbium 532 104 70-130



### **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 8/11/17 **BatchID:** 143575 **Date Analyzed:** 8/14/17 **Extraction Method: SW3050B** ICP-MS1 **Instrument: Analytical Method:** SW6020 **Matrix:** Soil **Unit:** mg/Kg

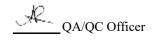
**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143575

1708536-005AMS/MSD

#### **QC Summary Report for Metals**

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	54.6	52.0	50	ND	108	103	75-125	5.03	20
Arsenic	54.7	52.3	50	2.204	105	100	75-125	4.45	20
Barium	856	778	500	313.3	108	93	75-125	9.49	20
Beryllium	50.0	47.8	50	ND	99	95	75-125	4.62	20
Cadmium	52.6	50.0	50	ND	105	100	75-125	5.01	20
Chromium	101	97.5	50	50.93	100	93	75-125	3.60	20
Cobalt	59.4	57.0	50	10.09	99	94	75-125	4.02	20
Copper	106	95.7	50	52.27	107	87	75-125	9.79	20
Lead	85.2	79.2	50	31.00	108	96	75-125	7.35	20
Mercury	2.98	2.44	1.25	1.111	149,F10	106	75-125	20.0	20
Molybdenum	52.5	50.6	50	ND	104	100	75-125	3.69	20
Nickel	85.2	79.7	50	28.91	113	102	75-125	6.66	20
Selenium	51.8	49.3	50	ND	103	98	75-125	4.90	20
Silver	52.3	49.4	50	ND	105	99	75-125	5.67	20
Thallium	50.6	47.6	50	ND	101	95	75-125	6.11	20
Vanadium	109	102	50	54.34	109	96	75-125	6.35	20
Zinc	572	539	500	47.88	105	98	75-125	6.03	20
Surrogate Recovery									
Terbium	554	530	500		111	106	70-130	4.32	20

Analyte	DLT	DLTRef	%D %[
	Result	Val	Lim
Antimony	ND<2.5	ND	-
Arsenic	2.67	2.204	21.1
Barium	331	313.3	5.65 2
Beryllium	ND<2.5	ND	-
Cadmium	ND<1.2	ND	-
Chromium	56.2	50.93	10.3 2
Cobalt	11.2	10.09	11.0
Copper	56.2	52.27	7.52 2
Lead	32.7	31.00	5.48 2
Mercury	1.25	1.111	12.5
Molybdenum	ND<2.5	ND	-
Nickel	30.9	28.91	6.88 2
Selenium	ND<2.5	ND	-



### **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 8/11/17 **BatchID:** 143575 **Date Analyzed:** 8/14/17 **Extraction Method: SW3050B** ICP-MS1 **Instrument: Analytical Method:** SW6020 **Matrix:** Soil **Unit:** mg/Kg

**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143575

1708536-005AMS/MSD

	QC Summary Report for Metals							
Analyte	DLT Result	DLTRef Val	%D %D Limit					
Silver	ND<2.5	ND						
Thallium	ND<2.5	ND						
Vanadium	58.6	54.34	7.84 20					
Zinc	52.6	47.88	9.86 -					

<sup>%</sup>D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

### **Quality Control Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Prepared:
 8/11/17
 BatchID:
 143542

 Date Analyzed:
 8/11/17
 Extraction Method:
 SW5030B

**Instrument:** GC19 Analytical Method: SW8021B/8015Bm

Matrix: Soil Unit: mg/Kg

Project: University Mound East Pipeline; AGS 14-027/24 Sample ID: MB/LCS-143542

1708518-001AMS/MSD

#### QC Summary Report for SW8021B/8015Bm

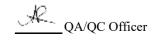
Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	1.0	-	-	-
MTBE	ND	0.050	-	-	-
Benzene	ND	0.0050	-	-	-
Toluene	ND	0.0050	-	-	-
Ethylbenzene	ND	0.0050	-	-	-
Xylenes	ND	0.015	-	-	-

#### **Surrogate Recovery**

2-Fluorotoluene 0.08568 0.10 86 75-134

Analyte	LCS Result	LCSD Result	SPK Val		.CSD LCS/LCSD 6REC Limits	RPD imit
TPH(btex)	0.567		0.60	94	82-118	
MTBE	0.0835		0.10	83	61-119	-
Benzene	0.124		0.10	124	77-128	-
Toluene	0.128		0.10	128	74-132	-
Ethylbenzene	0.125		0.10	125	84-127	-
Xylenes	0.369		0.30	123	86-129	-
Surrogate Recovery						
2-Fluorotoluene	0.107		0.10	107	75-134	-

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	NR	NR		ND	NR	NR	-	NR	_
MTBE	NR	NR		ND	NR	NR	-	NR	-
Benzene	NR	NR		ND	NR	NR	-	NR	-
Toluene	NR	NR		ND	NR	NR	-	NR	-
Ethylbenzene	NR	NR		ND	NR	NR	-	NR	-
Xylenes	NR	NR		ND	NR	NR	-	NR	-
Surrogate Recovery									
2-Fluorotoluene	NR	NR			NR	NR	-	NR	-



### **Quality Control Report**

 Client:
 AGS, Inc.
 WorkOrder:
 1708536

 Date Prepared:
 8/11/17
 BatchID:
 143572

 Date Analyzed:
 8/12/17
 Extraction Method:
 SW5030B

**Instrument:** GC19, GC7 **Analytical Method:** SW8021B/8015Bm

Matrix: Soil Unit: mg/Kg

**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143572

1708536-006AMS/MSD

#### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	1.0	-	-	-
MTBE	ND	0.050	-	-	-
Benzene	ND	0.0050	-	-	-
Toluene	ND	0.0050	-	-	-
Ethylbenzene	ND	0.0050	-	-	-
Xylenes	ND	0.015	-	-	-

