



## Colorado Oil & Gas Conservation Commission Mesa County – Site Investigation Summary Report

**Antea<sup>®</sup>Group**

Understanding today.  
Improving tomorrow.

**PREPARED FOR**  
Colorado Oil & Gas  
Conservation Commission  
Date: July 2, 2021

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## Introduction

Antea Group is pleased to present this Site Investigation Summary Report to the Colorado Oil & Gas Conservation Commission (COGCC) detailing the May 14, 2021 site investigation at three (3) Orphaned Well Program (OWP) well locations in Mesa County, CO. The orphaned wells are identified as Wynkoop 1 - 077-07350 (Wynkoop), Snowden OWP - 077-08440 (Snowden), and Lupton 1 - 077-08398 (Lupton). The Mesa County OWP well head locations are shown on **Figure 1**.

## Site Investigation

On May 14, 2021, Antea Group personnel conducted a site investigation at each of the 3 OWP well locations in Mesa County, CO. Prior to Antea Group's site presence, COGCC contractors had begun to expose the Lupton and Snowden wellheads while the Wynkoop bradenhead was undisturbed. Antea Group conducted field screening, vapor sampling, and soil sampling in accordance with the initial COGCC Form 27 for each wellhead location.

Initial inspections of each wellhead area showed no visual indications of hydrocarbon staining at the surface and down to depths of approximately 2 to 3 feet below ground surface (bgs). Additionally, no odors were present in the inspection areas.

### FIELD SCREENING

Antea Group performed field screenings around each well head using a soil vapor probe connected to a Landtec GEM 5000 to collect soil vapor readings for methane, carbon dioxide, oxygen, hydrogen sulfide, and carbon monoxide. Field screened locations (FS-1 through FS-5) for wells Wynkoop, Snowden, and Lupton are shown on **Figure 2**, **Figure 3**, and **Figure 4** respectively. The FS-1 location for each well site was performed immediately adjacent to the well while subsequent locations were spaced five (5) feet apart in cardinal directions (North, East, West, and South). Depth of vapor collection was approximately 2 feet bgs.

The Wynkoop field screening locations (FS-1 through FS-5) reported no significant methane readings. FS-1 reported the highest Methane reading of 0.2%.

The Snowden and Lupton sites consisted of a competent shale unit at the surface which impeded Antea Group's ability to collect a complete set of five (5) field screenings around the wellheads. Each site was field screened immediately adjacent to the wellhead, followed by a field screening 5 feet to the north and 5 feet to the south. The field screened locations at the Snowden and Lupton sites reported no significant Methane readings above 0.1%.

Field screened results are shown on **Table 2**.

### VAPOR SAMPLING

A soil vapor survey was conducted at each site to confirm the presence or absence of methane gas in the vicinity of the wellhead areas. As no significant methane readings were detected, a vapor sample was collected at the sample location in closest proximity to the well at all three (3) site locations. A soil vapor probe was driven into the soil approximately two (2) feet bgs using a slide hammer. New tygon tubing was used to connect the sample rod with a one-way hand bulb pump and pumped to purge the volume of air in the tooling. Once the tooling was purged, the pump was then connected to a laboratory supplied sample collection bag and filled. Soil vapor samples were shipped under chain of custody protocol to Isotech Laboratory located in Champaign, IL.



Analytical results show trace levels of Argon and Carbon Dioxide at each well site and trace levels of Methane were reported at well sites Snowden (0.0004 mol. %) and Lupton (0.0002 mol. %). Oxygen and Nitrogen were reported within normal background range at each well site. All other analytical results were reported below laboratory detection limits and hydrocarbon concentrations were too low to run isotopic analyses.

Soil vapor analytical results are shown on **Table 3** and the Isotech Laboratory report is included as **Attachment A**.

## SOIL SAMPLING

Antea Group collected one (1) soil sample (SB-1) at approximately 2 feet bgs at each well site's respective FS-1 location. No Photo Ionization Detector (PID) readings were collected due to absence of visual or olfactory indicators. The three (3) soil samples were immediately placed on ice and shipped under chain of custody protocol to Pace Analytical Laboratory located in Lenexa, KS and were analyzed for Table 915-1 constituents.

Analytical results showed Arsenic concentrations exceeding the Residential Screening Level (0.68 mg/kg) at each of the Snowden (10.2 mg/kg), Wynkoop (10.8 mg/kg), and Lupton (7.8 mg/kg) well sites. However, the naturally occurring background concentration of arsenic in Colorado is 11 mg/kg, as outlined in the Colorado Department of Health and Environment (CDPHE) *Arsenic Concentrations in Soil – Risk Management Guidance for Evaluating*. The Arsenic concentration at all three (3) well sites are representative of native background concentration. Nickel concentration at the Snowden well site and concentrations of Barium, Cadmium, Lead, and Selenium at all three (3) well sites are in excess of the Protection of Groundwater Soil Screening Levels, but not in excess of the Residential Screening Levels listed on Table 915-1.

Naphthalene concentration at the Snowden and Lupton well sites were in excess of the Protection of Groundwater Soil Screening Level, but not in excess of the Residential Screening Level. All other analytical results were reported below laboratory detection limits.

No groundwater was encountered during the site investigation.

Soil analytical results are shown on **Table 4** and the Pace Analytical Laboratory report is included as **Attachment B**.

## Conclusion

Antea Group's Mesa County site investigation of the three (3) aforementioned COGCC OWP orphaned wells resulted in no identified methane seepage related vapor impacts or Table 915-1 constituent concentrations above Residential Screening Levels except for the Arsenic concentration found at each well site. Reported Arsenic levels are likely due to native background concentration and are below the CDPHE regulatory threshold of 11 mg/kg. Vapor field screened results showed low to no levels of methane presence in the vicinity of the wellhead areas at each well site and laboratory analytical results showed insufficient hydrocarbon concentrations for isotopic analysis.

A handwritten signature in blue ink, appearing to read "D. Weber".

Date: July 2, 2021

---

David Weber, PG  
Project Manager  
Antea Group  
Direct: +1 970-292-1899  
david.weber@anteagroup.us

**Table 1**  
**COGCC OWP Mesa County**  
**Coordinate Table**

Wellhead	Location	Latitude	Longitude
Wynkoop	Wynkoop 1 - 077-07350	39.201411	-108.769943
	FS-1 / VP-1 / SB-1	39.201406	-108.769932
	FS-2	39.201418	-108.769933
	FS-3	39.201405	-108.769914
	FS-4	39.201391	-108.769930
	FS-5	39.201405	-108.769949
Snowden	Snowden OWP 077-08440	39.261590	-108.916074
	FS-1 / VP-1 / SB-1	39.261526	-108.915904
	FS-2	39.261540	-108.915901
	FS-3	39.261512	-108.915903
Lupton	Lupton 1 - 077-08398	39.264422	-108.924264
	FS-1 / VP-1 / SB-1	39.264293	-108.924259
	FS-2	39.264305	-108.924259
	FS-3	39.264277	-108.924257

\*Coordinates reported in Decimal Degrees

**Table 2**  
**COGCC OWP Mesa County**  
**Field Screen Results**

Well	Field Screen Location	Field Screen Values					
		CH4 %	CO2 %	O2 %	H2S ppm	CO ppm	Balance %
Wynkoop 1 077-07350	FS-1	0.2	1.2	20.2	0.0	0.0	78.4
	FS-2	0.0	1.4	19.4	0.0	0.0	79.2
	FS-3	0.0	1.5	19.2	0.0	0.0	79.3
	FS-4	0.0	1.5	19.2	0.0	0.0	79.4
	FS-5	0.0	1.4	19.1	0.0	0.0	79.4
Snowden OWP 077-08440	FS-1	0.1	0.8	19.3	0.0	0.0	79.8
	FS-2	0.0	5.9	12.9	0.0	0.2	81.2
	FS-3	0.1	5.5	11.0	0.0	2.0	83.5
Lupton 1 077-08398	FS-1	0.1	0.1	20.6	0.0	1.0	79.2
	FS-2	0.1	0.1	20.9	0.0	1.0	79.0
	FS-3	0.1	0.1	21.5	0.0	0.0	78.7

**Table 3**  
**COGCC OWP Mesa County**  
**Vapor Analytical Results**

Chemical		Snowden	Wynkoop	Lupton
Helium	He	ND	ND	ND
Hydrogen	H <sub>2</sub>	ND	ND	ND
Argon	Ar	0.947	0.938	0.953
Oxygen	O <sub>2</sub>	19.94	20.16	21.32
Carbon Dioxide	CO <sub>2</sub>	0.73	1.15	0.11
Nitrogen	N <sub>2</sub>	78.38	77.75	77.62
Carbon Monoxide	CO	ND	ND	ND
Methane	C <sub>1</sub>	0.0004	ND	0.0002
Ethane	C <sub>2</sub>	ND	ND	ND
Ethylene	C <sub>2</sub> H <sub>4</sub>	ND	ND	ND
Propane	C <sub>3</sub>	ND	ND	ND
Propylene	C <sub>3</sub> H <sub>6</sub>	ND	ND	ND
Iso-butane	iC <sub>4</sub>	ND	ND	ND
N-butane	nC <sub>4</sub>	ND	ND	ND
Iso-pentane	iC <sub>5</sub>	ND	ND	ND
N-pentane	nC <sub>5</sub>	ND	ND	ND
Hexanes +	C <sub>6</sub> +	ND	ND	ND
Specific Gravity		1.003	1.005	1.001
BTU		0	0	0

\*results are mol. %



**Table 4**  
**COGCC OWP Mesa County**  
**Soil Analytical Results**

Analyte	Table 915-1 Cleanup Concentrations (mg/kg)		Wynkoop	Snowden	Lupton
	Residential Screening Level	Protection of GW Soil Screening Level	(mg/kg)	(mg/kg)	(mg/kg)
6010					
Arsenic	0.68	0.29 (M)	10.8	10.2	7.8
Barium	15,000	82 (M)	379	198	216
Cadmium	71	0.38 (M)	1.4	2.3	1.7
Copper	3,100	46 (M)	20.8	24	21.4
Lead	400	14 (M)	14.5	22.7	33.4
Nickel	1,500	26 (R)	22.7	30.6	25.5
Selenium	390	0.26 (M)	4.7	6.5	6
Silver	390	0.8 (R)	ND	ND	ND
Zinc	23,000	370 (R)	75	121	117
8270					
Acenaphthene	360	0.55 (R)	ND	ND	ND
Acenaphthylene	NVG	NVG	ND	0.0050J	0.0017J
Anthracene	1800	5.8 (R)	ND	0.0091	ND
Benzo(a)anthracene	1.1	0.011 (R)	ND	0.0084	0.0030J
Benzo(a)pyrene	0.11	0.24 (M)	ND	0.0091	0.0030J
Benzo(b)fluoranthene	1.1	0.011 (R)	ND	0.024	0.0088
Benzo(g,h,i)perylene	NVG	NVG	ND	0.044	0.011
Benzo(k)fluoranthene	11	2.9 (R)	ND	ND	ND
Chrysene	110	9 (R)	ND	0.042	0.013
Dibenz(a,h)anthracene	0.11	0.096 (R)	ND	ND	ND
Fluoranthene	240	8.9 (R)	ND	0.021	0.0097
Fluorene	240	0.54 (R)	ND	0.011	0.0024J
Indeno(1,2,3-cd)pyrene	1.1	0.98 (R)	ND	ND	ND
Naphthalene	2	0.0038 (R)	ND	0.066	0.016
Phenanthrene	NVG	NVG	0.0032J	0.11	0.038
Pyrene	180	1.3 (R)	ND	0.051	0.014
8260 VOA					
Benzene	1.2	0.0026 (M)	ND	ND	ND
Ethylbenzene	5.8	0.78 (M)	ND	ND	ND
Toluene	490	0.69 (M)	ND	ND	ND
1,2,4-Trimethylbenzene	30	0.0081 (R)	ND	ND	ND
1,3,5-Trimethylbenzene	27	0.0087 (R)	ND	ND	ND
Xylene (total)	58	9.9 (M)	ND	ND	ND
8015B DRO					
TPH-DRO*	500 (total TPH)		7.8J	351	141
8260 GRO					
TPH-GRO*	500 (total TPH)		ND	ND	ND
Percent Moisture (%)			11.3	9.3	8.5
Chromium, Hexavalent (mg/kg)			ND	ND	ND
pH	6 - 8.3		7.4	7.3	11.7
Specific Conductance (mmhos/cm)	<4 mmhos/cm		0.0454	4.93	5.37

