



## SVE Monitoring

Location	Date	SVE Point(s)	Exhaust OVM (ppm)	Vacuum Pressure upstream of drum (H <sub>2</sub> O")	Vacuum Pressure downstream of drum (H <sub>2</sub> O")	Exhaust Rate (cfm) if known	System Operational at Arrival?	Drum H <sub>2</sub> O (inches bTOD)	Drum Drained?	Comments
Atlantic ALS 9A	1-10-23	1	11.1	-46	-37	-	Y	26.5	Y	
Florence GJ16	1	2	23.1	Broken	-	-	N	31.4	N	Drum Frozen
Sandoval	1	1	62.2	-8	Broken	-	N	14	Y	Tank 80-90% Full
Jacquez	1	3	7.4	0.0	Broken	-	N	9	Y	Attempted to restart unit will not turn on
Al Elliot	1	5	165.0	-10	-10	-	Y	27.5	Y	638.8 hours run time
GCU H80	1	All	-	-	-	-	Y	-	-	2.5 PSI 154°F 1947.1 HRS 100.0 20.0 31.0 410.0
Heaton	1	Unit	106.6	-66	Broken	-	Y	26.5	Y	
Mudge B12R	1/2/23	1	-	-	-	-	N	32	N	drum frozen - unable to drain. SVE not operational.
Mudge A2	1/12/23	2	0.8	-54	-	-	Y	31	N	water in drum below drain port.

## Notes:

SVE - Soil Vapor Extraction  
 OVM - Organic Vapor Monitoring  
 ppm- parts per million  
 H<sub>2</sub>O"- inches water  
 cfm- cubic feet per minute  
 bTOD- below top of drum

# SVE Monitoring

Location	Date	SVE Point(s)	Exhaust OVM (ppm)	Vacuum Pressure upstream of drum (H2O")	Vacuum Pressure downstream of drum (H2O")	Exhaust Rate (cfm) if known	System Operational at Arrival?	Drum H2O (inches bTOD)	Drum Drained?	Comments
Atlantic ALS 9A	2-7-23	1	5.4	-38	-47	-	Y	26.5	Y	
Florence	↓	2	<del>2.5</del> Broken	Broken	-	-	N	27	N	Restarted System, System carries when left
Sandoval	↓	1	<del>2</del> 0.4	-	-	-	N	14.25	Y	Attempted to restart Unit restart
Jacquez	↓	3	1.0	-	-	-	N	28	N	Attempted to restart Went restart, Drum Frozen
Al Elliot	↓	5	2.4	-	-	-	N	27.5	Y	Attempted to restart will not restart
GU H80	↓	All	-	-	-	-	Y	-	-	2.6 PSI 150°F 2618.0 hrs 1) 0.5 2) 0.5 3) 0.5 4) 0.25
Heaton	↓	Unk	106.7	-56	-	-	Y	29.5	Y	
Mudge B12R	2-9-23	1	0.2	-	-	-	N	32.0	N	Attempted to restart System won't start, Drum Frozen
Mudge A2	2-9-23	2	2.1	-54	-	-	Y	30.5	N	Drum Frozen

## Notes:

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 OVM - Organic Vapor Monitoring  
 ppm- parts per million  
 H2O"- inches water  
 cfm- cubic feet per minute  
 bTOD- below top of drum



## SVE Monitoring

Location	Date	SVE Point(s)	Exhaust OVM (ppm)	Vacuum Pressure upstream of drum (H <sub>2</sub> O")	Vacuum Pressure downstream of drum (H <sub>2</sub> O")	Exhaust Rate (cfm) if known	System Operational at Arrival?	Drum H <sub>2</sub> O (inches bTOD)	Drum Drained?	Comments
Atlantic	3/9/23	1	5.9	-36	-46	-	Y	31.25	Y	
Florence		2	131.3	broken	none	-	Y	24.5	Y	drum valve leaking
Sandoval		1	13.3	Broken	Broken	-	Y	31.0	Y	run time 1041.7 hrs Grabbed gas sample @ 1045
Jacquez		3	-	-	-	-	N	-	N	System not operational
Al Elliot		5	132.0	-8	-10	-	Y	30.25	Y	run time 971.7 hours
GCU H80		A11	-	-	-	-	Y	-		2.5 psi 150°F 3339.0 hours 10.2 20.2 31.25 40.1
Heaton	3/10/23	unk	113.8	-42	-	-	Y	28.5	Y	
Mudge B12E		1	-	-	-	-	-	-	-	unable to access site
Mudge A2		2	109.1	-52	-	-	Y	31.5	N	water in drum below valve