**Surrogate Recovery** 

2-Fluorotoluene 0.08357 0.10 84 75-134

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD RPD Limits	RPD Limit
TPH(btex)	0.604		0.60	101		82-118	
MTBE	0.0911		0.10	91		61-119	-
Benzene	0.106		0.10	106		77-128	-
Toluene	0.109		0.10	109		74-132	-
Ethylbenzene	0.106		0.10	106		84-127	-
Xylenes	0.310		0.30	103		86-129	-
Surrogate Recovery							
2-Fluorotoluene	0.0861		0.10	86		75-134	-

Analyte	MS	MSD	SPK	SPKRef	MS	MSD	MS/MSD	RPD	RPD
	Result	Result	Val	Val	%REC	%REC	Limits		Limit
TPH(btex)	0.550	0.554	0.60	ND	92	92	58-129	0	20
MTBE	0.0836	0.0825	0.10	ND	67	66	47-118	1.30	20
Benzene	0.0929	0.0902	0.10	ND	93	90	55-129	2.92	20
Toluene	0.0979	0.0957	0.10	ND	98	96	56-130	2.35	20
Ethylbenzene	0.0991	0.0971	0.10	ND	99	97	63-129	2.01	20
Xylenes	0.312	0.307	0.30	ND	104	102	64-131	1.87	20
Surrogate Recovery									
2-Fluorotoluene	0.0809	0.0802	0.10		81	80	62-126	0.954	20

# **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 8/11/17 **BatchID:** 143560 **Date Analyzed:** 8/11/17 **Extraction Method: SW3550B** GC9a **Instrument: Analytical Method:** SW8015B **Matrix:** Soil Unit: mg/Kg

**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-143560

1708519-003AMS/MSD

QC Report for SW8015B w/out SG Clean-Up										
Analyte	MB Result	LCS Result		RL	SPK Val		B SS REC	LCS %RE	C	LCS Limits
TPH-Diesel (C10-C23)	ND	40.2		1.0	40	-		100		79-133
TPH-Motor Oil (C18-C36)	ND	-		5.0	-	-		-		-
Surrogate Recovery										
C9	26.18	26.0			25	10	)5	104		77-109
Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/I	-	RPD	RPD Limit
TPH-Diesel (C10-C23)	NR	NR		370	NR	NR	-		NR	-
Surrogate Recovery										
C9	N/A	N/A			N/A	N/A	-		N/A	-

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Page 1 of 1

5 days;

08/11/2017

Requested TAT:

WorkOrder: 1708536 ClientCode: AGSI OuoteID: 7536

Excel **EQuIS**  □ Email □HardCopy ☐ ThirdParty J-flag

☐ Detection Summary Dry-Weight

Report to: Bill to:

WriteOn

□WaterTrax

Email: Michelle Shriro michelle.shriro@agsinc.com Jana Marjanovic Pearson

cc/3rd Party: AGS, Inc. AGS. Inc.

Date Received: 08/11/2017 PO: 5 Freelon Street 5 Freelon Street

ProjectNo: University Mound East Pipeline; AGS 14-San Francisco, CA 94107 San Francisco, CA 94107 Date Logged: 027/24 (415) 777-2166 FAX: jana.pearson@agsinc.com

□ EDF

					Requested Tests (See legend below)											
Lab ID	Client ID	Matrix	Collection Date	Hold	1	2	3	4	5	6	7	8	9	10	11	12
1708536-001	ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	Soil	8/9/2017 10:02		Α	Α	Α	Α	Α	Α	Α	Α	Α	Α		
1708536-002	ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	Soil	8/9/2017 12:16		Α	Α	Α	Α	Α	Α	Α	Α	Α	Α		
1708536-003	ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	Soil	8/9/2017 13:32		Α	Α	Α			Α	Α	Α	Α	Α		
1708536-004	ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	Soil	8/10/2017 08:35		Α	Α	Α	Α	Α	Α	Α	Α	Α	Α		
1708536-005	ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	Soil	8/10/2017 10:06		Α	Α	Α	Α		Α	Α	Α	Α	Α		
1708536-006	ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	Soil	8/10/2017 11:11		Α	Α	Α	Α		Α	Α	Α	Α	Α		
1708536-007	ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	Soil	8/10/2017 11:48		Α	Α	Α			Α	Α	Α	Α	Α		
1708536-008	ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	Soil	8/10/2017 12:42		Α	Α	Α			Α	Α	Α	Α	Α		

#### Test Legend:

1	7199_TTLC_LL_S [J]	2 8081PCB_ESL_S [	J] 3 8081PCB_ESL_SUB	4 8081PCB_FLORISIL_S [J]
5	8081PCB_GPCFLSL_S [J]	6 8270_SCSM_S [J]	7 CAM17MS_TTLC_S	8 CARB435_400
9	G-MBTEX_S	10 TPH(DMO)_S	11	12

Prepared by: Alexandra Iniguez **Project Manager: Angela Rydelius** 

#### **Comments:**

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days). Hazardous samples will be returned to client or disposed of at client expense.



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#### **WORK ORDER SUMMARY**

Client Name:	AGS, INC.	Project:	University Mound East Pipeline;	AGS 14-027/24	Work Order:	1708536
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Client Contact: Michelle Shriro

QC Level:

Contact's Email: michelle.shriro@agsinc.com

Comments:

Date Logged: 8/11/2017

	W	aterTrax	WriteOn EDF	Excel	Fax Email	HardC	opyThirdPart	у 🔳	J-flag
Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De- chlorinated	Collection Date & Time	TAT	Sediment Hold SubOut Content
1708536-001A	ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/9/2017 10:02	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	
			Asbestos, CARB 435, 400 Point					5 days	
			SW6020 (CAM 17)					5 days	
			SW8270C (Low Level SVOCs) with GPC Cleanup					5 days	
			SW8081A/8082 (OC Pesticides+PCB w/ GPC & Florisil)					5 days	•
			SW8081A/8082 (OC Pesticides+PCB w/ Florisil)					5 days	•
			SW8081PCB (Subcontracted)					5 days	SubOut
			SW8081A/8082 (OC Pesticides+PCBs) ESLs					5 days	✓
			SW7199 (Hexavalent chromium, Low- Level)					5 days	
1708536-002A	ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/9/2017 12:16	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	
			Asbestos, CARB 435, 400 Point					5 days	
			SW6020 (CAM 17)					5 days	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).