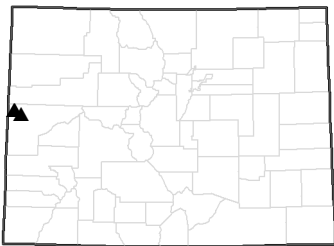
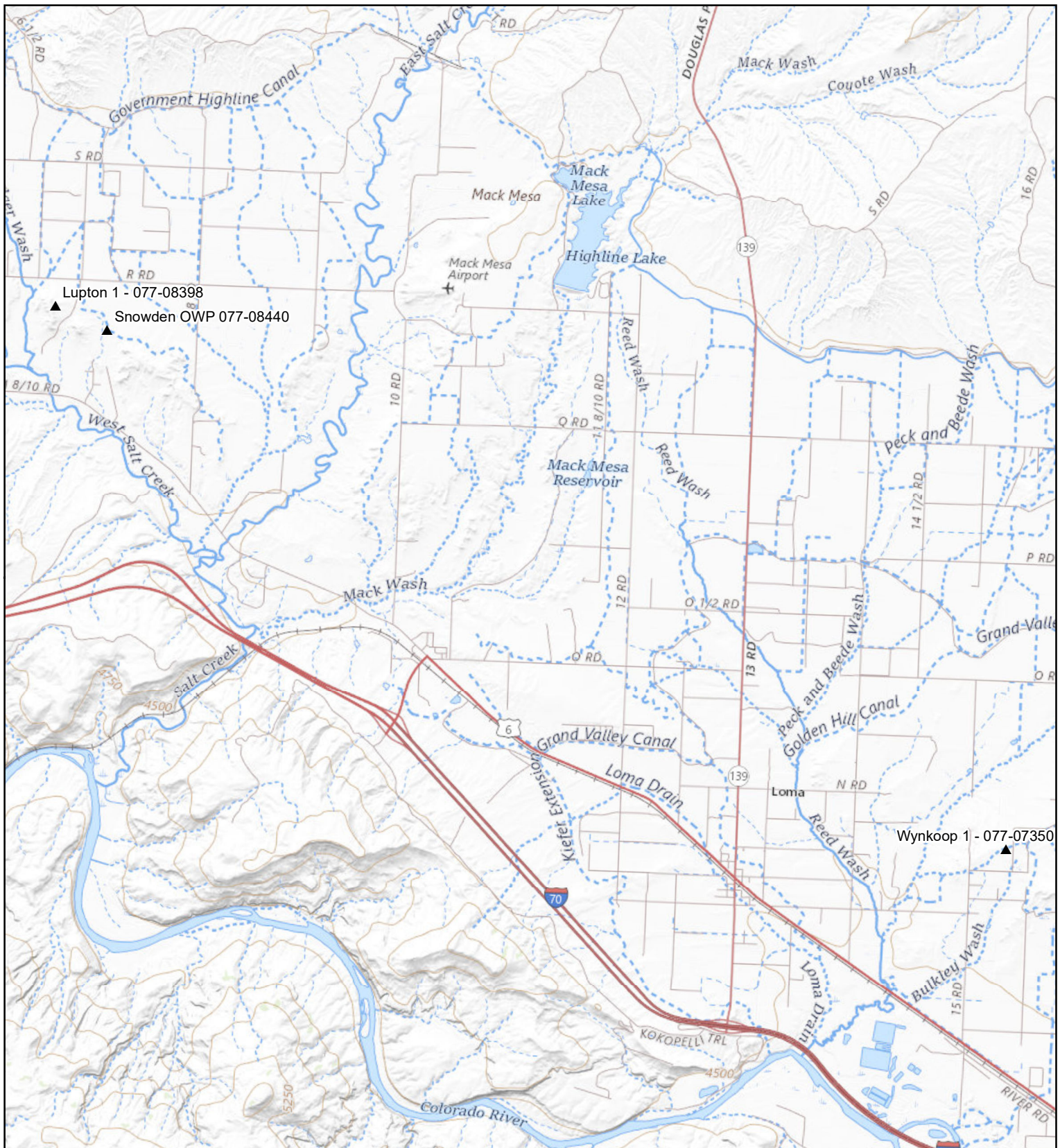
TPH - Total Petroleum Hydrocarbon  
DRO - Diesel Range Organics  
GRO - Gasoline Range Organics  
TPH [C6-C10] and [C10-C36] combined  
(R) Risk Based  
(M) MCL Based

Exceeds 915-1 Residential Screening Level Concnetration

Exceeds 915-1 Protection of Groundwater Screening Level

Outside of pH range

Below Specific Conductance



Mesa County, CO



0 1,500 3,000 6,000 9,000 12,000 Feet

### FIGURE 1

MESA COUNTY SITE LOCATION MAP  
COGCC OWP  
MESA COUNTY, CO

PROJECT NO.

COGCCMESA21

PREPARED BY

SF

REF SCALE

1:72,000

DATE

6/17/2021

REVIEWED BY

DW

MAP SCALE

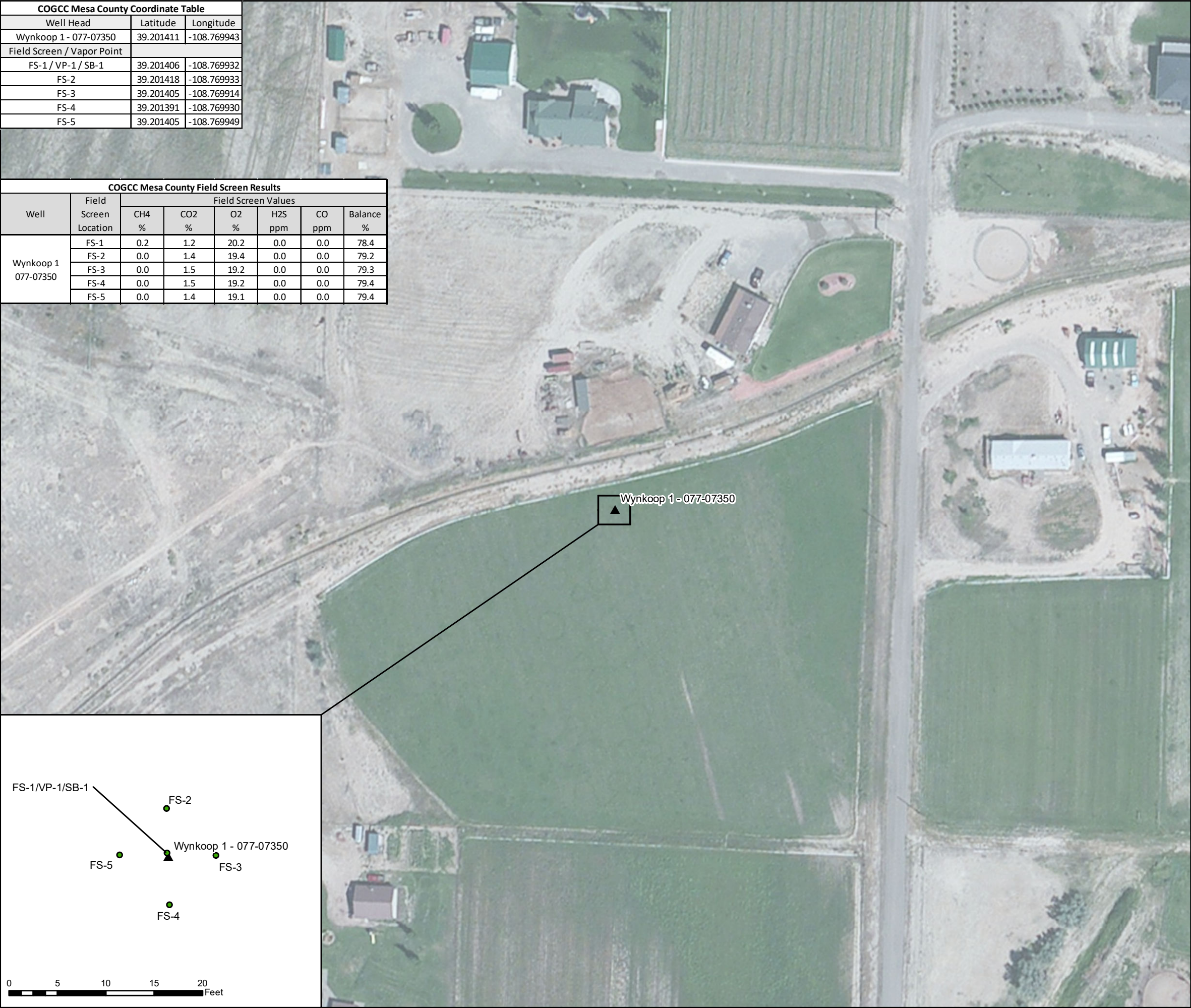
1 INCH = 6,000 FEET



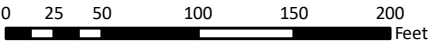


COGCC Mesa County Coordinate Table		
Well Head	Latitude	Longitude
Wynkoop 1 - 077-07350	39.201411	-108.769943
Field Screen / Vapor Point		
FS-1 / VP-1 / SB-1	39.201406	-108.769932
FS-2	39.201418	-108.769933
FS-3	39.201405	-108.769914
FS-4	39.201391	-108.769930
FS-5	39.201405	-108.769949


COGCC Mesa County Field Screen Results							
Well	Field Screen Location	Field Screen Values					
		CH4 %	CO2 %	O2 %	H2S ppm	CO ppm	Balance %
Wynkoop 1 077-07350	FS-1	0.2	1.2	20.2	0.0	0.0	78.4
	FS-2	0.0	1.4	19.4	0.0	0.0	79.2
	FS-3	0.0	1.5	19.2	0.0	0.0	79.3
	FS-4	0.0	1.5	19.2	0.0	0.0	79.4
	FS-5	0.0	1.4	19.1	0.0	0.0	79.4



- Legend**
- ▲ Wynkoop Wellhead Location
  - Field Screen, Vapor Point, Sample Location



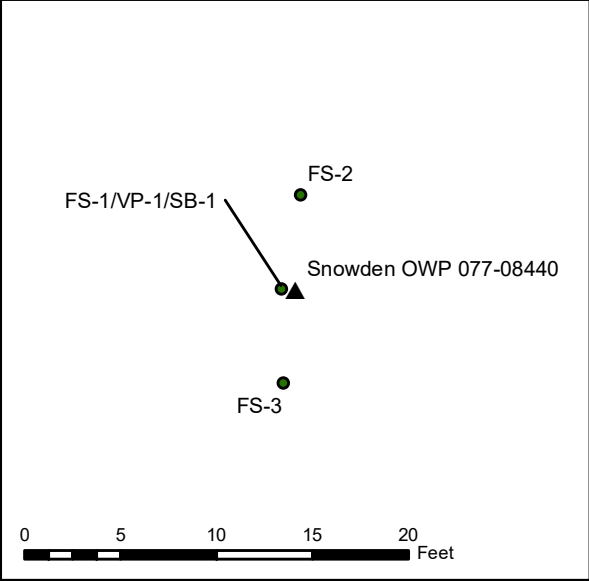
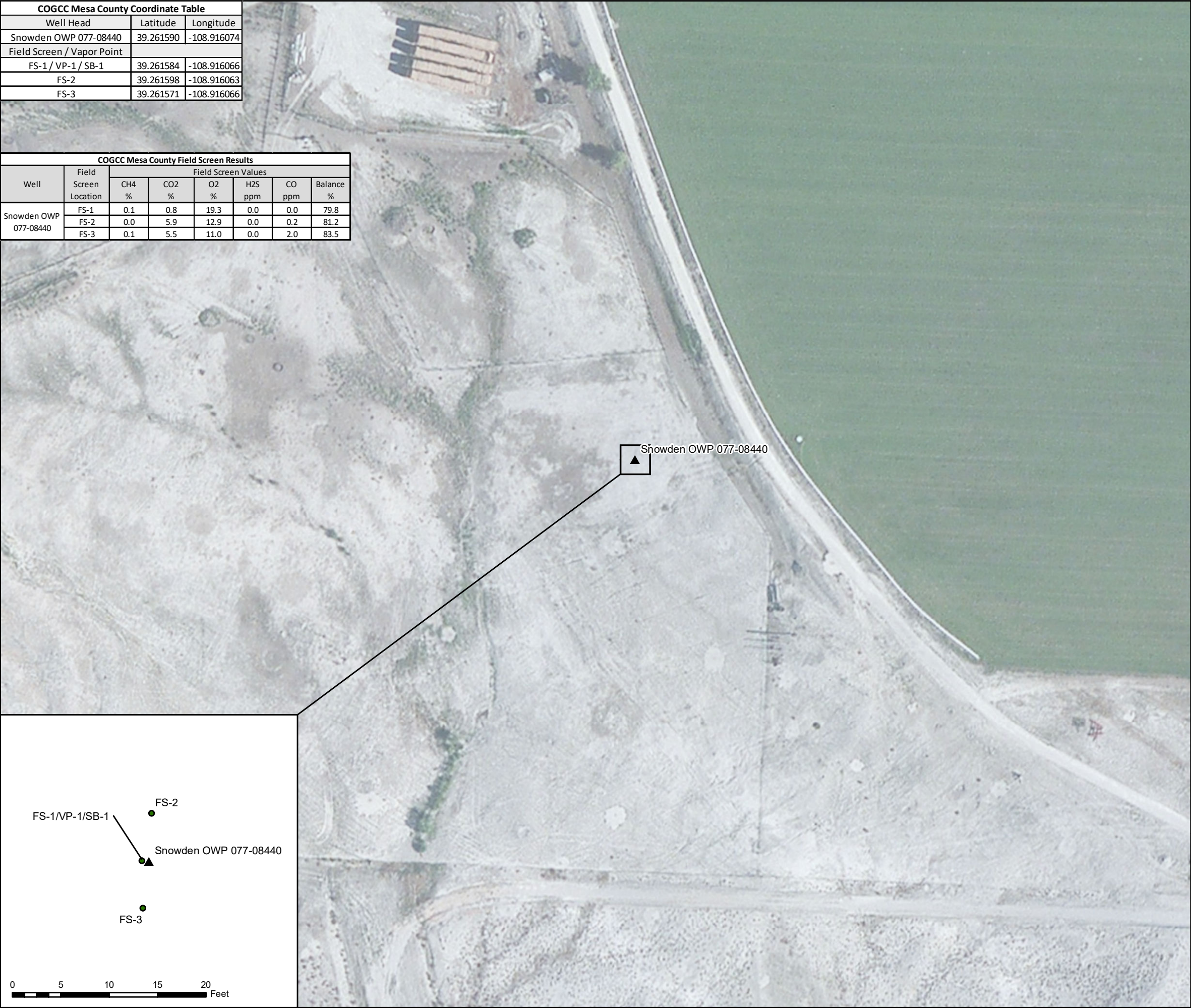
**FIGURE 2**  
SAMPLE LOCATION MAP  
WYNKOOP 1 077-07350  
MESA COUNTY, CO