## Notes:

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 ppm- parts per million  
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 cfm- cubic feet per minute  
 bTOD- below top of drum

## SVE Monitoring

Location	Date	SVE Point(s)	Exhaust OVM (ppm)	Vacuum Pressure upstream of drum (H <sub>2</sub> O")	Vacuum Pressure downstream of drum (H <sub>2</sub> O")	Run Time (Hours)	System Operational at Arrival?	Drum H <sub>2</sub> O (inches bTOD)	Drum Drained?	Comments
Atlantic	4-6-23	1	5.1	-44	-36	—	Y	30.5	N	Drum Frozen
Florance		2	104.1	Broken	—	—	Y	20.5	Y	Drum leaking from Drain Valve
Sandoval		1	10.5	Broken	Broken	1681.2	N	14.3	Y	system restarted after Draining drum
Jaquez		3	142.1	-30	—	334.3	Y	28.75	Y	
AL Elliott		5	110.5	-8	-12	1347.5	Y	30.5	Y	
GC4 H180		411	—	—	—	4005.7	Y	—	—	2.6 ps: 160° (1) 0.5 (2) 0.6 (3) 0.5 (4) 0.5
Henton		unlabeled	122.7	-56	—	—	Y	31.25	Y	
Mudge B12R		1	204.7	-44	-30	—	Y	29.25	Y	
Mudge A002	↓	2	96.5	-52	—	—	Y	30.5	Y	

## Notes:

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 cfm- cubic feet per minute  
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## SVE Monitoring

Location	Date	SVE Point(s)	Exhaust OVM (ppm)	Vacuum Pressure upstream of drum (H2O")	Vacuum Pressure downstream of drum (H2O")	Run Time (Hours)	System Operational at Arrival?	Drum H2O (inches bTOD)	Drum Drained?	Comments
Atlantic	5/3/23	1	38.4	-35	-45	-	Y	32	N	water below port
Florance		2	101.9	Broken	-	-	N	33	N	water below port Restarted system.
Sandoval		1	9.6	Broken	Broken	2329.0	Y	26.5	Y	2329.0 hrs
Jaquez		3	-	-	-	-	N	29	Y	System won't start.
AL Elliott		5	106.2	-8	-11	1951.3	Y	32	Y	1951.3 hrs
GCU H180		All	-	-	-	4510.2	Y	-	-	2.5 psi 165° Temp 1) 0.5 2) 0.5 3) 1.0 4) 0.5
Heaton		unk	104.3	-53	-	-	Y	Dry	N	
Mudge B12R		1	122.3	-44	-29	-	Y	31.5	Y	
Mudge A002	✓	2	69.3	-59	-	-	N	31	N	water below port. restarted system.