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#### **WORK ORDER SUMMARY**

Client Name:	AGS, INC.	Project:	University Mound East Pipeline; AGS 14-027/24	Work Order: 1708536
--------------	-----------	----------	---	---------------------

Client Contact: Michelle Shriro

QC Level:

Contact's Email: michelle.shriro@agsinc.com

Comments:

Date Logged: 8/11/2017

	Wate	erTrax	☐WriteOn ☐EDF ☐E	Excel	Fax Email	HardC	opyThirdPar	ty 🔳	J-flag
Lab ID	Client ID	Matrix	Test Name	Containers /Composites	<b>Bottle &amp; Preservative</b>	De- chlorinated	Collection Date & Time	TAT	Sediment Hold SubOut Content
1708536-002A	ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	Soil	SW8270C (Low Level SVOCs) with GPC Cleanup	2 / (2:1)	16OZ GJ		8/9/2017 12:16	5 days	
			SW8081A/8082 (OC Pesticides+PCB w/ GPC & Florisil)					5 days	•
			SW8081A/8082 (OC Pesticides+PCB w/ Florisil)					5 days	•
			SW8081PCB (Subcontracted)					5 days	SubOut
			SW8081A/8082 (OC Pesticides+PCBs) ESLs					5 days	•
			SW7199 (Hexavalent chromium, Low- Level)					5 days	
1708536-003A	ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/9/2017 13:32	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	
			Asbestos, CARB 435, 400 Point					5 days	
			SW6020 (CAM 17)					5 days	
			SW8270C (Low Level SVOCs) with GPC Cleanup					5 days	
			SW8081PCB (Subcontracted)					5 days	SubOut
			SW8081A/8082 (OC Pesticides+PCBs) ESLs					5 days	•

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).



**Client Contact:** 

Michelle Shriro

### McCampbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701 Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269 http://www.mccampbell.com / E-mail: main@mccampbell.com

#### **WORK ORDER SUMMARY**

Client Name: AGS, INC. Project: University Mound East Pipeline; AGS 14-027/24 Work Order: 1708536

QC Level:

Contact's Email: michelle.shriro@agsinc.com

Comments:

Date Logged: 8/11/2017

	Wate	rTrax	WriteOn EDF	Excel	FaxEmail	HardC	opyThirdPar	ty 🔳	J-flag
Lab ID	Client ID	Matrix	Test Name	Containers /Composites	<b>Bottle &amp; Preservative</b>	De- chlorinated	Collection Date & Time	TAT	Sediment Hold SubOut Content
1708536-003A	ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	Soil	SW7199 (Hexavalent chromium, Low- Level)	2 / (2:1)	16OZ GJ		8/9/2017 13:32	5 days	
1708536-004A	ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/10/2017 8:35	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	
			Asbestos, CARB 435, 400 Point					5 days	
			SW6020 (CAM 17)					5 days	
			SW8270C (Low Level SVOCs) with GPC Cleanup					5 days	
			SW8081A/8082 (OC Pesticides+PCB w/ GPC & Florisil)					5 days	•
			SW8081A/8082 (OC Pesticides+PCB w/ Florisil)					5 days	•
			SW8081PCB (Subcontracted)					5 days	SubOut
			SW8081A/8082 (OC Pesticides+PCBs) ESLs	)				5 days	•
			SW7199 (Hexavalent chromium, Low- Level)					5 days	
1708536-005A	ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/10/2017 10:06	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).



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#### **WORK ORDER SUMMARY**

Client Name: AGS, INC. Project: University Mound East Pipeline; AGS 14-027/24 Work Order: 1708536

Client Contact: Michelle Shriro

QC Level:

Contact's Email: michelle.shriro@agsinc.com

Comments:

Date Logged: 8/11/2017

	Wate	rTrax	WriteOn EDF	Excel	Fax Email	HardC	opy ThirdPar	ty 🔳	J-flag
Lab ID	Client ID	Matrix	Test Name	Containers /Composites	<b>Bottle &amp; Preservative</b>	De- chlorinated	Collection Date & Time	TAT	Sediment Hold SubOut Content
1708536-005A	ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	Soil	Asbestos, CARB 435, 400 Point	2 / (2:1)	16OZ GJ		8/10/2017 10:06	5 days	
			SW6020 (CAM 17)					5 days	
			SW8270C (Low Level SVOCs) with GPC Cleanup					5 days	
			SW8081A/8082 (OC Pesticides+PCB w/ Florisil)					5 days	•
			SW8081PCB (Subcontracted)					5 days	SubOut
			SW8081A/8082 (OC Pesticides+PCBs) ESLs					5 days	
			SW7199 (Hexavalent chromium, Low- Level)					5 days	
1708536-006A	ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/10/2017 11:11	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	
			Asbestos, CARB 435, 400 Point					5 days	
			SW6020 (CAM 17)					5 days	
			SW8270C (Low Level SVOCs) with GPC Cleanup					5 days	
			SW8081A/8082 (OC Pesticides+PCB w/ Florisil)					5 days	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).