PROJECT NO. COGCCMESA21	PREPARED BY SF	REF SCALE 1:1,200	
DATE 6/21/2021	REVIEWED BY DW	MAP SCALE 1 INCH = 100 FEET	

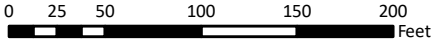


COGCC Mesa County Coordinate Table		
Well Head	Latitude	Longitude
Snowden OWP 077-08440	39.261590	-108.916074
Field Screen / Vapor Point		
FS-1 / VP-1 / SB-1	39.261584	-108.916066
FS-2	39.261598	-108.916063
FS-3	39.261571	-108.916066


COGCC Mesa County Field Screen Results							
Well	Field Screen Location	Field Screen Values					
		CH4 %	CO2 %	O2 %	H2S ppm	CO ppm	Balance %
Snowden OWP 077-08440	FS-1	0.1	0.8	19.3	0.0	0.0	79.8
	FS-2	0.0	5.9	12.9	0.0	0.2	81.2
	FS-3	0.1	5.5	11.0	0.0	2.0	83.5



- Legend**
- ▲ Snowden Wellhead Location
  - Field Screen, Vapor Point, Sample Location



**FIGURE 3**  
SAMPLE LOCATION MAP  
SNOWDEN OWP 077-08440  
MESA COUNTY, CO

PROJECT NO. COGCCMESA21	PREPARED BY SF	REF SCALE 1:1,200	
DATE 6/21/2021	REVIEWED BY DW	MAP SCALE 1 INCH = 100 FEET	

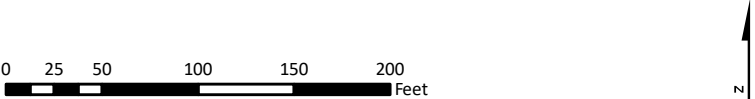


COGCC Mesa County Coordinate Table		
Well Head	Latitude	Longitude
Lupton 1 - 077-08398	39.264422	-108.924264
Field Screen / Vapor Point		
FS-1 / VP-1 / SB-1	39.264418	-108.924254
FS-2	39.264430	-108.924254
FS-3	39.264403	-108.924252


COGCC Mesa County Field Screen Results							
Well	Field Screen Location	Field Screen Values					
		CH4 %	CO2 %	O2 %	H2S ppm	CO ppm	Balance %
Lupton 1 077-08398	FS-1	0.1	0.1	20.6	0.0	1.0	79.2
	FS-2	0.1	0.1	20.9	0.0	1.0	79.0
	FS-3	0.1	0.1	21.5	0.0	0.0	78.7



- Legend**
- ▲ Lupton Wellhead Location
  - Field Screen, Vapor Point, Sample Location



**FIGURE 4**  
SAMPLE LOCATION MAP  
LUPTON 1 - 077-08398  
MESA COUNTY, CO

PROJECT NO. COGCCMESA21	PREPARED BY SF	REF SCALE 1:1,200	
DATE 7/2/2021	REVIEWED BY DW	MAP SCALE 1 INCH = 100 FEET	



## Attachment A – Isotech Laboratory Report

Lab #: 792284 Job #: 47720 IS-108358 Co. Job#:  
Sample Name: VP-1 Co. Lab#:  
Company: Antea Group  
API/Well:  
Container: IsoBag  
Field/Site Name: COGCC Mesa County  
Location: Lupton  
Formation:  
Sampling Point:  
Date Sampled: 5/14/2021 13:34 Date Received: 5/18/2021 Date Reported: 5/26/2021

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.953			
Oxygen -----	21.32			
Nitrogen -----	77.62			
Carbon Dioxide -----	0.11			
Methane -----	0.0002			
Ethane -----	nd			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0

Specific gravity, calculated: 1.001

Remarks: Insufficient hydrocarbon concentrations for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.



Lab #: 792285 Job #: 47720 IS-108358 Co. Job#:   
 Sample Name: VP-1 Co. Lab#:   
 Company: Antea Group   
 API/Well:   
 Container: IsoBag   
 Field/Site Name: COGCC Mesa County   
 Location: Wynkoop   
 Formation:   
 Sampling Point:   
 Date Sampled: 5/14/2021 9:42 Date Received: 5/18/2021 Date Reported: 5/26/2021

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.938			
Oxygen -----	20.16			
Nitrogen -----	77.75			
Carbon Dioxide -----	1.15			
Methane -----	nd			
Ethane -----	nd			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0

Specific gravity, calculated: 1.005

Remarks: Insufficient hydrocarbon concentrations for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

Lab #: 792286 Job #: 47720 IS-108358 Co. Job#:   
 Sample Name: VP-1 Co. Lab#:   
 Company: Antea Group   
 API/Well:   
 Container: IsoBag   
 Field/Site Name: COGCC Mesa County   
 Location: Snowden   
 Formation:   
 Sampling Point:   
 Date Sampled: 5/14/2021 11:15 Date Received: 5/18/2021 Date Reported: 5/26/2021

Component	Chemical mol. %	$\delta^{13}\text{C}$ ‰	$\delta\text{D}$ ‰	$\delta^{15}\text{N}$ ‰
Carbon Monoxide -----	nd			
Helium -----	nd			
Hydrogen -----	nd			
Argon -----	0.947			
Oxygen -----	19.94			
Nitrogen -----	78.38			
Carbon Dioxide -----	0.73			
Methane -----	0.0004			
Ethane -----	nd			
Ethylene -----	nd			
Propane -----	nd			
Propylene -----	nd			
Iso-butane -----	nd			
N-butane -----	nd			
Iso-pentane -----	nd			
N-pentane -----	nd			
Hexanes + -----	nd			

Total BTU/cu.ft. dry @ 60deg F & 14.73psia, calculated: 0

Specific gravity, calculated: 1.003

Remarks: Insufficient hydrocarbon concentrations for isotopic analysis.

nd = not detected. na = not analyzed. Isotopic composition of hydrogen is relative to VSMOW. Isotopic composition of carbon is relative to VPDB. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %.

## Attachment B – Pace Analytical Laboratory Report

May 27, 2021

David Weber  
Antea Group  
3855 Precision Dr. Ste 160  
Loveland, CO 80538

RE: Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

Dear David Weber:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City
- Pace Analytical Services - Salina

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson  
heather.wilson@pacelabs.com  
1(913)563-1407  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

---

### **Pace Analytical Services Kansas**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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### **Pace Analytical Services Salina**

528 N 9th Street, Salina, KS 67401

Kansas Cert No. E10146

Texas NELAP: T104704246-18-10

Oklahoma: 2019-133/8815 Non-Potable Water/ Solids

Kansas: Cert No. E-10146 RCRA, Water, Solids

Salina Field Accred. No. E-92593

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60369689001	SB-1	Solid	05/14/21 10:50	05/18/21 09:05

## REPORT OF LABORATORY ANALYSIS

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## SAMPLE ANALYTE COUNT

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60369689001	SB-1	EPA 8015B	WNM	3	PASI-K
		EPA 6010	JDE	9	PASI-K
		EPA 8270 by SIM	JMT	18	PASI-K
		EPA 8260B	RAD	9	PASI-K
		EPA 8260	RAD	4	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 7196	JND	1	PASI-SA
		EPA 9045	BLA	1	PASI-K
		EPA 9050	BLA	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

PASI-SA = Pace Analytical Services - Salina

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

**Method:** EPA 8015B

**Description:** 8015B Diesel Range Organics

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8015B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 721541

S4: Surrogate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 2901066)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- MSD (Lab ID: 2901067)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- SB-1 (Lab ID: 60369689001)
  - n-Tetracosane (S)
  - p-Terphenyl (S)

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

---

**Method:** EPA 6010

**Description:** 6010 MET ICP Red. Interference

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 6010 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 721865

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60369474002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 2902288)
- Barium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

---

**Method:** EPA 8270 by SIM  
**Description:** 8270 MSSV PAH by SIM  
**Client:** Antea Group Colorado  
**Date:** May 27, 2021

### General Information:

1 sample was analyzed for EPA 8270 by SIM by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

QC Batch: 721427

P3: Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.

- SB-1 (Lab ID: 60369689001)

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 721427

S0: Surrogate recovery outside laboratory control limits.

- BLANK (Lab ID: 2900687)
  - Terphenyl-d14 (S)
- SB-1 (Lab ID: 60369689001)
  - Terphenyl-d14 (S)

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

---

**Method:** EPA 8260B

**Description:** 8260 MSV 5035A VOA

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8260B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 5035A/5030 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

---

**Method:** EPA 8260

**Description:** 8260 MSV GRO and Oxygenates

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8260 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 5035 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

---

**Method:** EPA 7196

**Description:** 7196 Chromium, Hexavalent

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 7196 by Pace Analytical Services Salina. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3060 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

---

**Method:** EPA 9045

**Description:** 9045 pH Soil

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 9045 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

---

**Method:** EPA 9050

**Description:** 9050 Specific Conductance

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 9050 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

Sample: SB-1 Lab ID: 60369689001 Collected: 05/14/21 10:50 Received: 05/18/21 09:05 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
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### 8015B Diesel Range Organics

Analytical Method: EPA 8015B Preparation Method: EPA 3546

Pace Analytical Services - Kansas City

TPH-DRO	351	mg/kg	107	10	05/20/21 07:56	05/20/21 18:37		
<b>Surrogates</b>								
n-Tetracosane (S)	0	%	10-170	10	05/20/21 07:56	05/20/21 18:37	646-31-1	S4
p-Terphenyl (S)	0	%	65-125	10	05/20/21 07:56	05/20/21 18:37	92-94-4	S4

### 6010 MET ICP Red. Interference

Analytical Method: EPA 6010 Preparation Method: EPA 3050

Pace Analytical Services - Kansas City

Arsenic	10.2	mg/kg	0.87	1	05/21/21 11:40	05/25/21 15:31	7440-38-2	
Barium	198	mg/kg	0.44	1	05/21/21 11:40	05/25/21 15:31	7440-39-3	
Cadmium	2.3	mg/kg	0.44	1	05/21/21 11:40	05/25/21 15:31	7440-43-9	
Copper	24.0	mg/kg	1.7	1	05/21/21 11:40	05/25/21 15:31	7440-50-8	
Lead	22.7	mg/kg	0.87	1	05/21/21 11:40	05/25/21 15:31	7439-92-1	
Nickel	30.6	mg/kg	0.44	1	05/21/21 11:40	05/25/21 15:31	7440-02-0	
Selenium	6.5	mg/kg	1.3	1	05/21/21 11:40	05/25/21 15:31	7782-49-2	
Silver	ND	mg/kg	0.61	1	05/21/21 11:40	05/26/21 15:53	7440-22-4	
Zinc	121	mg/kg	8.7	1	05/21/21 11:40	05/25/21 15:31	7440-66-6	