## Notes:

SVE - Soil Vapor Extraction

OVM - Organic Vapor Monitoring

ppm- parts per million

H2O"- inches water

cfm- cubic feet per minute

bTOD- below top of drum

Drain valve  
still leaking4510.2 hrs  
psi

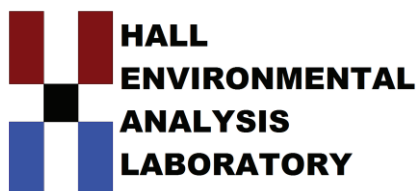


## SVE Monitoring

Location	Date	SVE Point(s)	Exhaust OVM (ppm)	Vacuum Pressure upstream of drum (H <sub>2</sub> O")	Vacuum Pressure downstream of drum (H <sub>2</sub> O")	Run Time (Hours)	System Operational at Arrival?	Drum H <sub>2</sub> O (inches bTOD)	Drum Drained?	Comments
Atlantic	6/6/23	1	5.5	-44	0	-	Y	Dry	N	
Florence		2	99.6	Broken	-	-	Y	29"	Y	Drum leaking from drain valve
Sandoval		1	7.3	Broken	Broken	3144.4	Y	Below Port	N	3144.4 hrs
Juaquez		3	123.2	-24	-	1606.7	Y	30"	Y	1606.7 hrs
Al Elliot +		5	96.8	-8	-11	2683.0	Y	Below Port	N	2683.0 hrs
GCV #180		All	-	-	-	5326.6	Y	-	-	110° 2.4 psi 10.75 20.5 5326.6 hrs 30.5 40.5 psi
Horton		Unv	110.5	-54	-	-	Y	Dry	N	Vacuum Pressure Gauge removed (downstream)
Mudge B12R		1	101.1	-44	-29	-	Y	Dry	N	
Mudge A002		2	171.6	-50	-	-	Y	Below Port	N	

## Notes:

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 H<sub>2</sub>O"- inches water  
 cfm- cubic feet per minute  
 bTOD- below top of drum



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 07, 2023

Kyle Siesser  
Cottonwood Consulting LLC  
PO BOX 1653  
Durango, CO 81302  
TEL: (970) 764-7356  
FAX

RE: Mudge A 2

OrderNo.: 2306D63

Dear Kyle Siesser:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/27/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 2306D63

Date Reported: 7/7/2023

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Cottonwood Consulting LLC

Client Sample ID: SVE

Project: Mudge A 2

Collection Date: 6/21/2023 10:00:00 AM

Lab ID: 2306D63-001

Matrix: AIR

Received Date: 6/27/2023 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: CCM
Benzene	9.7	0.20		µg/L	2	6/28/2023 12:58:00 PM
Toluene	4.0	0.20		µg/L	2	6/28/2023 12:58:00 PM
Ethylbenzene	1.1	0.20		µg/L	2	6/28/2023 12:58:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2,4-Trimethylbenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,3,5-Trimethylbenzene	0.35	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2-Dichloroethane (EDC)	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2-Dibromoethane (EDB)	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Naphthalene	ND	0.40		µg/L	2	6/28/2023 12:58:00 PM
1-Methylnaphthalene	ND	0.80		µg/L	2	6/28/2023 12:58:00 PM
2-Methylnaphthalene	ND	0.80		µg/L	2	6/28/2023 12:58:00 PM
Acetone	ND	2.0		µg/L	2	6/28/2023 12:58:00 PM
Bromobenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Bromodichloromethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Bromoform	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Bromomethane	ND	0.40		µg/L	2	6/28/2023 12:58:00 PM
2-Butanone	ND	2.0		µg/L	2	6/28/2023 12:58:00 PM
Carbon disulfide	ND	2.0		µg/L	2	6/28/2023 12:58:00 PM
Carbon tetrachloride	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Chlorobenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Chloroethane	ND	0.40		µg/L	2	6/28/2023 12:58:00 PM
Chloroform	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Chloromethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
2-Chlorotoluene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
4-Chlorotoluene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
cis-1,2-DCE	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
cis-1,3-Dichloropropene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2-Dibromo-3-chloropropane	ND	0.40		µg/L	2	6/28/2023 12:58:00 PM
Dibromochloromethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Dibromomethane	ND	0.40		µg/L	2	6/28/2023 12:58:00 PM
1,2-Dichlorobenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,3-Dichlorobenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,4-Dichlorobenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Dichlorodifluoromethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,1-Dichloroethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,1-Dichloroethene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2-Dichloropropane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,3-Dichloropropane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
2,2-Dichloropropane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quantitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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## Analytical Report