"When Quality Counts"

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#### **WORK ORDER SUMMARY**

Client Name:	AGS, INC.	Project:	University Mound East Pipeline; AGS 14-027/24	Work Order: 1708536
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Client Contact: Michelle Shriro

QC Level:

Contact's Email: michelle.shriro@agsinc.com

Comments:

Date Logged: 8/11/2017

	Wate	rTrax	WriteOn EDF	Excel	FaxEmail	HardC	opyThirdPar	ty 🔳	I-flag
Lab ID	Client ID	Matrix	Test Name	Containers /Composites	<b>Bottle &amp; Preservative</b>	De- chlorinated	Collection Date & Time	TAT	Sediment Hold SubOut Content
1708536-006A	ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	Soil	SW8081PCB (Subcontracted)	2 / (2:1)	16OZ GJ		8/10/2017 11:11	5 days	SubOut
			SW8081A/8082 (OC Pesticides+PCBs) ESLs					5 days	✓
			SW7199 (Hexavalent chromium, Low- Level)					5 days	
1708536-007A	ES-7 #1 (20"-23") & ES-7 #2 (4'-4'6")	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/10/2017 11:48	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	
			Asbestos, CARB 435, 400 Point					5 days	
			SW6020 (CAM 17)					5 days	
			SW8270C (Low Level SVOCs) with GPC Cleanup					5 days	
			SW8081PCB (Subcontracted)					5 days	SubOut
			SW8081A/8082 (OC Pesticides+PCBs) ESLs					5 days	<b>✓</b>
			SW7199 (Hexavalent chromium, Low- Level)					5 days	
1708536-008A	ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	Soil	SW8015B (Diesel & Motor Oil)	2 / (2:1)	16OZ GJ		8/10/2017 12:42	5 days	
			SW8021B/8015Bm (G/MBTEX)					5 days	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).



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1534 Willow Pass Road, Pittsburg, CA 94565-1701 Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269 http://www.mccampbell.com / E-mail: main@mccampbell.com

#### **WORK ORDER SUMMARY**

Client Name:	AGS, INC.	Project:	University Mound East Pipeline; AGS 14-027/24	Work Order: 1708536
--------------	-----------	----------	---	---------------------

Client Contact: Michelle Shriro

QC Level:

Contact's Email: michelle.shriro@agsinc.com

Comments:

Date Logged: 8/11/2017

		]WaterTrax	WriteOnEDF	Excel	]Fax	HardC	opyThirdPart	у 🔲 Ј	J-flag
Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De- chlorinated	Collection Date & Time	TAT	Sediment Hold SubOut Content
1708536-008A	ES-8 #1 (20"-23") & ES-(4'-4'6")	-8 #2 Soil	Asbestos, CARB 435, 400 Point	2 / (2:1)	16OZ GJ		8/10/2017 12:42	5 days	
			SW6020 (CAM 17)					5 days	
			SW8270C (Low Level SVOCs) w GPC Cleanup	ith				5 days	
			SW8081PCB (Subcontracted)					5 days	SubOut
			SW8081A/8082 (OC Pesticides+I ESLs	PCBs)				5 days	•
			SW7199 (Hexavalent chromium, Level)	Low-				5 days	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

# Hold all Scope for SFPORC authorization \_\_\_\_\_\_\_MAI Work Order #

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McCAMPBELL ANALYTICAL, INC.	CHAIN OF CUSTODY RECORD CAST AT	1
1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701	um Atound Time I Day Rush   2 Day Rush   3 Day Rush   STD   Quote # 75 3C	
Telephone: (877) 252-9262 Fax: (925) 252-9269	J-Flag MDL ESL Cleanup Approved Bottle Order #	
www.mccampbell.com main.a/mccampbell.com	behvery Format   PDF   GeoTracker EDF   EDD   Write On (DW)   EQuIS	
Report To: Michelle Shriro Bill To: Midhelle Shriro	Analysis Requested	
Company: AGS Trc.		
Finall Michelle shring agsing, com	10. (Sq. 1)	र्ष है।
All ismail: Tele: 415,777, 2166 cvt 39		13 7
Project Name: University Mound East Pipeline Project ": AGS 14-027/24		35 9
Project Location: San Francisco, CA PO #	1 PH as Gas (1)	12 1
Sampler Signature: Aman	September   Sept	T å
SAMPLE ID Sampling   Matrix Preservative		13 2
Table Lines	HILLY & HILL & DIE  TPH as Die  Silea Gel  Silea Gel  Total Oil &  Silea Gel  Total Detrol  Grease (166  Total Petrol  Mith Silica  EPA 525.2  EPA 525.2	134
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ES-Z #1 (20"-24") 8/10/17 829 mm		$\Box$
ES-Z #2 (4'-4'6") 8/10/17 835 m		H
ES-5 #1 (20"-23") 8/10/17 1005 am		171
FC 5 42 (22" 21") 2/ /= 1006		HH
		<b>V</b>
Sonsdisciosure meurs an immediate 8380 surcharge and the client is subject to full legal hability for harm suffered. Thank	ay cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAIs i for your understanding and for allowing us to work safely	staff
* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody		-
Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS LCSD will	prepared in its place and noted in the report	d
Relinquished By Company Name Date Time	Recounsed By Company Name Date Time Sample 2 parts to be Camposited from Son	_
M Sul 8/11/17 955	8-11-17 1950 (darper) 12 196	
8-11-17 13NO		
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Matrix Code: DW Drinking Water, GW Ground Water, WW Waste Water, SW 2000		که که ایر ۲ ملاصیه
Preservative Code: 1.4 C 2. HCL 3. H.SO, 4. HNO, 5. NaOH 6. ZnoAct 40H	Temp Za za temporaria	
# Do Not include corrosilly Scape outlined in quote (see	· •	_
NO STLC or TCLP without Special reguest, Hol	all Samples ofter festing. Page of	2