### 8270 MSSV PAH by SIM

Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546

Pace Analytical Services - Kansas City

Acenaphthene	ND	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	83-32-9	
Acenaphthylene	0.0050J	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	208-96-8	
Anthracene	0.0091	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	120-12-7	
Benzo(a)anthracene	0.0084	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	56-55-3	
Benzo(a)pyrene	0.0091	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	50-32-8	
Benzo(b)fluoranthene	0.024	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	205-99-2	
Benzo(g,h,i)perylene	0.044	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	207-08-9	
Chrysene	0.042	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	53-70-3	
Fluoranthene	0.021	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	206-44-0	
Fluorene	0.011	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	193-39-5	
Naphthalene	0.066	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	91-20-3	
Phenanthrene	0.11	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	85-01-8	
Pyrene	0.051	mg/kg	0.0071	1	05/19/21 18:36	05/20/21 15:19	129-00-0	
<b>Surrogates</b>								
2-Fluorobiphenyl (S)	109	%	40-120	1	05/19/21 18:36	05/20/21 15:19	321-60-8	P3
Terphenyl-d14 (S)	148	%	45-130	1	05/19/21 18:36	05/20/21 15:19	1718-51-0	S0

### 8260 MSV 5035A VOA

Analytical Method: EPA 8260B Preparation Method: EPA 5035A/5030

Pace Analytical Services - Kansas City

Benzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 15:45	71-43-2	
Ethylbenzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 15:45	100-41-4	
Toluene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 15:45	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 15:45	95-63-6	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

**Sample: SB-1**      **Lab ID: 60369689001**      Collected: 05/14/21 10:50      Received: 05/18/21 09:05      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV 5035A VOA</b>								
Analytical Method: EPA 8260B Preparation Method: EPA 5035A/5030								
Pace Analytical Services - Kansas City								
1,3,5-Trimethylbenzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 15:45	108-67-8	
Xylene (Total)	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 15:45	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	106	%	80-120	1	05/19/21 15:00	05/19/21 15:45	2037-26-5	
4-Bromofluorobenzene (S)	103	%	80-120	1	05/19/21 15:00	05/19/21 15:45	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	80-120	1	05/19/21 15:00	05/19/21 15:45	2199-69-1	
<b>8260 MSV GRO and Oxygenates</b>								
Analytical Method: EPA 8260 Preparation Method: EPA 5035								
Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	0.54	1	05/19/21 15:00	05/19/21 15:45		
<b>Surrogates</b>								
Toluene-d8 (S)	106	%	78-122	1	05/19/21 15:00	05/19/21 15:45	2037-26-5	
4-Bromofluorobenzene (S)	103	%	69-133	1	05/19/21 15:00	05/19/21 15:45	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	80-120	1	05/19/21 15:00	05/19/21 15:45	2199-69-1	
<b>Percent Moisture</b>								
Analytical Method: ASTM D2974								
Pace Analytical Services - Kansas City								
Percent Moisture	9.3	%	0.50	1		05/21/21 16:50		
<b>7196 Chromium, Hexavalent</b>								
Analytical Method: EPA 7196 Preparation Method: EPA 3060								
Pace Analytical Services - Salina								
Chromium, Hexavalent	ND	mg/kg	4.3	5	05/25/21 17:09	05/26/21 20:22	18540-29-9	
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.3	Std. Units	0.10	1		05/24/21 06:43		
<b>9050 Specific Conductance</b>								
Analytical Method: EPA 9050								
Pace Analytical Services - Kansas City								
Specific Conductance	4930	umhos/cm	1.0	1		05/21/21 11:37		

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

QC Batch:	721865	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3050	Analysis Description:	6010 MET
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

METHOD BLANK: 2902285 Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	05/25/21 14:49	
Barium	mg/kg	ND	0.50	05/25/21 14:49	
Cadmium	mg/kg	ND	0.50	05/25/21 14:49	
Copper	mg/kg	ND	2.0	05/26/21 15:51	
Lead	mg/kg	ND	1.0	05/25/21 14:49	
Nickel	mg/kg	ND	0.50	05/25/21 14:49	
Selenium	mg/kg	ND	1.5	05/25/21 14:49	
Silver	mg/kg	0.28J	0.70	05/25/21 14:49	
Zinc	mg/kg	ND	10.0	05/25/21 14:49	

LABORATORY CONTROL SAMPLE: 2902286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	100	89.8	90	80-120	
Barium	mg/kg	100	93.0	93	80-120	
Cadmium	mg/kg	100	91.8	92	80-120	
Copper	mg/kg	100	94.4	94	80-120	
Lead	mg/kg	100	94.5	94	80-120	
Nickel	mg/kg	100	93.9	94	80-120	
Selenium	mg/kg	100	85.4	85	80-120	
Silver	mg/kg	50	45.2	90	80-120	
Zinc	mg/kg	100	90.3	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2902287 2902288

Parameter	Units	60369474002		MS		MSD		MS		MSD		MS		MSD		% Rec		Limits		RPD		Max		Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	% Rec	Conc.	Result	Conc.	RPD	Conc.	Result	Conc.	
Arsenic	mg/kg	4.1	101	101	108	93.3	96.6	88	86	75-125	3	20												
Barium	mg/kg	128	101	101	108	233	264	104	126	75-125	13	20	M1											
Cadmium	mg/kg	ND	101	101	108	92.2	95.7	91	89	75-125	4	20												
Copper	mg/kg	10.5	101	101	108	110	113	99	95	75-125	2	20												
Lead	mg/kg	10.7	101	101	108	101	118	90	100	75-125	15	20												
Nickel	mg/kg	10.5	101	101	108	105	111	94	93	75-125	5	20												
Selenium	mg/kg	ND	101	101	108	84.6	86.7	84	80	75-125	2	20												
Silver	mg/kg	ND	50.5	50.5	53.9	46.2	47.2	92	88	75-125	2	20												
Zinc	mg/kg	28.7	101	101	108	128	132	99	96	75-125	3	20												

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

QC Batch:	721315	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 5035A/5030	Analysis Description:	8260 MSV 5035A Volatile Organics
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

METHOD BLANK: 2900244 Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
Benzene	mg/kg	ND	0.0050	05/19/21 10:02	
Ethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
Toluene	mg/kg	ND	0.0050	05/19/21 10:02	
Xylene (Total)	mg/kg	ND	0.0050	05/19/21 10:02	
1,2-Dichlorobenzene-d4 (S)	%	98	80-120	05/19/21 10:02	
4-Bromofluorobenzene (S)	%	96	85-115	05/19/21 10:02	
Toluene-d8 (S)	%	98	80-120	05/19/21 10:02	

LABORATORY CONTROL SAMPLE: 2900245

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	0.1	0.098	98	80-125	
1,3,5-Trimethylbenzene	mg/kg	0.1	0.10	101	80-125	
Benzene	mg/kg	0.1	0.094	94	75-125	
Ethylbenzene	mg/kg	0.1	0.10	101	80-130	
Toluene	mg/kg	0.1	0.091	91	80-120	
Xylene (Total)	mg/kg	0.3	0.29	98	80-125	
1,2-Dichlorobenzene-d4 (S)	%			98	80-120	
4-Bromofluorobenzene (S)	%			98	85-115	
Toluene-d8 (S)	%			101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2900246 2900247

Parameter	Units	60369685001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	mg/kg	ND	0.13	0.13	0.091	0.094	70	71	10-123	3	35	
1,3,5-Trimethylbenzene	mg/kg	ND	0.13	0.13	0.098	0.10	76	78	15-130	4	35	
Benzene	mg/kg	ND	0.13	0.13	0.096	0.098	74	75	45-130	2	35	
Ethylbenzene	mg/kg	ND	0.13	0.13	0.10	0.11	81	82	35-140	3	35	
Toluene	mg/kg	ND	0.13	0.13	0.096	0.099	74	75	40-135	3	35	
Xylene (Total)	mg/kg	ND	0.38	0.4	0.30	0.31	78	78	30-145	1	35	
1,2-Dichlorobenzene-d4 (S)	%						98	98	80-120		3	
4-Bromofluorobenzene (S)	%						94	98	85-115		20	
Toluene-d8 (S)	%						103	101	80-120		20	

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

QC Batch:	721490	Analysis Method:	EPA 8260
QC Batch Method:	EPA 5035	Analysis Description:	8260 MSV GRO and Oxygenates
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

METHOD BLANK: 2900852 Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH-GRO	mg/kg	ND	0.50	05/19/21 10:02	
1,2-Dichlorobenzene-d4 (S)	%	98	80-120	05/19/21 10:02	
4-Bromofluorobenzene (S)	%	96	69-133	05/19/21 10:02	
Toluene-d8 (S)	%	98	78-122	05/19/21 10:02	

LABORATORY CONTROL SAMPLE: 2900853

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-GRO	mg/kg	4	2.6	65	61-140	
1,2-Dichlorobenzene-d4 (S)	%			98	80-120	
4-Bromofluorobenzene (S)	%			98	69-133	
Toluene-d8 (S)	%			101	78-122	

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

QC Batch:	721541	Analysis Method:	EPA 8015B
QC Batch Method:	EPA 3546	Analysis Description:	EPA 8015B
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

METHOD BLANK: 2901064 Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH-DRO	mg/kg	ND	9.4	05/20/21 18:21	
n-Tetracosane (S)	%	88	31-152	05/20/21 18:21	
p-Terphenyl (S)	%	94	46-130	05/20/21 18:21	

LABORATORY CONTROL SAMPLE: 2901065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO	mg/kg	79.1	71.8	91	69-122	
n-Tetracosane (S)	%			78	31-152	
p-Terphenyl (S)	%			95	46-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2901066 2901067

Parameter	Units	60369689001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-DRO	mg/kg	351	87.3	89.5	462	408	127	63	30-130	12	35	
n-Tetracosane (S)	%						0	0	31-152			S4
p-Terphenyl (S)	%						0	0	46-130			S4

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

QC Batch:	721427	Analysis Method:	EPA 8270 by SIM
QC Batch Method:	EPA 3546	Analysis Description:	8270/3546 MSSV PAH by SIM
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

METHOD BLANK: 2900687 Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	mg/kg	ND	0.0032	05/20/21 10:40	
Acenaphthylene	mg/kg	ND	0.0032	05/20/21 10:40	
Anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(a)anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(a)pyrene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(b)fluoranthene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(g,h,i)perylene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(k)fluoranthene	mg/kg	ND	0.0032	05/20/21 10:40	
Chrysene	mg/kg	ND	0.0032	05/20/21 10:40	
Dibenz(a,h)anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Fluoranthene	mg/kg	0.0036	0.0032	05/20/21 10:40	
Fluorene	mg/kg	ND	0.0032	05/20/21 10:40	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0032	05/20/21 10:40	
Naphthalene	mg/kg	ND	0.0032	05/20/21 10:40	
Phenanthrene	mg/kg	0.0053	0.0032	05/20/21 10:40	
Pyrene	mg/kg	0.0027J	0.0032	05/20/21 10:40	
2-Fluorobiphenyl (S)	%	92	45-116	05/20/21 10:40	
Terphenyl-d14 (S)	%	151	39-126	05/20/21 10:40	S0

LABORATORY CONTROL SAMPLE: 2900688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	mg/kg	0.032	0.028	87	45-120	
Acenaphthylene	mg/kg	0.032	0.028	85	50-120	
Anthracene	mg/kg	0.032	0.030	92	50-120	
Benzo(a)anthracene	mg/kg	0.032	0.030	92	55-125	
Benzo(a)pyrene	mg/kg	0.032	0.029	90	45-120	
Benzo(b)fluoranthene	mg/kg	0.032	0.030	92	50-125	
Benzo(g,h,i)perylene	mg/kg	0.032	0.029	90	40-120	
Benzo(k)fluoranthene	mg/kg	0.032	0.031	95	55-120	
Chrysene	mg/kg	0.032	0.029	91	55-120	
Dibenz(a,h)anthracene	mg/kg	0.032	0.030	92	40-125	
Fluoranthene	mg/kg	0.032	0.031	96	50-125	
Fluorene	mg/kg	0.032	0.029	89	50-120	
Indeno(1,2,3-cd)pyrene	mg/kg	0.032	0.029	90	44-125	
Naphthalene	mg/kg	0.032	0.027	84	45-120	
Phenanthrene	mg/kg	0.032	0.031	96	50-125	
Pyrene	mg/kg	0.032	0.030	93	50-125	
2-Fluorobiphenyl (S)	%			81	45-116 M4	

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

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LABORATORY CONTROL SAMPLE: 2900688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Terphenyl-d14 (S)	%			84	39-126	

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

QC Batch: 722002

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

METHOD BLANK: 2902812

Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	05/21/21 16:49	

SAMPLE DUPLICATE: 2902813

Parameter	Units	60369519001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.1	18.3	1	20	