Lab Order 2306D63

Date Reported: 7/7/2023

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Cottonwood Consulting LLC

Client Sample ID: SVE

Project: Mudge A 2

Collection Date: 6/21/2023 10:00:00 AM

Lab ID: 2306D63-001

Matrix: AIR

Received Date: 6/27/2023 8:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8260B: VOLATILES</b>						Analyst: CCM
1,1-Dichloropropene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Hexachlorobutadiene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
2-Hexanone	ND	2.0		µg/L	2	6/28/2023 12:58:00 PM
Isopropylbenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
4-Isopropyltoluene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
4-Methyl-2-pentanone	ND	2.0		µg/L	2	6/28/2023 12:58:00 PM
Methylene chloride	ND	0.60		µg/L	2	6/28/2023 12:58:00 PM
n-Butylbenzene	ND	0.60		µg/L	2	6/28/2023 12:58:00 PM
n-Propylbenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
sec-Butylbenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Styrene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
tert-Butylbenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,1,1,2-Tetrachloroethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,1,2,2-Tetrachloroethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Tetrachloroethene (PCE)	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
trans-1,2-DCE	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
trans-1,3-Dichloropropene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2,3-Trichlorobenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2,4-Trichlorobenzene	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,1,1-Trichloroethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,1,2-Trichloroethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Trichloroethene (TCE)	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Trichlorofluoromethane	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
1,2,3-Trichloropropane	ND	0.40		µg/L	2	6/28/2023 12:58:00 PM
Vinyl chloride	ND	0.20		µg/L	2	6/28/2023 12:58:00 PM
Xylenes, Total	7.3	0.30		µg/L	2	6/28/2023 12:58:00 PM
Surr: Dibromofluoromethane	97.6	70-130		%Rec	2	6/28/2023 12:58:00 PM
Surr: 1,2-Dichloroethane-d4	93.1	70-130		%Rec	2	6/28/2023 12:58:00 PM
Surr: Toluene-d8	127	70-130		%Rec	2	6/28/2023 12:58:00 PM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	2	6/28/2023 12:58:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Above Quantitation Range/Estimated Value
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of standard limits. If undiluted results may be estimated.	

Page 2 of 4



## ANALYTICAL SUMMARY REPORT

July 06, 2023

Hall Environmental

4901 Hawkins St NE Ste D

Albuquerque, NM 87109-4372

Work Order: B23062508

Quote ID: B15626

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 1 sample for Hall Environmental on 6/29/2023 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B23062508-001	2306D63-001A, SVE	06/21/23 10:00	06/29/23	Air	Air Correction Calculations Appearance and Comments Calculated Properties GPM @ std cond./1000 cu. ft., moist. Free Natural Gas Analysis Specific Gravity @ 60/60

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

  
Laboratory Manager

Digitally signed by

Cindy Rohrer

Date: 2023.07.06 14:29:14 -06:00



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Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

## LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

**Client:** Hall Environmental  
**Project:** Not Indicated  
**Lab ID:** B23062508-001  
**Client Sample ID:** 2306D63-001A, SVE

**Report Date:** 07/06/23  
**Collection Date:** 06/21/23 10:00  
**Date Received:** 06/29/23  
**Matrix:** Air

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>GAS CHROMATOGRAPHY ANALYSIS REPORT</b>							
Oxygen	21.41	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Nitrogen	78.00	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Carbon Dioxide	0.47	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Hydrogen Sulfide	<0.01	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Methane	0.07	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Ethane	<0.01	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Propane	<0.01	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Isobutane	<0.01	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
n-Butane	<0.01	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Isopentane	<0.01	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
n-Pentane	<0.01	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Hexanes plus	0.05	Mol %		0.01		GPA 2261-95	06/30/23 11:20 / jrj
Propane	< 0.001	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj
Isobutane	< 0.001	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj
n-Butane	< 0.001	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj
Isopentane	< 0.001	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj
n-Pentane	< 0.001	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj
Hexanes plus	0.021	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj
GPM Total	0.021	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj
GPM Pentanes plus	0.021	gpm		0.001		GPA 2261-95	06/30/23 11:20 / jrj

### CALCULATED PROPERTIES

Gross BTU per cu ft @ Std Cond. (HHV)	3		1		GPA 2261-95	06/30/23 11:20 / jrj
Net BTU per cu ft @ std cond. (LHV)	3		1		GPA 2261-95	06/30/23 11:20 / jrj
Pseudo-critical Pressure, psia	546		1		GPA 2261-95	06/30/23 11:20 / jrj
Pseudo-critical Temperature, deg R	240		1		GPA 2261-95	06/30/23 11:20 / jrj
Specific Gravity @ 60/60F	1.00		0.001		D3588-81	06/30/23 11:20 / jrj
Air, %	97.81		0.01		GPA 2261-95	06/30/23 11:20 / jrj

- The analysis was not corrected for air.