# Hold all Scope for SF PUC authorization MAI Work Order 11. 17085360

Telephone: (877) 252-9262 Fax: (925) 252-9269  Www.mecampbell.com  Report To: Michalle Shot to  Bill To: Michalle Shot to  Tele: 415.777. 2166 ext 39  Project Location: San Fracisca, a PO: "  Sampler Signature: University Mend East P: polymbroject #: A65 14-027 /24  Project Location: San Fracisca, a PO: "  Sampler Signature: Sampler Signature: University Mend East P: polymbroject #: A65 14-027 /24  Project Location: San Fracisca, a PO: "  Sampler Signature: University Mend East P: polymbroject #: A65 14-027 /24  Project Location: San Fracisca, a PO: "  Sampler Signature: University Mend East P: polymbroject #: Polymbroject #: A65 14-027 /24  Project Location: San Fracisca, a PO: "  Sampler Signature: University Mend East P: polymbroject #:	CHAIN OF CUSTODY RECORD	IPBELL ANALYTICAL, INC
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Report To: Michaelle Shreice  Bill To:		
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S-6 #1 (20"-24") \$ [idi7   11" and	22   23   23   25   25   25   25   25	Data lana da Matrix Preservat
ES-C #2 (4'3"-4'4") 8 (16/17 11" and 1	Silica Si	Time 9
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Relinquished By Company Name Date Time Received By Company Name Date Time Received By Company Name Date Time	m its place and noted in the report  The standard of the stand	
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8-11-17 /30 Chu h 8/11/1 1310 hole Test com	7 7 1310 hole Test composite	9/11/100
latrix Code: DW Drinking Water, GW Ground Water, WW Waste Water, SW Seawater, S. Soil, SL. Sludge, A. Air, WP Wipe, O. Other Hold individu	oil St. Studge A Air WP Wine O Other Hold individuals	GW Ground Water, WW Waste Water, SW See
reservative Code: 1-4 C 2 HCl 3 H SO; 4 HNO; 5 NaOH 6 ZnOAc NaOH 7 None  Temp C Initials	·	3 H-SO <sub>3</sub> 4 HNO <sub>3</sub> 5 NaOH 6 ZnOAc Na

NO CTLC or TCLP without special report but HOLD all supples after testing

### **Sample Receipt Checklist**

Client Name:	AGS, Inc.				Date and Time Received	8/11/2017 13:10
Project Name:	roject Name: University Mound East Pipeline; AGS 14-027/24		Date Logged:	8/11/2017		
					Received by:	Alexandra Iniguez
WorkOrder №:		latrix: <u>Soil</u>			Logged by:	Alexandra Iniguez
Carrier:	Bernie Cummins (MAI (	Courier)				
		Chain of C	ustody	(COC) Infor	<u>mation</u>	
Chain of custody	present?		Yes	•	No 🗌	
Chain of custody	signed when relinquishe	d and received?	Yes	<b>✓</b>	No 🗌	
Chain of custody	agrees with sample labe	ls?	Yes	•	No 🗌	
Sample IDs note	d by Client on COC?		Yes	•	No 🗆	
Date and Time o	f collection noted by Clier	nt on COC?	Yes	•	No 🗌	
Sampler's name	noted on COC?		Yes	✓	No 🗌	
		Sample	e Rece	ipt Informati	<u>on</u>	
Custody seals int	tact on shipping containe	r/cooler?	Yes	•	No 🗌	NA 🗌
Shipping contain	er/cooler in good condition	n?	Yes	•	No 🗌	
Samples in prope	er containers/bottles?		Yes	•	No 🗌	
Sample containe	rs intact?		Yes	•	No 🗆	
Sufficient sample	e volume for indicated tes	t?	Yes	•	No 🗆	
		Sample Preservation	on and	Hold Time (I	HT) Information	
All samples recei	ived within holding time?		Yes	<b>✓</b>	No 🗆	NA 🗆
Sample/Temp Bl	ank temperature			Temp: 4.9	9°C	NA 🗆
Water - VOA vial	s have zero headspace /	no bubbles?	Yes		No 🗆	NA 🗹
Sample labels ch	necked for correct preserv	vation?	Yes	•	No 🗌	
pH acceptable up	oon receipt (Metal: <2; 52	2: <4; 218.7: >8)?	Yes		No 🗆	NA 🗹
Samples Receive	ed on Ice?		Yes	✓	No 🗆	
		(Ice Type	e: WE	T ICE )		
UCMR Samples:		on receipt for EPA 522?	Yes		No 🗆	NA 🗹
		on receipt for EPA 218.7,			No 🗆	NA 🗸
300.1, 537, 539		on recorpt for £1 7( 2 16.7,	100		110 🗀	
Comments:					=======	=======

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# McCampbell Analytical, Inc.

"When Quality Counts"

# **Analytical Report**

**WorkOrder:** 1708536 A

Report Created for: AGS, Inc.

5 Freelon Street

San Francisco, CA 94107

**Project Contact:** Michelle Shriro

**Project P.O.:** 

**Project Name:** University Mound East Pipeline; AGS 14-027/24

**Project Received:** 08/11/2017

Analytical Report reviewed & approved for release on 09/08/2017 by:

Angela Rydelius,

Laboratory Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.



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CA ELAP 1644 ♦ NELAP 4033 ORELAP

### **Glossary of Terms & Qualifier Definitions**

Client: AGS, Inc.

**Project:** University Mound East Pipeline; AGS 14-027/24

WorkOrder: 1708536 A

### **Glossary Abbreviation**

%D Serial Dilution Percent Difference

95% Interval 95% Confident Interval

DF Dilution Factor

DI WET (DISTLC) Waste Extraction Test using DI water

DISS Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)

DLT Dilution Test (Serial Dilution)

DUP Duplicate

EDL Estimated Detection Limit

ERS External reference sample. Second source calibration verification.

ITEF International Toxicity Equivalence Factor

LCS Laboratory Control Sample

MB Method Blank

MB % Rec % Recovery of Surrogate in Method Blank, if applicable

MDL Method Detection Limit

ML Minimum Level of Quantitation

MS Matrix Spike

MSD Matrix Spike Duplicate

N/A Not Applicable

ND Not detected at or above the indicated MDL or RL

NR Data Not Reported due to matrix interference or insufficient sample amount.