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1  
Pace Project No.: 60369689

QC Batch:	722558	Analysis Method:	EPA 7196
QC Batch Method:	EPA 3060	Analysis Description:	7196 Chromium, Hexavalent
		Laboratory:	Pace Analytical Services - Salina

Associated Lab Samples: 60369689001

METHOD BLANK: 2904895 Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	4.0	05/26/21 20:21	

LABORATORY CONTROL SAMPLE: 2904896

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	60	59.0	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2904897 2904898

Parameter	Units	60369690001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	66.8	66.8	58.9	56.1	88	84	75-125	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2904900 2904901

Parameter	Units	60369690001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1440	1430	1450	1400	100	98	75-125	3	20	

SAMPLE DUPLICATE: 2904899

Parameter	Units	60369690001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

QC Batch: 721592

Analysis Method: EPA 9045

QC Batch Method: EPA 9045

Analysis Description: 9045 pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

SAMPLE DUPLICATE: 2901321

Parameter	Units	60369690001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	3	

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## QUALITY CONTROL DATA

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

QC Batch: 721591

Analysis Method: EPA 9050

QC Batch Method: EPA 9050

Analysis Description: 9050 Specific Conductance

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369689001

METHOD BLANK: 2901318

Matrix: Solid

Associated Lab Samples: 60369689001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	05/21/21 11:36	

SAMPLE DUPLICATE: 2901319

Parameter	Units	60369689001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	4930	4930	0	20	

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## QUALIFIERS

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M4	A matrix spike/matrix spike duplicate was not performed for this batch due to sample dilution.
P3	Sample extract could not be concentrated to the routine final volume, resulting in elevated reporting limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: COGCC SNOWDEN 1

Pace Project No.: 60369689

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60369689001	SB-1	EPA 3546	721541	EPA 8015B	721704
60369689001	SB-1	EPA 3050	721865	EPA 6010	722059
60369689001	SB-1	EPA 3546	721427	EPA 8270 by SIM	721577
60369689001	SB-1	EPA 5035A/5030	721315	EPA 8260B	721453
60369689001	SB-1	EPA 5035	721490	EPA 8260	721499
60369689001	SB-1	ASTM D2974	722002		
60369689001	SB-1	EPA 3060	722558	EPA 7196	723030
60369689001	SB-1	EPA 9045	721592		
60369689001	SB-1	EPA 9050	721591		

## REPORT OF LABORATORY ANALYSIS

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May 27, 2021

David Weber  
Antea Group  
3855 Precision Dr. Ste 160  
Loveland, CO 80538

RE: Project: COGCC-WYNKOOP 1  
Pace Project No.: 60369690

Dear David Weber:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City
- Pace Analytical Services - Salina

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson  
heather.wilson@pacelabs.com  
1(913)563-1407  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

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### **Pace Analytical Services Kansas**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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### **Pace Analytical Services Salina**

528 N 9th Street, Salina, KS 67401

Kansas Cert No. E10146

Texas NELAP: T104704246-18-10

Oklahoma: 2019-133/8815 Non-Potable Water/ Solids

Kansas: Cert No. E-10146 RCRA, Water, Solids

Salina Field Accred. No. E-92593

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60369690001	SB-1	Solid	05/14/21 10:00	05/18/21 13:10

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## SAMPLE ANALYTE COUNT

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60369690001	SB-1	EPA 8015B	WNM	3	PASI-K
		EPA 6010	JDE	9	PASI-K
		EPA 8270 by SIM	JMT	18	PASI-K
		EPA 8260B	RAD	9	PASI-K
		EPA 8260	RAD	4	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 7196	JND	1	PASI-SA
		EPA 9045	BLA	1	PASI-K
		EPA 9050	BLA	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

PASI-SA = Pace Analytical Services - Salina

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

---

**Method:** EPA 8015B

**Description:** 8015B Diesel Range Organics

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8015B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 721541

S4: Surrogate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 2901066)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- MSD (Lab ID: 2901067)
  - n-Tetracosane (S)
  - p-Terphenyl (S)

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

---

**Method:** EPA 6010

**Description:** 6010 MET ICP Red. Interference

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 6010 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 721865

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60369474002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 2902288)
- Barium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1  
Pace Project No.: 60369690

---

**Method:** EPA 8270 by SIM  
**Description:** 8270 MSSV PAH by SIM  
**Client:** Antea Group Colorado  
**Date:** May 27, 2021

### General Information:

1 sample was analyzed for EPA 8270 by SIM by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 721427

S0: Surrogate recovery outside laboratory control limits.

- BLANK (Lab ID: 2900687)
- Terphenyl-d14 (S)

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 721427

B: Analyte was detected in the associated method blank.

- BLANK for HBN 721427 [OEXT/825 (Lab ID: 2900687)
- Phenanthrene

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

---

**Method:** EPA 8260B

**Description:** 8260 MSV 5035A VOA

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8260B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 5035A/5030 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

---

**Method:** EPA 8260

**Description:** 8260 MSV GRO and Oxygenates

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8260 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 5035 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

---

**Method:** EPA 7196

**Description:** 7196 Chromium, Hexavalent

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 7196 by Pace Analytical Services Salina. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3060 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

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**Method:** EPA 9045

**Description:** 9045 pH Soil

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 9045 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

---

**Method:** EPA 9050

**Description:** 9050 Specific Conductance

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 9050 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

Sample: SB-1 Lab ID: 60369690001 Collected: 05/14/21 10:00 Received: 05/18/21 13:10 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8015B Diesel Range Organics</b>								
Analytical Method: EPA 8015B Preparation Method: EPA 3546								
Pace Analytical Services - Kansas City								
TPH-DRO	7.8J	mg/kg	10.7	1	05/20/21 07:56	05/20/21 19:02		
<b>Surrogates</b>								
n-Tetracosane (S)	67	%	10-170	1	05/20/21 07:56	05/20/21 19:02	646-31-1	
p-Terphenyl (S)	83	%	65-125	1	05/20/21 07:56	05/20/21 19:02	92-94-4	
<b>6010 MET ICP Red. Interference</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Pace Analytical Services - Kansas City								
Arsenic	10.8	mg/kg	0.92	1	05/21/21 11:40	05/25/21 15:34	7440-38-2	
Barium	379	mg/kg	0.46	1	05/21/21 11:40	05/25/21 15:34	7440-39-3	
Cadmium	1.4	mg/kg	0.46	1	05/21/21 11:40	05/25/21 15:34	7440-43-9	
Copper	20.8	mg/kg	1.8	1	05/21/21 11:40	05/25/21 15:34	7440-50-8	
Lead	14.5	mg/kg	0.92	1	05/21/21 11:40	05/25/21 15:34	7439-92-1	
Nickel	22.7	mg/kg	0.46	1	05/21/21 11:40	05/25/21 15:34	7440-02-0	
Selenium	4.7	mg/kg	1.4	1	05/21/21 11:40	05/25/21 15:34	7782-49-2	
Silver	ND	mg/kg	0.65	1	05/21/21 11:40	05/26/21 15:56	7440-22-4	
Zinc	75.0	mg/kg	9.2	1	05/21/21 11:40	05/25/21 15:34	7440-66-6	
<b>8270 MSSV PAH by SIM</b>								
Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Pace Analytical Services - Kansas City								
Acenaphthene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	83-32-9	
Acenaphthylene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	208-96-8	
Anthracene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	120-12-7	
Benzo(a)anthracene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	56-55-3	
Benzo(a)pyrene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	50-32-8	
Benzo(b)fluoranthene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	205-99-2	
Benzo(g,h,i)perylene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	207-08-9	
Chrysene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	53-70-3	
Fluoranthene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	206-44-0	
Fluorene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	193-39-5	
Naphthalene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	91-20-3	
Phenanthrene	0.0032J	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	85-01-8	B
Pyrene	ND	mg/kg	0.0037	1	05/19/21 18:36	05/20/21 15:37	129-00-0	
<b>Surrogates</b>								
2-Fluorobiphenyl (S)	75	%	40-120	1	05/19/21 18:36	05/20/21 15:37	321-60-8	
Terphenyl-d14 (S)	80	%	45-130	1	05/19/21 18:36	05/20/21 15:37	1718-51-0	
<b>8260 MSV 5035A VOA</b>								
Analytical Method: EPA 8260B Preparation Method: EPA 5035A/5030								
Pace Analytical Services - Kansas City								
Benzene	ND	mg/kg	0.0056	1	05/19/21 15:00	05/19/21 16:01	71-43-2	
Ethylbenzene	ND	mg/kg	0.0056	1	05/19/21 15:00	05/19/21 16:01	100-41-4	
Toluene	ND	mg/kg	0.0056	1	05/19/21 15:00	05/19/21 16:01	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0056	1	05/19/21 15:00	05/19/21 16:01	95-63-6	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: COGCC-WYNKOOP 1  
Pace Project No.: 60369690

**Sample: SB-1**      **Lab ID: 60369690001**      Collected: 05/14/21 10:00      Received: 05/18/21 13:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV 5035A VOA</b>								
Analytical Method: EPA 8260B Preparation Method: EPA 5035A/5030								
Pace Analytical Services - Kansas City								
1,3,5-Trimethylbenzene	ND	mg/kg	0.0056	1	05/19/21 15:00	05/19/21 16:01	108-67-8	
Xylene (Total)	ND	mg/kg	0.0056	1	05/19/21 15:00	05/19/21 16:01	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	101	%	80-120	1	05/19/21 15:00	05/19/21 16:01	2037-26-5	
4-Bromofluorobenzene (S)	93	%	80-120	1	05/19/21 15:00	05/19/21 16:01	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	80-120	1	05/19/21 15:00	05/19/21 16:01	2199-69-1	
<b>8260 MSV GRO and Oxygenates</b>								
Analytical Method: EPA 8260 Preparation Method: EPA 5035								
Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	0.56	1	05/19/21 15:00	05/19/21 16:01		
<b>Surrogates</b>								
Toluene-d8 (S)	101	%	78-122	1	05/19/21 15:00	05/19/21 16:01	2037-26-5	
4-Bromofluorobenzene (S)	93	%	69-133	1	05/19/21 15:00	05/19/21 16:01	460-00-4	
1,2-Dichlorobenzene-d4 (S)	100	%	80-120	1	05/19/21 15:00	05/19/21 16:01	2199-69-1	
<b>Percent Moisture</b>								
Analytical Method: ASTM D2974								
Pace Analytical Services - Kansas City								
Percent Moisture	11.3	%	0.50	1		05/21/21 16:50		
<b>7196 Chromium, Hexavalent</b>								
Analytical Method: EPA 7196 Preparation Method: EPA 3060								
Pace Analytical Services - Salina								
Chromium, Hexavalent	ND	mg/kg	4.4	5	05/25/21 17:09	05/26/21 20:23	18540-29-9	
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.4	Std. Units	0.10	1		05/24/21 06:37		
<b>9050 Specific Conductance</b>								
Analytical Method: EPA 9050								
Pace Analytical Services - Kansas City								
Specific Conductance	454	umhos/cm	1.0	1		05/21/21 11:38		

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1  
Pace Project No.: 60369690

QC Batch:	721865	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3050	Analysis Description:	6010 MET
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

METHOD BLANK: 2902285 Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	05/25/21 14:49	
Barium	mg/kg	ND	0.50	05/25/21 14:49	
Cadmium	mg/kg	ND	0.50	05/25/21 14:49	
Copper	mg/kg	ND	2.0	05/26/21 15:51	
Lead	mg/kg	ND	1.0	05/25/21 14:49	
Nickel	mg/kg	ND	0.50	05/25/21 14:49	
Selenium	mg/kg	ND	1.5	05/25/21 14:49	
Silver	mg/kg	0.28J	0.70	05/25/21 14:49	
Zinc	mg/kg	ND	10.0	05/25/21 14:49	

LABORATORY CONTROL SAMPLE: 2902286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	100	89.8	90	80-120	
Barium	mg/kg	100	93.0	93	80-120	
Cadmium	mg/kg	100	91.8	92	80-120	
Copper	mg/kg	100	94.4	94	80-120	
Lead	mg/kg	100	94.5	94	80-120	
Nickel	mg/kg	100	93.9	94	80-120	
Selenium	mg/kg	100	85.4	85	80-120	
Silver	mg/kg	50	45.2	90	80-120	
Zinc	mg/kg	100	90.3	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2902287 2902288