### COMMENTS

-	-	06/30/23 11:20 / jrj
- BTU, GPM, and specific gravity are corrected for deviation from ideal gas behavior. - GPM = gallons of liquid at standard conditions per 1000 cu. ft. of moisture free gas @ standard conditions. - To convert BTU to a water-saturated basis @ standard conditions, multiply by 0.9825. - Standard conditions: 60 F & 14.73 psi on a dry basis.		

**Report Definitions:** RL - Analyte Reporting Limit  
QCL - Quality Control Limit

MCL - Maximum Contaminant Level  
ND - Not detected at the Reporting Limit (RL)



# QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B23062508

Report Date: 07/06/23

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
<b>Method: GPA 2261-95</b>									Batch: R404747	
<b>Lab ID: B23062510-001ADUP</b>	12 Sample Duplicate					Run: GCNGA-B_230630A			06/30/23 12:12	
Oxygen		21.6	Mol %	0.01				0	20	
Nitrogen		77.8	Mol %	0.01				0	20	
Carbon Dioxide		0.38	Mol %	0.01				0.0	20	
Hydrogen Sulfide		<0.01	Mol %	0.01					20	
Methane		<0.01	Mol %	0.01					20	
Ethane		<0.01	Mol %	0.01					20	
Propane		<0.01	Mol %	0.01					20	
Isobutane		<0.01	Mol %	0.01					20	
n-Butane		<0.01	Mol %	0.01					20	
Isopentane		<0.01	Mol %	0.01					20	
n-Pentane		<0.01	Mol %	0.01					20	
Hexanes plus		0.25	Mol %	0.01				4.1	20	
<b>Lab ID: LCS063023</b>	11 Laboratory Control Sample					Run: GCNGA-B_230630A			06/30/23 12:48	
Oxygen		0.59	Mol %	0.01	118	70	130			
Nitrogen		6.05	Mol %	0.01	101	70	130			
Carbon Dioxide		1.00	Mol %	0.01	101	70	130			
Methane		74.4	Mol %	0.01	99	70	130			
Ethane		6.02	Mol %	0.01	100	70	130			
Propane		5.20	Mol %	0.01	105	70	130			
Isobutane		1.99	Mol %	0.01	99	70	130			
n-Butane		2.00	Mol %	0.01	100	70	130			
Isopentane		1.00	Mol %	0.01	100	70	130			
n-Pentane		1.01	Mol %	0.01	101	70	130			
Hexanes plus		0.79	Mol %	0.01	99	70	130			

## Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)





Trust our People. Trust our Data.  
www.energylab.com

Billings, MT 406.252.6325 • Casper, WY 307.235.0515  
Gillette, WY 307.686.7175 • Helena, MT 406.442.0711

## Work Order Receipt Checklist

Hall Environmental

B23062508

Login completed by: Yvonna E. Smith

Date Received: 6/29/2023

Reviewed by: cindy

Received by: htm

Reviewed Date: 7/5/2023

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	17.8°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

### Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

### Contact and Corrective Action Comments:

None



## CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975  
FAX: 505-345-4107  
Website: www.hallenvironmental.com

SUB CONTRACTOR: <b>Energy Labs -Billings</b>		COMPANY: <b>Energy Laboratories</b>		PHONE: <b>(406) 869-6253</b>	FAX: <b>(406) 252-6069</b>
ADDRESS: <b>1120 South 27th Street</b>		ACCOUNT #:			
CITY, STATE, ZIP: <b>Billings, MT 59107</b>					
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE
1	2306D63-001A SVE		TEDLAR	Air	6/21/2023 10:00:00 AM
					# CONTAINERS
					1
					Natural Gas Analysis O2, CO2
					<b>ANALYTICAL COMMENTS</b>
					<b>B23002508</b>

## SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By:	Date: <b>6/27/2023</b>	Time: <b>10:44 AM</b>	Received By:	Date: <b>6/27/23</b>	Time: <b>10:15</b>
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
TAT: <b>Standard</b>		RUSH		Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>	
REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE					
FOR LAB USE ONLY					
Temp of samples _____ °C Attempt to Cool? _____					
Comments: _____					

## QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2306D63

07-Jul-23

Client: Cottonwood Consulting LLC

Project: Mudge A 2

Sample ID: 2306d63-001adup		SampType: DUP		TestCode: EPA Method 8260B: Volatiles						
Client ID: SVE	Batch ID: R97801			RunNo: 97801						
Prep Date:	Analysis Date: 6/28/2023			SeqNo: 3557428		Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	9.7	0.20						0.469	20	
Toluene	4.0	0.20						0.240	20	
Ethylbenzene	1.1	0.20						1.86	20	
Methyl tert-butyl ether (MTBE)	ND	0.20						0	20	
1,2,4-Trimethylbenzene	ND	0.20						0	20	
1,3,5-Trimethylbenzene	0.37	0.20						4.58	20	
1,2-Dichloroethane (EDC)	ND	0.20						0	20	
1,2-Dibromoethane (EDB)	ND	0.20						0	20	
Naphthalene	ND	0.40						0	20	
1-Methylnaphthalene	ND	0.80						0	20	
2-Methylnaphthalene	ND	0.80						0	20	
Acetone	ND	2.0						0	20	
Bromobenzene	ND	0.20						0	20	
Bromodichloromethane	ND	0.20						0	20	
Bromoform	ND	0.20						0	20	
Bromomethane	ND	0.40						0	20	
2-Butanone	ND	2.0						0	20	
Carbon disulfide	ND	2.0						0	20	
Carbon tetrachloride	ND	0.20						0	20	
Chlorobenzene	ND	0.20						0	20	
Chloroethane	ND	0.40						0	20	
Chloroform	ND	0.20						0	20	
Chloromethane	ND	0.20						0	20	
2-Chlorotoluene	ND	0.20						0	20	
4-Chlorotoluene	ND	0.20						0	20	
cis-1,2-DCE	ND	0.20						0	20	
cis-1,3-Dichloropropene	ND	0.20						0	20	
1,2-Dibromo-3-chloropropane	ND	0.40						0	20	
Dibromochloromethane	ND	0.20						0	20	
Dibromomethane	ND	0.40						0	20	
1,2-Dichlorobenzene	ND	0.20						0	20	
1,3-Dichlorobenzene	ND	0.20						0	20	
1,4-Dichlorobenzene	ND	0.20						0	20	
Dichlorodifluoromethane	ND	0.20						0	20	
1,1-Dichloroethane	ND	0.20						0	20	
1,1-Dichloroethene	ND	0.20						0	20	
1,2-Dichloropropane	ND	0.20						0	20	
1,3-Dichloropropane	ND	0.20						0	20	
2,2-Dichloropropane	ND	0.20						0	20	

## Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of standard limits. If undiluted results may be estimated.

B Analyte detected in the associated Method Blank  
E Above Quantitation Range/Estimated Value  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