PDS Post Digestion Spike

PDSD Post Digestion Spike Duplicate

PF Prep Factor

RD Relative Difference

RL Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)

RPD Relative Percent Deviation
RRT Relative Retention Time

SPK Val Spike Value

SPKRef Val Spike Reference Value

SPLP Synthetic Precipitation Leachate Procedure

ST Sorbent Tube

TCLP Toxicity Characteristic Leachate Procedure

TEQ Toxicity Equivalents

WET (STLC) Waste Extraction Test (Soluble Threshold Limit Concentration)

1708536



## **Analytical Report**

 Client:
 AGS, Inc.

 Date Received:
 8/11/17 13:10

 Date Prepared:
 9/3/17-9/5/17

**Extraction Method:** CA Title 22 **Analytical Method:** SW6020

**Project:** University Mound East Pipeline; AGS 14-027/24

Unit: mg/L

WorkOrder:

Metals (STLC)							
Client ID	Lab ID	Matrix	Date C	Collected Instrument	Batch ID		
ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	1708536-001A	Soil	08/09/20	017 10:02 ICP-MS3	144913		
Analytes	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed		
Chromium	ND		0.10	1	09/08/2017 10:13		

Analyst(s): ND

Client ID	Lab ID	Matrix	Date Collected Instrumen	t Batch ID
ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	1708536-002A	Soil	08/09/2017 12:16 ICP-MS3	144913
<u>Analytes</u>	Result		<u>RL</u> <u>DF</u>	Date Analyzed
Chromium	0.12		0.10 1	09/07/2017 21:01

Analyst(s): ND

Client ID	Lab ID	Matrix	Date Co	llected Instrument	Batch ID
ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	1708536-003A	Soil	08/09/201	7 13:32 ICP-MS3	144913
<u>Analytes</u>	Result		<u>RL</u>	<u>DF</u>	Date Analyzed
Chromium	0.23		0.10	1	09/07/2017 21:07

Analyst(s): ND

Client ID	Lab ID	Matrix	Date Coll	ected Instrument	Batch ID
ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	1708536-004A	Soil	08/10/2017	08:35 ICP-MS2	144839
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed
Chromium	0.23		0.10	1	09/05/2017 18:29

Analyst(s): MIG

\_\_\_\_Angela Rydelius, Lab Manager

# **Analytical Report**

**Client:** AGS, Inc. **Date Received:** 8/11/17 13:10 **Date Prepared:** 9/3/17-9/5/17

ES-5 #1 (20"-23") & ES-5 #2 (23"-26")

WorkOrder: 1708536 **Extraction Method:** CA Title 22 **Analytical Method:** SW6020

University Mound East Pipeline; AGS 14-027/24 **Project:** 

Unit: mg/L

	Metals (S7	TLC)	
Lab ID	Matrix	Date Collected Instrument	Batch ID
1708536-005A	Soil	08/10/2017 10:06 ICP-MS2	144839

**Analytes** Result <u>RL</u> <u>DF</u> **Date Analyzed** Chromium 0.23 0.10 09/05/2017 18:36

MIG Analyst(s):

**Client ID** 

Client ID	Lab ID	Matrix	Date Col	lected Instrument	Batch ID
ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	1708536-006A	Soil	08/10/201	7 11:11 ICP-MS2	144837
<u>Analytes</u>	Result		<u>RL</u>	DF	Date Analyzed
Chromium	0.28		0.10	1	09/05/2017 18:42

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Co	ollected Instrument	Batch ID
ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	1708536-008A	Soil	08/10/20	17 12:42 ICP-MS2	144839
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	Date Analyzed
Chromium	0.13		0.10	1	09/05/2017 18:48

Analyst(s): MIG

\_\_Angela Rydelius, Lab Manager

# **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 9/3/17 **BatchID:** 144837 **Date Analyzed:** 9/5/17 Extraction Method: CA Title 22 **Instrument:** ICP-MS3 **Analytical Method:** SW6020 **Matrix: Unit:** Soil mg/L

**Project:** University Mound East Pipeline; AGS 14-027/24 **Sample ID:** MB/LCS-144837

1708E22-001AMS/MSD

QC Summary Report for Metals (STLC)							
Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chromium	ND	9.37	0.10	10	-	94	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	9.08	9.28	10	ND	91	93	75-125	2.24	20

## **Quality Control Report**

**Client:** AGS, Inc. WorkOrder: 1708536 **Date Prepared:** 9/3/17 **BatchID:** 144839 **Date Analyzed:** 9/5/17 Extraction Method: CA Title 22 **Instrument:** ICP-MS3 **Analytical Method:** SW6020 **Matrix: Unit:** Soil mg/L

Project: University Mound East Pipeline; AGS 14-027/24 Sample ID: MB/LCS-144839

1709020-001AMS/MSD

# QC Summary Report for Metals (STLC)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chromium	ND	9.27	0.10	10	-	93	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	9.14	8.19	10	ND<2.0	91	82	75-125	11.0	20

## **Quality Control Report**

Client:AGS, Inc.WorkOrder:1708536Date Prepared:9/5/17BatchID:144913Date Analyzed:9/7/17Extraction Method:CA Title 22Instrument:ICP-MS3Analytical Method:SW6020

Matrix:SoilUnit:mg/LProject:University Mound East Pipeline; AGS 14-027/24Sample ID:MB/LCS-144913

1709091-001AMS/MSD

### **QC Summary Report for Metals (STLC)**

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Chromium	ND	9.44	0.10	10	-	94	75-125

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	9.98	9.78	10	0.48	95	93	75-125	1.96	20