Parameter	Units	60369474002		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Conc.	% Rec	% Rec	% Rec	% Rec				
Arsenic	mg/kg	4.1	101	101	108	93.3	96.6	88	86	75-125	3	20			
Barium	mg/kg	128	101	101	108	233	264	104	126	75-125	13	20	M1		
Cadmium	mg/kg	ND	101	101	108	92.2	95.7	91	89	75-125	4	20			
Copper	mg/kg	10.5	101	101	108	110	113	99	95	75-125	2	20			
Lead	mg/kg	10.7	101	101	108	101	118	90	100	75-125	15	20			
Nickel	mg/kg	10.5	101	101	108	105	111	94	93	75-125	5	20			
Selenium	mg/kg	ND	101	101	108	84.6	86.7	84	80	75-125	2	20			
Silver	mg/kg	ND	50.5	50.5	53.9	46.2	47.2	92	88	75-125	2	20			
Zinc	mg/kg	28.7	101	101	108	128	132	99	96	75-125	3	20			

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

QC Batch: 721315

Analysis Method: EPA 8260B

QC Batch Method: EPA 5035A/5030

Analysis Description: 8260 MSV 5035A Volatile Organics

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

METHOD BLANK: 2900244

Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
Benzene	mg/kg	ND	0.0050	05/19/21 10:02	
Ethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
Toluene	mg/kg	ND	0.0050	05/19/21 10:02	
Xylene (Total)	mg/kg	ND	0.0050	05/19/21 10:02	
1,2-Dichlorobenzene-d4 (S)	%	98	80-120	05/19/21 10:02	
4-Bromofluorobenzene (S)	%	96	85-115	05/19/21 10:02	
Toluene-d8 (S)	%	98	80-120	05/19/21 10:02	

LABORATORY CONTROL SAMPLE: 2900245

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	0.1	0.098	98	80-125	
1,3,5-Trimethylbenzene	mg/kg	0.1	0.10	101	80-125	
Benzene	mg/kg	0.1	0.094	94	75-125	
Ethylbenzene	mg/kg	0.1	0.10	101	80-130	
Toluene	mg/kg	0.1	0.091	91	80-120	
Xylene (Total)	mg/kg	0.3	0.29	98	80-125	
1,2-Dichlorobenzene-d4 (S)	%			98	80-120	
4-Bromofluorobenzene (S)	%			98	85-115	
Toluene-d8 (S)	%			101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2900246 2900247

Parameter	Units	60369685001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	mg/kg	ND	0.13	0.13	0.091	0.094	70	71	10-123	3	35	
1,3,5-Trimethylbenzene	mg/kg	ND	0.13	0.13	0.098	0.10	76	78	15-130	4	35	
Benzene	mg/kg	ND	0.13	0.13	0.096	0.098	74	75	45-130	2	35	
Ethylbenzene	mg/kg	ND	0.13	0.13	0.10	0.11	81	82	35-140	3	35	
Toluene	mg/kg	ND	0.13	0.13	0.096	0.099	74	75	40-135	3	35	
Xylene (Total)	mg/kg	ND	0.38	0.4	0.30	0.31	78	78	30-145	1	35	
1,2-Dichlorobenzene-d4 (S)	%						98	98	80-120		3	
4-Bromofluorobenzene (S)	%						94	98	85-115		20	
Toluene-d8 (S)	%						103	101	80-120		20	

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

QC Batch: 721490

Analysis Method: EPA 8260

QC Batch Method: EPA 5035

Analysis Description: 8260 MSV GRO and Oxygenates

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

METHOD BLANK: 2900852

Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH-GRO	mg/kg	ND	0.50	05/19/21 10:02	
1,2-Dichlorobenzene-d4 (S)	%	98	80-120	05/19/21 10:02	
4-Bromofluorobenzene (S)	%	96	69-133	05/19/21 10:02	
Toluene-d8 (S)	%	98	78-122	05/19/21 10:02	

LABORATORY CONTROL SAMPLE: 2900853

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-GRO	mg/kg	4	2.6	65	61-140	
1,2-Dichlorobenzene-d4 (S)	%			98	80-120	
4-Bromofluorobenzene (S)	%			98	69-133	
Toluene-d8 (S)	%			101	78-122	

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1  
Pace Project No.: 60369690

QC Batch:	721541	Analysis Method:	EPA 8015B
QC Batch Method:	EPA 3546	Analysis Description:	EPA 8015B
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

METHOD BLANK: 2901064 Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH-DRO	mg/kg	ND	9.4	05/20/21 18:21	
n-Tetracosane (S)	%	88	31-152	05/20/21 18:21	
p-Terphenyl (S)	%	94	46-130	05/20/21 18:21	

LABORATORY CONTROL SAMPLE: 2901065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO	mg/kg	79.1	71.8	91	69-122	
n-Tetracosane (S)	%			78	31-152	
p-Terphenyl (S)	%			95	46-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2901066 2901067

Parameter	Units	60369689001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-DRO	mg/kg	351	87.3	89.5	462	408	127	63	30-130	12	35	
n-Tetracosane (S)	%						0	0	31-152			S4
p-Terphenyl (S)	%						0	0	46-130			S4

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1  
Pace Project No.: 60369690

QC Batch:	721427	Analysis Method:	EPA 8270 by SIM
QC Batch Method:	EPA 3546	Analysis Description:	8270/3546 MSSV PAH by SIM
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

METHOD BLANK: 2900687 Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	mg/kg	ND	0.0032	05/20/21 10:40	
Acenaphthylene	mg/kg	ND	0.0032	05/20/21 10:40	
Anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(a)anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(a)pyrene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(b)fluoranthene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(g,h,i)perylene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(k)fluoranthene	mg/kg	ND	0.0032	05/20/21 10:40	
Chrysene	mg/kg	ND	0.0032	05/20/21 10:40	
Dibenz(a,h)anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Fluoranthene	mg/kg	0.0036	0.0032	05/20/21 10:40	
Fluorene	mg/kg	ND	0.0032	05/20/21 10:40	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0032	05/20/21 10:40	
Naphthalene	mg/kg	ND	0.0032	05/20/21 10:40	
Phenanthrene	mg/kg	0.0053	0.0032	05/20/21 10:40	
Pyrene	mg/kg	0.0027J	0.0032	05/20/21 10:40	
2-Fluorobiphenyl (S)	%	92	45-116	05/20/21 10:40	
Terphenyl-d14 (S)	%	151	39-126	05/20/21 10:40	S0

LABORATORY CONTROL SAMPLE: 2900688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	mg/kg	0.032	0.028	87	45-120	
Acenaphthylene	mg/kg	0.032	0.028	85	50-120	
Anthracene	mg/kg	0.032	0.030	92	50-120	
Benzo(a)anthracene	mg/kg	0.032	0.030	92	55-125	
Benzo(a)pyrene	mg/kg	0.032	0.029	90	45-120	
Benzo(b)fluoranthene	mg/kg	0.032	0.030	92	50-125	
Benzo(g,h,i)perylene	mg/kg	0.032	0.029	90	40-120	
Benzo(k)fluoranthene	mg/kg	0.032	0.031	95	55-120	
Chrysene	mg/kg	0.032	0.029	91	55-120	
Dibenz(a,h)anthracene	mg/kg	0.032	0.030	92	40-125	
Fluoranthene	mg/kg	0.032	0.031	96	50-125	
Fluorene	mg/kg	0.032	0.029	89	50-120	
Indeno(1,2,3-cd)pyrene	mg/kg	0.032	0.029	90	44-125	
Naphthalene	mg/kg	0.032	0.027	84	45-120	
Phenanthrene	mg/kg	0.032	0.031	96	50-125	
Pyrene	mg/kg	0.032	0.030	93	50-125	
2-Fluorobiphenyl (S)	%			81	45-116 M4	

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

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LABORATORY CONTROL SAMPLE: 2900688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Terphenyl-d14 (S)	%			84	39-126	

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

QC Batch: 722002

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

METHOD BLANK: 2902812

Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	05/21/21 16:49	

SAMPLE DUPLICATE: 2902813

Parameter	Units	60369519001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.1	18.3	1	20	

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1  
Pace Project No.: 60369690

QC Batch:	722558	Analysis Method:	EPA 7196
QC Batch Method:	EPA 3060	Analysis Description:	7196 Chromium, Hexavalent
		Laboratory:	Pace Analytical Services - Salina

Associated Lab Samples: 60369690001

METHOD BLANK: 2904895 Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	4.0	05/26/21 20:21	

LABORATORY CONTROL SAMPLE: 2904896

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	60	59.0	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2904897 2904898

Parameter	Units	60369690001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	66.8	66.8	58.9	56.1	88	84	75-125	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2904900 2904901

Parameter	Units	60369690001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1440	1430	1450	1400	100	98	75-125	3	20	

SAMPLE DUPLICATE: 2904899

Parameter	Units	60369690001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

QC Batch: 721592

Analysis Method: EPA 9045

QC Batch Method: EPA 9045

Analysis Description: 9045 pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

SAMPLE DUPLICATE: 2901321

Parameter	Units	60369690001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	3	

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## QUALITY CONTROL DATA

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

QC Batch: 721591

Analysis Method: EPA 9050

QC Batch Method: EPA 9050

Analysis Description: 9050 Specific Conductance

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369690001

METHOD BLANK: 2901318

Matrix: Solid

Associated Lab Samples: 60369690001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	05/21/21 11:36	

SAMPLE DUPLICATE: 2901319

Parameter	Units	60369689001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	4930	4930	0	20	

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## QUALIFIERS

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M4 A matrix spike/matrix spike duplicate was not performed for this batch due to sample dilution.

S0 Surrogate recovery outside laboratory control limits.

S4 Surrogate recovery not evaluated against control limits due to sample dilution.

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: COGCC-WYNKOOP 1

Pace Project No.: 60369690

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60369690001	SB-1	EPA 3546	721541	EPA 8015B	721704
60369690001	SB-1	EPA 3050	721865	EPA 6010	722059
60369690001	SB-1	EPA 3546	721427	EPA 8270 by SIM	721577
60369690001	SB-1	EPA 5035A/5030	721315	EPA 8260B	721453
60369690001	SB-1	EPA 5035	721490	EPA 8260	721499
60369690001	SB-1	ASTM D2974	722002		
60369690001	SB-1	EPA 3060	722558	EPA 7196	723030
60369690001	SB-1	EPA 9045	721592		
60369690001	SB-1	EPA 9050	721591		

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<b>Antea Group</b> 3855 Precision Drive, Suite 160 Loveland, CO 80538		Billing Information: <b>Antea Group</b> Loveland, CO 80538		Chain of Custody Page 1 of 1	
Report to: David.Wenz@AnteaGroup.us Email To: Antea Group		Project Description: CAGCC - WYNKOOOL 1		Project: 970-292-1899	
City/State Collected: CO		Lab Project #: WYNKOOOL 1		Please Circle: PT MT CT ET	
Site/Facility ID #: WYNKOOOL 1		P.O. #:		Quote #:	
Rush? (Lab MUST Be Notified) Same Day Five Day Next Day 5 Day (Rad Only) Two Day 10 Day (Rad Only) Three Day		Date Results Needed		No. of Cntrs	
Sample ID: SB-1		Comp/Grab: Galy SS		Date: 5/14/21	
Collected by (print): D. Wenz		Matrix*:		Depth: 2.0	
Collected by (signature):		Date:		Time: 1000	
Immediately Packed on Ice N Y		Date:		Time:	
Shipped Via:		Remarks:		Sample # (lab only)	
SDG #		pH Temp		Flow Other	
Table #		CR6 - 4oz Soil Jar		Metals - 4oz Soil Jar	
Acctnum:		SPCON, PH - 4oz Soil Jar		PAHSIM, TPH-DRO - 4oz Soil Jar	
Template:		*BTEXH260, GRO - 4oz Soil Jar		*BTEXH260, GRO - 4oz Soil Jar	
Prelogin:		PAHSIM, TPH-DRO - 4oz Soil Jar		PAHSIM, TPH-DRO - 4oz Soil Jar	
PM:		CR6 - 4oz Soil Jar		CR6 - 4oz Soil Jar	
PB:		Metals - 4oz Soil Jar		Metals - 4oz Soil Jar	
Shipped Via:		pH Temp		Flow Other	
Remarks:		Trip Blank Received: Yes / No		HCL / MeOH TBR	
Sample Receipt Checklist:		Tracking # 01135282-0032		Received by: (Signature)	
COC Seal Present/Intact:		Date: 5/17/2021		Time: 1400	
COC Signed/Accurate:		Date:		Time:	
Bottles arrive intact:		Date:		Time:	
Correct bottles used:		Date:		Time:	
Sufficient volume sent:		Date:		Time:	
If Applicable:		Date:		Time:	
VOA Zero Headspace:		Date:		Time:	
Preservation Correct/Checked:		Date:		Time:	
RAD Screen <0.5 mR/hr:		Date:		Time:	
If preservation required by Login: Date/Time		Date:		Time:	
Hold:		Date:		Time:	
Condition: NCF		Date:		Time:	