Page 3 of 4

## QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 2306D63

07-Jul-23

Client: Cottonwood Consulting LLC

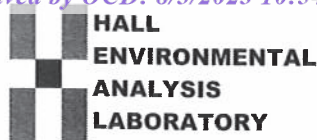
Project: Mudge A 2

Sample ID: <b>2306d63-001adup</b>		SampType: <b>DUP</b>		TestCode: <b>EPA Method 8260B: Volatiles</b>						
Client ID: <b>SVE</b>		Batch ID: <b>R97801</b>		RunNo: <b>97801</b>						
Prep Date:		Analysis Date: <b>6/28/2023</b>		SeqNo: <b>3557428</b>		Units: <b>µg/L</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,1-Dichloropropene	ND	0.20						0	20	
Hexachlorobutadiene	ND	0.20						0	20	
2-Hexanone	ND	2.0						0	20	
Isopropylbenzene	ND	0.20						0	20	
4-Isopropyltoluene	ND	0.20						0	20	
4-Methyl-2-pentanone	ND	2.0						0	20	
Methylene chloride	ND	0.60						0	20	
n-Butylbenzene	ND	0.60						0	20	
n-Propylbenzene	ND	0.20						0	20	
sec-Butylbenzene	ND	0.20						0	20	
Styrene	ND	0.20						0	20	
tert-Butylbenzene	ND	0.20						0	20	
1,1,1,2-Tetrachloroethane	ND	0.20						0	20	
1,1,2,2-Tetrachloroethane	ND	0.20						0	20	
Tetrachloroethene (PCE)	ND	0.20						0	20	
trans-1,2-DCE	ND	0.20						0	20	
trans-1,3-Dichloropropene	ND	0.20						0	20	
1,2,3-Trichlorobenzene	ND	0.20						0	20	
1,2,4-Trichlorobenzene	ND	0.20						0	20	
1,1,1-Trichloroethane	ND	0.20						0	20	
1,1,2-Trichloroethane	ND	0.20						0	20	
Trichloroethene (TCE)	ND	0.20						0	20	
Trichlorofluoromethane	ND	0.20						0	20	
1,2,3-Trichloropropane	ND	0.40						0	20	
Vinyl chloride	ND	0.20						0	20	
Xylenes, Total	7.5	0.30						3.30	20	
Surr: Dibromofluoromethane	2.0		2.000		99.1	70	130	0	0	
Surr: 1,2-Dichloroethane-d4	1.9		2.000		94.0	70	130	0	0	
Surr: Toluene-d8	2.5		2.000		125	70	130	0	0	
Surr: 4-Bromofluorobenzene	2.1		2.000		107	70	130	0	0	

## Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: Cottonwood Consulting LLC

Work Order Number: 2306D63

RcptNo: 1

Received By: Joseph Alderette 6/27/2023 8:40:00 AM

Completed By: Desiree Dominguez 6/27/2023 10:42:18 AM

Reviewed By: *ju 6/27/23*

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? FedEx

Log In

3. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☒
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☐ No ☐ NA ☒
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels? Yes ☒ No ☐  
(Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met? Yes ☒ No ☐  
(If no, notify customer for authorization.)

# of preserved  
bottles checked  
for pH:

(<2 or >12 unless noted)

Adjusted? \_\_\_\_\_

Checked by: *SCM 06/27/23*

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: \_\_\_\_\_

Date: \_\_\_\_\_

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	NA	Good	Yes	NA		

## HALL ENVIRONMENTAL ANALYSIS LABORATORY

[www.hallenvironmental.com](http://www.hallenvironmental.com)

4901 Hawkins NE - Albuquerque, NM 87109

**Tel. 505-345-3975**      **Fax 505-345-4107**

**Turn-Around Time:**

☒ Standard ☐ Rush

**Project Name:**

Mudge A #2

Project #:

email or Fax#: [ksiesser@cottonwoodconsulting.com](mailto:ksiesser@cottonwoodconsulting.com)

**QA/QC Package:**

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other☐ EDD (Type)

---

Date	Time	Matrix	Sample Name
------	------	--------	-------------

9/21/33	AIR	SVE
---------	-----	-----

Date:	Time:	Relinquished by:
-------	-------	------------------

6/26/23	0900	Joseph Infante
---------	------	----------------

Date:	Time:	Relinquished by:
-------	-------	------------------

100

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 10/2/2023 11:38:32 AM

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS  
  
Action 247783

CONDITIONS

Operator: SIMCOE LLC 1199 Main Ave., Suite 101 Durango, CO 81301	OGRID: 329736
	Action Number: 247783
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	None	10/2/2023