# McCampbell Analytical, Inc.

# CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Pittsburg, CA 94565-1701		WorkOrder: 1708536	A ClientC	ode: AGSI	QuoteID	: 7536
(925) 252-9262		☐ Excel ☐ Fax	Email	HardCopy	ThirdParty	J-flag
		Detection Summary	Dry-Weight			
Report to:		Bill to:		Red	quested TAT:	5 days;
Michelle Shriro	Email: michelle.shriro@agsinc.com	Jana Marjano	ovic Pearson			
AGS, Inc.	cc/3rd Party:	AGS, Inc.		Da	te Received:	08/11/2017
5 Freelon Street	PO:	5 Freelon Str	eet			
San Francisco, CA 94107	ProjectNo: University Mound East Pipeline;	AGS 14- San Francisc	o, CA 94107	Da	te Logged:	08/11/2017
(415) 777-2166 FAX:	027/24	jana.pearson	@agsinc.com	Da	te Add-On:	09/01/2017
			Requested Tes	ets (See legend	helow)	

									Requested	Tests (	See leg	end bel	ow)			
Lab ID	Client ID	Matrix	<b>Collection Date</b>	Hold	1	2	3	4	4 5	6	7	8	9	10	11	12
1708536-001	ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	Soil	8/9/2017 10:02		Α											
1708536-002	ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	Soil	8/9/2017 12:16		Α											
1708536-003	ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	Soil	8/9/2017 13:32		Α											
1708536-004	ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	Soil	8/10/2017 08:35		Α											
1708536-005	ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	Soil	8/10/2017 10:06		Α											
1708536-006	ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	Soil	8/10/2017 11:11		Α											
1708536-008	ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	Soil	8/10/2017 12:42		Α											

### Test Legend:

1 CRMS_STLC_S	2	3	4
5	6	7	8
9	10	11	12

Project Manager: Angela Rydelius Prepared by: Alexandra Iniguez

Add-On Prepared By: Jena Alfaro

**Comments:** STLC Cr added 9/1/17 STAT



### McCampbell Analytical, Inc.

"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701 Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269 http://www.mccampbell.com / E-mail: main@mccampbell.com

### **WORK ORDER SUMMARY**

Client Name: AGS, INC. Project: University Mound East Pipeline; AGS 14-027/24 Work Order: 1708536

Client Contact: Michelle Shriro

QC Level:

Contact's Email michelle.shriro@agsinc.com

Comments: STLC Cr added 9/1/17 STAT

Date Logged: 8/11/2017

**Date Add-On:** 9/1/2017

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	<b>Bottle &amp; Preservative</b>	Collection Date & Time	TAT	Sediment Hold SubOu Content
1708536-001A	ES-1 #1 (1'-1'6") & ES-1 #2 (3'6"-4')	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	16OZ GJ	8/9/2017 10:02	5 days*	
1708536-002A	ES-4 #1 (1'-1'6") & ES-4 #2 (4'-4'6")	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	16OZ GJ	8/9/2017 12:16	5 days*	
1708536-003A	ES-3 #1 (1'-1'6") & ES-3 #2 (4'-4'6")	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	16OZ GJ	8/9/2017 13:32	5 days*	
1708536-004A	ES-2 #1 (20"-24") & ES-2 #2 (4'-4'6")	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	16OZ GJ	8/10/2017 8:35	5 days*	
1708536-005A	ES-5 #1 (20"-23") & ES-5 #2 (23"-26")	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	16OZ GJ	8/10/2017 10:06	5 days*	
1708536-006A	ES-6 #1 (20"-24") & ES-6 #2 (4'3"-4'6")	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	16OZ GJ	8/10/2017 11:11	5 days*	
1708536-008A	ES-8 #1 (20"-23") & ES-8 #2 (4'-4'6")	Soil	SW6020 (Chromium) (STLC)	2 / (2:1)	16OZ GJ	8/10/2017 12:42	5 days*	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

# - Hold all Scope for SFPORC authorization \_\_\_\_\_ MAI Work Order " 1708.5360

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\*Added 9/1/17 STAT.

# Hold all Scope for SF PUC authorization



Telephone: (877) 252-9262 Fax. (925) 252-9269  Www.mecampbell.com  Report To: Michalle Shot to  Bill To: Michalle Shot to  Analysis Requested  Tele: 415.777.2166 cxt 39  Project Location: San Freedson, CA  Project Location: San Freedson, CA  Project Location: San Freedson, CA  Sampling			<b>FT</b>	3T	120	OR	EC	R	DDY	STO	CU	FC	N O	IAI	CI							.	, INC	ICAL												cCA	M	ſ		70	_
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NO CTLC or TCLP without special reports but HOLD all Supples after testing