May 27, 2021

David Weber  
Antea Group  
3855 Precision Dr. Ste 160  
Loveland, CO 80538

RE: Project: COGCC LUPTON 1  
Pace Project No.: 60369700

Dear David Weber:

Enclosed are the analytical results for sample(s) received by the laboratory on May 18, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City
- Pace Analytical Services - Salina

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Heather Wilson  
heather.wilson@pacelabs.com  
1(913)563-1407  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: COGCC LUPTON 1

Pace Project No.: 60369700

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### **Pace Analytical Services Kansas**

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

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### **Pace Analytical Services Salina**

528 N 9th Street, Salina, KS 67401

Kansas Cert No. E10146

Texas NELAP: T104704246-18-10

Oklahoma: 2019-133/8815 Non-Potable Water/ Solids

Kansas: Cert No. E-10146 RCRA, Water, Solids

Salina Field Accred. No. E-92593

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: COGCC LUPTON 1

Pace Project No.: 60369700

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60369700001	SB-1	Solid	05/14/21 12:40	05/18/21 09:05

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## SAMPLE ANALYTE COUNT

Project: COGCC LUPTON 1

Pace Project No.: 60369700

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60369700001	SB-1	EPA 8015B	WNM	3	PASI-K
		EPA 6010	JDE	9	PASI-K
		EPA 8270 by SIM	JMT	18	PASI-K
		EPA 8260B	RAD	9	PASI-K
		EPA 8260	RAD	4	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 7196	JND	1	PASI-SA
		EPA 9045	BLA	1	PASI-K
		EPA 9050	BLA	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

PASI-SA = Pace Analytical Services - Salina

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

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**Method:** EPA 8015B

**Description:** 8015B Diesel Range Organics

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8015B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 721541

S4: Surrogate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 2901066)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- MSD (Lab ID: 2901067)
  - n-Tetracosane (S)
  - p-Terphenyl (S)

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

---

**Method:** EPA 6010

**Description:** 6010 MET ICP Red. Interference

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 6010 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 721865

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60369474002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 2902288)
- Barium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

---

**Method:** EPA 8270 by SIM

**Description:** 8270 MSSV PAH by SIM

**Client:** Antea Group Colorado

**Date:** May 27, 2021

### General Information:

1 sample was analyzed for EPA 8270 by SIM by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 721427

S0: Surrogate recovery outside laboratory control limits.

- BLANK (Lab ID: 2900687)
- Terphenyl-d14 (S)

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: 721427

B: Analyte was detected in the associated method blank.

- BLANK for HBN 721427 [OEXT/825 (Lab ID: 2900687)]
  - Fluoranthene
  - Phenanthrene
  - Pyrene

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

---

**Method:** EPA 8270 by SIM

**Description:** 8270 MSSV PAH by SIM

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**Additional Comments:**

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1  
Pace Project No.: 60369700

---

**Method:** EPA 8260B  
**Description:** 8260 MSV 5035A VOA  
**Client:** Antea Group Colorado  
**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8260B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 5035A/5030 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

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**Method:** EPA 8260

**Description:** 8260 MSV GRO and Oxygenates

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 8260 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 5035 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

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**Method:** EPA 7196

**Description:** 7196 Chromium, Hexavalent

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 7196 by Pace Analytical Services Salina. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3060 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

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**Method:** EPA 9045

**Description:** 9045 pH Soil

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 9045 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

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**Method:** EPA 9050

**Description:** 9050 Specific Conductance

**Client:** Antea Group Colorado

**Date:** May 27, 2021

**General Information:**

1 sample was analyzed for EPA 9050 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: COGCC LUPTON 1  
Pace Project No.: 60369700

**Sample: SB-1**      **Lab ID: 60369700001**      Collected: 05/14/21 12:40      Received: 05/18/21 09:05      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
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### 8015B Diesel Range Organics

Analytical Method: EPA 8015B      Preparation Method: EPA 3546  
Pace Analytical Services - Kansas City

TPH-DRO	141	mg/kg	10.5	1	05/20/21 07:56	05/20/21 19:10		
<b>Surrogates</b>								
n-Tetracosane (S)	106	%	10-170	1	05/20/21 07:56	05/20/21 19:10	646-31-1	
p-Terphenyl (S)	104	%	65-125	1	05/20/21 07:56	05/20/21 19:10	92-94-4	

### 6010 MET ICP Red. Interference

Analytical Method: EPA 6010      Preparation Method: EPA 3050  
Pace Analytical Services - Kansas City

Arsenic	7.8	mg/kg	1.0	1	05/21/21 11:40	05/25/21 15:37	7440-38-2	
Barium	216	mg/kg	0.51	1	05/21/21 11:40	05/25/21 15:37	7440-39-3	
Cadmium	1.7	mg/kg	0.51	1	05/21/21 11:40	05/25/21 15:37	7440-43-9	
Copper	21.4	mg/kg	2.0	1	05/21/21 11:40	05/25/21 15:37	7440-50-8	
Lead	33.4	mg/kg	1.0	1	05/21/21 11:40	05/25/21 15:37	7439-92-1	
Nickel	25.5	mg/kg	0.51	1	05/21/21 11:40	05/25/21 15:37	7440-02-0	
Selenium	6.0	mg/kg	1.5	1	05/21/21 11:40	05/25/21 15:37	7782-49-2	
Silver	ND	mg/kg	0.71	1	05/21/21 11:40	05/26/21 15:58	7440-22-4	
Zinc	117	mg/kg	10.1	1	05/21/21 11:40	05/25/21 15:37	7440-66-6	

### 8270 MSSV PAH by SIM

Analytical Method: EPA 8270 by SIM      Preparation Method: EPA 3546  
Pace Analytical Services - Kansas City

Acenaphthene	ND	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	83-32-9	
Acenaphthylene	0.0017J	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	208-96-8	
Anthracene	ND	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	120-12-7	
Benzo(a)anthracene	0.0030J	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	56-55-3	
Benzo(a)pyrene	0.0030J	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	50-32-8	
Benzo(b)fluoranthene	0.0088	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	205-99-2	
Benzo(g,h,i)perylene	0.011	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	191-24-2	
Benzo(k)fluoranthene	ND	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	207-08-9	
Chrysene	0.013	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	218-01-9	
Dibenz(a,h)anthracene	ND	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	53-70-3	
Fluoranthene	0.0097	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	206-44-0	B
Fluorene	0.0024J	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	193-39-5	
Naphthalene	0.016	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	91-20-3	
Phenanthrene	0.038	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	85-01-8	B
Pyrene	0.014	mg/kg	0.0036	1	05/19/21 18:36	05/20/21 15:54	129-00-0	B
<b>Surrogates</b>								
2-Fluorobiphenyl (S)	68	%	40-120	1	05/19/21 18:36	05/20/21 15:54	321-60-8	
Terphenyl-d14 (S)	67	%	45-130	1	05/19/21 18:36	05/20/21 15:54	1718-51-0	

### 8260 MSV 5035A VOA

Analytical Method: EPA 8260B      Preparation Method: EPA 5035A/5030  
Pace Analytical Services - Kansas City

Benzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 16:17	71-43-2	
Ethylbenzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 16:17	100-41-4	
Toluene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 16:17	108-88-3	
1,2,4-Trimethylbenzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 16:17	95-63-6	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: COGCC LUPTON 1

Pace Project No.: 60369700

**Sample: SB-1**      **Lab ID: 60369700001**      Collected: 05/14/21 12:40      Received: 05/18/21 09:05      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV 5035A VOA</b>								
Analytical Method: EPA 8260B Preparation Method: EPA 5035A/5030								
Pace Analytical Services - Kansas City								
1,3,5-Trimethylbenzene	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 16:17	108-67-8	
Xylene (Total)	ND	mg/kg	0.0054	1	05/19/21 15:00	05/19/21 16:17	1330-20-7	
<b>Surrogates</b>								
Toluene-d8 (S)	104	%	80-120	1	05/19/21 15:00	05/19/21 16:17	2037-26-5	
4-Bromofluorobenzene (S)	94	%	80-120	1	05/19/21 15:00	05/19/21 16:17	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120	1	05/19/21 15:00	05/19/21 16:17	2199-69-1	
<b>8260 MSV GRO and Oxygenates</b>								
Analytical Method: EPA 8260 Preparation Method: EPA 5035								
Pace Analytical Services - Kansas City								
TPH-GRO	ND	mg/kg	0.54	1	05/19/21 15:00	05/19/21 16:17		
<b>Surrogates</b>								
Toluene-d8 (S)	104	%	78-122	1	05/19/21 15:00	05/19/21 16:17	2037-26-5	
4-Bromofluorobenzene (S)	94	%	69-133	1	05/19/21 15:00	05/19/21 16:17	460-00-4	
1,2-Dichlorobenzene-d4 (S)	99	%	80-120	1	05/19/21 15:00	05/19/21 16:17	2199-69-1	
<b>Percent Moisture</b>								
Analytical Method: ASTM D2974								
Pace Analytical Services - Kansas City								
Percent Moisture	8.5	%	0.50	1		05/21/21 16:50		
<b>7196 Chromium, Hexavalent</b>								
Analytical Method: EPA 7196 Preparation Method: EPA 3060								
Pace Analytical Services - Salina								
Chromium, Hexavalent	ND	mg/kg	4.4	5	05/25/21 17:09	05/26/21 20:26	18540-29-9	
<b>9045 pH Soil</b>								
Analytical Method: EPA 9045								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	11.7	Std. Units	0.10	1		05/24/21 06:54		
<b>9050 Specific Conductance</b>								
Analytical Method: EPA 9050								
Pace Analytical Services - Kansas City								
Specific Conductance	5370	umhos/cm	1.0	1		05/21/21 11:39		

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1  
Pace Project No.: 60369700

QC Batch: 721865	Analysis Method: EPA 6010
QC Batch Method: EPA 3050	Analysis Description: 6010 MET
	Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

METHOD BLANK: 2902285 Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	ND	1.0	05/25/21 14:49	
Barium	mg/kg	ND	0.50	05/25/21 14:49	
Cadmium	mg/kg	ND	0.50	05/25/21 14:49	
Copper	mg/kg	ND	2.0	05/26/21 15:51	
Lead	mg/kg	ND	1.0	05/25/21 14:49	
Nickel	mg/kg	ND	0.50	05/25/21 14:49	
Selenium	mg/kg	ND	1.5	05/25/21 14:49	
Silver	mg/kg	0.28J	0.70	05/25/21 14:49	
Zinc	mg/kg	ND	10.0	05/25/21 14:49	

LABORATORY CONTROL SAMPLE: 2902286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	100	89.8	90	80-120	
Barium	mg/kg	100	93.0	93	80-120	
Cadmium	mg/kg	100	91.8	92	80-120	
Copper	mg/kg	100	94.4	94	80-120	
Lead	mg/kg	100	94.5	94	80-120	
Nickel	mg/kg	100	93.9	94	80-120	
Selenium	mg/kg	100	85.4	85	80-120	
Silver	mg/kg	50	45.2	90	80-120	
Zinc	mg/kg	100	90.3	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2902287 2902288

Parameter	Units	60369474002		MS		MSD		MS		MSD		MS		MSD		% Rec		Limits		RPD		Max		Qual
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	
Arsenic	mg/kg	4.1	101	108	93.3	96.6	88	86	75-125	3	20													
Barium	mg/kg	128	101	108	233	264	104	126	75-125	13	20 M1													
Cadmium	mg/kg	ND	101	108	92.2	95.7	91	89	75-125	4	20													
Copper	mg/kg	10.5	101	108	110	113	99	95	75-125	2	20													
Lead	mg/kg	10.7	101	108	101	118	90	100	75-125	15	20													
Nickel	mg/kg	10.5	101	108	105	111	94	93	75-125	5	20													
Selenium	mg/kg	ND	101	108	84.6	86.7	84	80	75-125	2	20													
Silver	mg/kg	ND	50.5	53.9	46.2	47.2	92	88	75-125	2	20													
Zinc	mg/kg	28.7	101	108	128	132	99	96	75-125	3	20													

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1  
Pace Project No.: 60369700

QC Batch:	721315	Analysis Method:	EPA 8260B
QC Batch Method:	EPA 5035A/5030	Analysis Description:	8260 MSV 5035A Volatile Organics
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

METHOD BLANK: 2900244 Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
1,3,5-Trimethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
Benzene	mg/kg	ND	0.0050	05/19/21 10:02	
Ethylbenzene	mg/kg	ND	0.0050	05/19/21 10:02	
Toluene	mg/kg	ND	0.0050	05/19/21 10:02	
Xylene (Total)	mg/kg	ND	0.0050	05/19/21 10:02	
1,2-Dichlorobenzene-d4 (S)	%	98	80-120	05/19/21 10:02	
4-Bromofluorobenzene (S)	%	96	85-115	05/19/21 10:02	
Toluene-d8 (S)	%	98	80-120	05/19/21 10:02	