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### TRANSMITTAL LETTER

**DATE:** July 17, 2017

ATTENTION: Michelle Shiriro

**TO:** AGS, Inc.

5 Freelon Street

San Francisco, CA 94107

**SUBJECT:** Laboratory Test Data

**University Mound** 

Your #AGS-14-027, HDR Lab #17-0464LAB

**COMMENTS:** Enclosed are the results for the subject project.

James T. Keegan

Laboratory Services Manager



**Table 1 - Laboratory Tests on Soil Samples** 

# AGS, Inc. University Mound Your #AGS-14-027, HDR Lab #17-0464LAB 17-Jul-17

### Sample ID

			B-1 4	B-2 3B	B-3 2C	B-7 3	B-9 2B
<b>-</b>							
Resistivity as-received		Units	1,440	5,600	11,600	20,000	2 600
saturated		ohm-cm ohm-cm	1,440	1,760	7,600	30,000 10,000	2,600 1,800
		OIIIII-OIII			,		
рН			7.2	7.3	7.7	6.7	6.7
Electrical							
Conductivity		mS/cm	0.17	0.09	0.03	0.04	0.04
Chemical Analy	ses						
Cations							
calcium	Ca <sup>2+</sup>	mg/kg	52	50	40	37	40
magnesium	•	mg/kg	18	31	19	18	24
sodium	Na <sup>1+</sup>	mg/kg	30	58	30	22	30
potassium	$K^{1+}$	mg/kg	218	11	8.6	29	10
Anions							
carbonate	$CO_3^{2-}$	mg/kg	ND	ND	ND	ND	ND
bicarbonate	HCO <sub>3</sub>	mg/kg	140	177	116	46	82
fluoride	F <sup>1-</sup>	mg/kg	5.2	5.2	8.1	2.3	5.1
chloride	CI <sup>1-</sup>	mg/kg	4.8	11	2.0	3.3	4.1
sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/kg	205	87	8.2	62	32
phosphate	PO <sub>4</sub> <sup>3-</sup>	mg/kg	ND	ND	2.4	ND	ND
Other Tests							
ammonium	$NH_4^{1+}$	mg/kg	ND	ND	ND	ND	ND
nitrate	$NO_3^{1-}$	mg/kg	86	9.2	4.4	5.7	13
sulfide	$S^{2-}$	qual	na	na	na	na	na
Redox		mV	na	na	na	na	na
% moisture	H <sub>2</sub> O	%	16.4%	na	na	na	na

Resistivity per ASTM G-187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per AWWA 2320-B.

Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.

mg/kg = milligrams per kilogram (parts per million) of dry soil.

Redox = oxidation-reduction potential in millivolts

ND = not detected



**Table 1 - Laboratory Tests on Soil Samples** 

# AGS, Inc. University Mound Your #AGS-14-027, HDR Lab #17-0464LAB 17-Jul-17

### Sample ID

				B-10 2B	B-5 2B	B-12 2	B -15 3B/C	
Re	sistivity as-received		Units ohm-cm	4,800	44,000	6,800	2,400	
рН	saturated		ohm-cm	3,920 7.2	2,960 7.6	4,800 7.5	2,200 7.0	
Electrical Conductivity		mS/cm	0.03	0.14	0.04	0.03		
Chemical Analyses Cations								
	calcium	Ca <sup>2+</sup>	mg/kg	36	62	35	33	
	magnesium		mg/kg	18	19	15	18	
	sodium	Na <sup>1+</sup>	mg/kg	19	71	29	27	
	potassium	K <sup>1+</sup>	mg/kg	7.6	43	11	16	
	Anions							
	carbonate	CO <sub>3</sub> <sup>2-</sup>	mg/kg	ND	ND	ND	ND	
	bicarbonate	HCO <sub>3</sub> <sup>1</sup>	mg/kg	58	308	113	88	
	fluoride	$F^{1-}$	mg/kg	9.6	5.2	6.2	3.9	
	chloride	CI <sup>1-</sup>	mg/kg	4.0	25	3.7	6.5	
	sulfate	$SO_4^{2-}$	mg/kg	17	84	23	13	
	phosphate	PO <sub>4</sub> <sup>3-</sup>	mg/kg	ND	19	2.6	2.5	
Other Tests								
	ammonium	$NH_4^{1+}$	mg/kg	ND	ND	ND	ND	
	nitrate	$NO_3^{1-}$	mg/kg	7.3	4.4	7.1	19	
	sulfide	S <sup>2-</sup>	qual	na	na	na	na	
	Redox		mV	na	na	na	na	
	% moisture	$H_2O$	%	na	na	14.8%	na	

Resistivity per ASTM G-187, Cations per ASTM D6919, Anions per ASTM D4327, and Alkalinity per AWWA 2320-B.

Electrical conductivity in millisiemens/cm and chemical analyses were made on a 1:5 soil-to-water extract.

mg/kg = milligrams per kilogram (parts per million) of dry soil.

Redox = oxidation-reduction potential in millivolts

ND = not detected

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## San Francisco Public Works Environmental Commitment Record

FIS ID: Project Name:	Paul Ave, Woolsey St and Salinas Ave Pavement Renovation and Sewer Replacement		Name of Project Manager: Edmund Lee  Name of Resident Engineer:				
Project Description	Project proposes pavement renovation, curb ramp construction and sewer work at various locations.						
PERMITS REQ	UIRED	DATE OF PERMIT	DATE RECEIVED				
SITE VISIT – D.	ATE	PERSONNEL					

NOTE: This following table is intended as a summary guide to environmental commitments. If there are any discrepancies between this table and technical studies/correspondence then the technical studies/correspondence take precedence

Task and Brief Description	-	Timing/ Phase	Specific Action(s) Taken to Comply with Task	Task Completed		Remarks
				Initial	Date	
Standard construction Measures apply	SCMs	Pre- Construction/ Construction	Include 01 35 49			
Work is within the Air Pollutant Exposure Zone (APEZ).	Clean Construction Ordinance	Pre- Construction/ Construction	Include 01 35 49 Construction Emissions Minimization Plan			A CEMP is required if the project meets the definition of a major project in Chapter 2503 of the SF Environmental Code

Task and Brief Description	Compliance Item	Timing/ Phase	Specific Action(s) Taken to Comply with Task	Task Completed		Remarks
				Initial	Date	
Work is within Maher Zone(s).	Maher Ordinance	Pre- Construction/ Construction	Public Works Maher Screening Form Specifications as required as a result of screening			
Construction and maintenance activities in areas soils containing naturally occurring asbestos.	SCMs	Pre- Construction/ Construction	Include 01 35 49 Notification Form for Road Construction and Maintenance Operations			Notification Form must be submitted to the Bay Area Air Quality Management District (BAAQMD) at least 14 days prior to initiation of construction/maintenance activities. A copy/scan of this must then be provided to Regulatory Affairs
Preserve granite, cobblestones, and/or brick of existing curb and gutter in the Public Right of Way.	Public Works Order No: 201954	Pre- Construction/ Construction	Include in specs and plans			
Preserve historic materials in the Public Right of Way	SCMs	Pre- Construction/ Construction	Show as protected/preserved in place on plans			