LABORATORY CONTROL SAMPLE: 2900245

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	mg/kg	0.1	0.098	98	80-125	
1,3,5-Trimethylbenzene	mg/kg	0.1	0.10	101	80-125	
Benzene	mg/kg	0.1	0.094	94	75-125	
Ethylbenzene	mg/kg	0.1	0.10	101	80-130	
Toluene	mg/kg	0.1	0.091	91	80-120	
Xylene (Total)	mg/kg	0.3	0.29	98	80-125	
1,2-Dichlorobenzene-d4 (S)	%			98	80-120	
4-Bromofluorobenzene (S)	%			98	85-115	
Toluene-d8 (S)	%			101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2900246 2900247

Parameter	Units	60369685001		MSD		MSD		MSD		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	MSD % Rec	MSD % Rec	MSD % Rec				
1,2,4-Trimethylbenzene	mg/kg	ND	0.13	0.13	0.091	0.094	70	71	10-123	3	35				
1,3,5-Trimethylbenzene	mg/kg	ND	0.13	0.13	0.098	0.10	76	78	15-130	4	35				
Benzene	mg/kg	ND	0.13	0.13	0.096	0.098	74	75	45-130	2	35				
Ethylbenzene	mg/kg	ND	0.13	0.13	0.10	0.11	81	82	35-140	3	35				
Toluene	mg/kg	ND	0.13	0.13	0.096	0.099	74	75	40-135	3	35				
Xylene (Total)	mg/kg	ND	0.38	0.4	0.30	0.31	78	78	30-145	1	35				
1,2-Dichlorobenzene-d4 (S)	%						98	98	80-120		3				
4-Bromofluorobenzene (S)	%						94	98	85-115		20				
Toluene-d8 (S)	%						103	101	80-120		20				

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1

Pace Project No.: 60369700

QC Batch: 721490

Analysis Method: EPA 8260

QC Batch Method: EPA 5035

Analysis Description: 8260 MSV GRO and Oxygenates

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

METHOD BLANK: 2900852

Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH-GRO	mg/kg	ND	0.50	05/19/21 10:02	
1,2-Dichlorobenzene-d4 (S)	%	98	80-120	05/19/21 10:02	
4-Bromofluorobenzene (S)	%	96	69-133	05/19/21 10:02	
Toluene-d8 (S)	%	98	78-122	05/19/21 10:02	

LABORATORY CONTROL SAMPLE: 2900853

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-GRO	mg/kg	4	2.6	65	61-140	
1,2-Dichlorobenzene-d4 (S)	%			98	80-120	
4-Bromofluorobenzene (S)	%			98	69-133	
Toluene-d8 (S)	%			101	78-122	

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1  
Pace Project No.: 60369700

QC Batch:	721541	Analysis Method:	EPA 8015B
QC Batch Method:	EPA 3546	Analysis Description:	EPA 8015B
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

METHOD BLANK: 2901064 Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TPH-DRO	mg/kg	ND	9.4	05/20/21 18:21	
n-Tetracosane (S)	%	88	31-152	05/20/21 18:21	
p-Terphenyl (S)	%	94	46-130	05/20/21 18:21	

LABORATORY CONTROL SAMPLE: 2901065

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO	mg/kg	79.1	71.8	91	69-122	
n-Tetracosane (S)	%			78	31-152	
p-Terphenyl (S)	%			95	46-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2901066 2901067

Parameter	Units	60369689001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-DRO	mg/kg	351	87.3	89.5	462	408	127	63	30-130	12	35	
n-Tetracosane (S)	%						0	0	31-152			S4
p-Terphenyl (S)	%						0	0	46-130			S4

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1  
Pace Project No.: 60369700

QC Batch: 721427	Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3546	Analysis Description: 8270/3546 MSSV PAH by SIM
	Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

METHOD BLANK: 2900687 Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	mg/kg	ND	0.0032	05/20/21 10:40	
Acenaphthylene	mg/kg	ND	0.0032	05/20/21 10:40	
Anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(a)anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(a)pyrene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(b)fluoranthene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(g,h,i)perylene	mg/kg	ND	0.0032	05/20/21 10:40	
Benzo(k)fluoranthene	mg/kg	ND	0.0032	05/20/21 10:40	
Chrysene	mg/kg	ND	0.0032	05/20/21 10:40	
Dibenz(a,h)anthracene	mg/kg	ND	0.0032	05/20/21 10:40	
Fluoranthene	mg/kg	0.0036	0.0032	05/20/21 10:40	
Fluorene	mg/kg	ND	0.0032	05/20/21 10:40	
Indeno(1,2,3-cd)pyrene	mg/kg	ND	0.0032	05/20/21 10:40	
Naphthalene	mg/kg	ND	0.0032	05/20/21 10:40	
Phenanthrene	mg/kg	0.0053	0.0032	05/20/21 10:40	
Pyrene	mg/kg	0.0027J	0.0032	05/20/21 10:40	
2-Fluorobiphenyl (S)	%	92	45-116	05/20/21 10:40	
Terphenyl-d14 (S)	%	151	39-126	05/20/21 10:40	S0

LABORATORY CONTROL SAMPLE: 2900688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	mg/kg	0.032	0.028	87	45-120	
Acenaphthylene	mg/kg	0.032	0.028	85	50-120	
Anthracene	mg/kg	0.032	0.030	92	50-120	
Benzo(a)anthracene	mg/kg	0.032	0.030	92	55-125	
Benzo(a)pyrene	mg/kg	0.032	0.029	90	45-120	
Benzo(b)fluoranthene	mg/kg	0.032	0.030	92	50-125	
Benzo(g,h,i)perylene	mg/kg	0.032	0.029	90	40-120	
Benzo(k)fluoranthene	mg/kg	0.032	0.031	95	55-120	
Chrysene	mg/kg	0.032	0.029	91	55-120	
Dibenz(a,h)anthracene	mg/kg	0.032	0.030	92	40-125	
Fluoranthene	mg/kg	0.032	0.031	96	50-125	
Fluorene	mg/kg	0.032	0.029	89	50-120	
Indeno(1,2,3-cd)pyrene	mg/kg	0.032	0.029	90	44-125	
Naphthalene	mg/kg	0.032	0.027	84	45-120	
Phenanthrene	mg/kg	0.032	0.031	96	50-125	
Pyrene	mg/kg	0.032	0.030	93	50-125	
2-Fluorobiphenyl (S)	%			81	45-116 M4	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1

Pace Project No.: 60369700

LABORATORY CONTROL SAMPLE: 2900688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Terphenyl-d14 (S)	%			84	39-126	

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1

Pace Project No.: 60369700

QC Batch: 722002

Analysis Method: ASTM D2974

QC Batch Method: ASTM D2974

Analysis Description: Dry Weight/Percent Moisture

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

METHOD BLANK: 2902812

Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	05/21/21 16:49	

SAMPLE DUPLICATE: 2902813

Parameter	Units	60369519001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.1	18.3	1	20	

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1  
Pace Project No.: 60369700

QC Batch:	722558	Analysis Method:	EPA 7196
QC Batch Method:	EPA 3060	Analysis Description:	7196 Chromium, Hexavalent
		Laboratory:	Pace Analytical Services - Salina

Associated Lab Samples: 60369700001

METHOD BLANK: 2904895 Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	mg/kg	ND	4.0	05/26/21 20:21	

LABORATORY CONTROL SAMPLE: 2904896

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	mg/kg	60	59.0	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2904897 2904898

Parameter	Units	60369690001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	66.8	66.8	58.9	56.1	88	84	75-125	5	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2904900 2904901

Parameter	Units	60369690001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chromium, Hexavalent	mg/kg	ND	1440	1430	1450	1400	100	98	75-125	3	20	

SAMPLE DUPLICATE: 2904899

Parameter	Units	60369690001 Result	Dup Result	RPD	Max RPD	Qualifiers
Chromium, Hexavalent	mg/kg	ND	ND		20	

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## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1

Pace Project No.: 60369700

QC Batch: 721592

Analysis Method: EPA 9045

QC Batch Method: EPA 9045

Analysis Description: 9045 pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

SAMPLE DUPLICATE: 2901321

Parameter	Units	60369690001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	3	

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## QUALITY CONTROL DATA

Project: COGCC LUPTON 1

Pace Project No.: 60369700

QC Batch: 721591

Analysis Method: EPA 9050

QC Batch Method: EPA 9050

Analysis Description: 9050 Specific Conductance

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60369700001

METHOD BLANK: 2901318

Matrix: Solid

Associated Lab Samples: 60369700001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Specific Conductance	umhos/cm	ND	1.0	05/21/21 11:36	

SAMPLE DUPLICATE: 2901319

Parameter	Units	60369689001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Conductance	umhos/cm	4930	4930	0	20	

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## QUALIFIERS

Project: COGCC LUPTON 1

Pace Project No.: 60369700

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M4 A matrix spike/matrix spike duplicate was not performed for this batch due to sample dilution.

S0 Surrogate recovery outside laboratory control limits.

S4 Surrogate recovery not evaluated against control limits due to sample dilution.

## REPORT OF LABORATORY ANALYSIS

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## QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: COGCC LUPTON 1

Pace Project No.: 60369700

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60369700001	SB-1	EPA 3546	721541	EPA 8015B	721704
60369700001	SB-1	EPA 3050	721865	EPA 6010	722059
60369700001	SB-1	EPA 3546	721427	EPA 8270 by SIM	721577
60369700001	SB-1	EPA 5035A/5030	721315	EPA 8260B	721453
60369700001	SB-1	EPA 5035	721490	EPA 8260	721499
60369700001	SB-1	ASTM D2974	722002		
60369700001	SB-1	EPA 3060	722558	EPA 7196	723030
60369700001	SB-1	EPA 9045	721592		
60369700001	SB-1	EPA 9050	721591		

## REPORT OF LABORATORY ANALYSIS

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WO#: 60369700



60369700

Antea Group  
3855 Precision Drive, Suite 160  
Loveland, CO 80538

Billing Information:  
Antea Group  
Lorelee Holt

Report to:  
Email To: *Disa.werner@antagroup*

Project Description:  
*COCC LUPTON 1*

Phone: 970-292-1899

Collected by (print): *D. Werner*

Collected by (signature): *[Signature]*

Immediately Packed on Ice N ☒ Y ☐

City/State Collected: *CO*

Please Circle: PT MT CT ET

Lab Project # *LUPTON 1*

Site/Facility ID #

P.O. #

Quote #

Rush? (Lab MUST Be Notified)  
Same Day ☐ Five Day ☐  
Next Day ☐ 5 Day (Rad Only) ☐  
Two Day ☐ 10 Day (Rad Only) ☐  
Three Day ☐

Date Results Needed

No. of Cntrs

Time

Date

Depth

Matrix\*

Comp/Grab

Sample ID

SB-1

Grab SS 2.0 5/14/2011 12:40 5

\*BTEX8260, GRO - 40z Soil Jar

PAHSIM, TPH-DRO - 40z Soil Jar

SPCON, PH - 40z Soil Jar

CR6 - 40z Soil Jar

Metals - 40z Soil Jar

SDG #

Table #

Acctnum:

Template:

Prelogin:

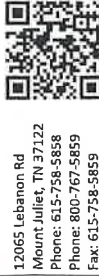
PM:

PB:

Shipped Via:

Remarks

Sample # (lab only)



12065 Lebanon Rd  
Mount Juliet, TN 37122  
Phone: 615-758-5858  
Fax: 615-758-5859

Sample Receipt Checklist  
COC Seal Present/Intact: ☒ NP ☐  
COC Signed/Accurate: ☒ Y ☐  
Bottles arrive intact: ☒ Y ☐  
Correct bottles used: ☒ Y ☐  
Sufficient volume sent: ☒ Y ☐  
If Applicable  
VOA Zero Headspace: ☒ Y ☐  
Preservation Correct/Checked: ☒ Y ☐  
RAD Screen <0.5 mK/hr: ☒ Y ☐

pH \_\_\_\_\_ Temp \_\_\_\_\_  
Flow \_\_\_\_\_ Other \_\_\_\_\_  
Trip Blank Received: Yes ☒ No ☐  
HCL / MeOH TBR

Tracking # 9308 4764 60369700  
Received by: (Signature) *[Signature]*  
Received by: (Signature) *[Signature]*  
Received for lab by: (Signature)

Date: 5/12/2011 Time: 1400  
Date: Time:  
Date: Time:

Relinquished by: (Signature) *[Signature]*  
Relinquished by: (Signature)  
Relinquished by: (Signature)

If preservation required by Login: Date/Time

Temp: 0.6 °C  
Bottles Received:

Date: 5-18-21 Time: 0905

Date: Time:

Date: Time:

Condition:  
NCF / OK