GROUNDWATER MONITORING REPORT
HALSELL'S GROCERY
HATCH, NEW MEXICO

Prepared For:

New Mexico Environment Department
Petroleum Storage Tank Bureau
2905 Rodeo Park Drive, Building 1
Santa Fe, New Mexico 87505
Attn: Mr. Chris Holmes

Facility:

Halsell's Grocery State Lead Site
112 School Street
Hatch, New Mexico
PSTB Facility #6053
Release ID #287

Submitted by:

Haller & Associates, Inc.
Environmental Services & Geoscience

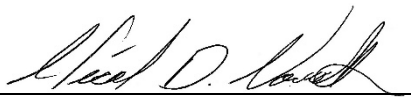
P.O. Box 1667
12220 North Highway 14, Suite C
Cedar Crest, NM 87008
Ph: 505-281-9333
Fax: 505-281-9338
License #92466

Deliverable ID #4076-2

December 13, 2019

STATEMENT OF FAMILIARITY

I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is true and complete.

Signature: 

Name: Micah Nauck

Affiliation: Haller & Associates, Inc.

Title: Project Manager / Geologist

Date: December 12, 2019

I. INTRODUCTION

A. Scope of Work

This report presents the results of a quarterly groundwater monitoring event at the Halsell's Grocery State Lead Site in Hatch, New Mexico (Figure 1). Fieldwork was performed on November 21, 2019, pursuant to a workplan prepared by Haller & Associates, Inc. (HAI), dated October 26, 2018. The workplan was approved by the New Mexico Environment Department-Petroleum Storage Tank Bureau (NMED-PSTB) in a letter to HAI dated September 14, 2019; workplan ID #4076. Work is subject to the provisions of NMED Professional Services Contract #18-667-3200-0012.

Three monitor wells are located at the Halsell's Grocery Site (Figure 2). All 3 monitor wells were gauged and sampled on November 21, 2019. The groundwater samples were analyzed for volatile organic compounds (VOCs) using EPA Method 8260B, ethylene dibromide (EDB) using EPA Method 504.1, dissolved iron and dissolved manganese using EPA Method 6010B, total dissolved solids (TDS) using EPA Method 2540C and chemical oxygen demand (COD) using EPA Method 410.4. Sampling protocols are presented in Appendix A.

B. Executive Summary

The shallow groundwater flow direction is to the south-southeast at a gradient of 0.0007 foot per foot (ft/ft), consistent with historic conditions (Figure 3 and Appendix B). Groundwater elevations have decreased an average of 0.20 feet since the previous groundwater monitoring event in September 2019. Groundwater elevation data are summarized in Table 1.

Dissolved benzene concentrations exceeded the New Mexico Water Quality Control Commission (NMWQCC) standard of 5 micrograms per liter (µg/L) at monitor well MW-1. Total naphthalenes exceeded the NMWQCC standard of 30 µg/L at monitor well MW-1. All other VOCs were below their respective standards. Dissolved petroleum contaminants have not exceeded standards in monitor well MW-3 since it was first sampled in June 1992. Dissolved organics analytical data are summarized in Table 2.

Dissolved iron concentrations exceeded the NMWQCC standard of 1.0 milligram per liter (mg/L) in monitor well MW-2.

Dissolved manganese concentrations exceeded the NMWQCC standard of 0.2 mg/L in all three monitor wells.

Groundwater analytical data are summarized in Tables 2 and 3. The most recent analytical data are presented on Figures 4 and 5. The laboratory report is presented in Appendix D.

II. ACTIVITIES PERFORMED DURING THIS QUARTER

A. Site Background

The Halsell's Grocery site is located at 112 School Road, Hatch, New Mexico. Halsell's Grocery is no longer an active gasoline station. The site contains one building that is currently unoccupied. In March 1991, the New Mexico Department of Transportation encountered underground storage tanks (USTs) during a road improvement project. Petroleum contamination was confirmed at the site in September 1991. In May 1992, three on-site monitoring wells were installed (MW-1, MW-2 and MW-3). Historical groundwater monitoring data indicate that dissolved contaminant concentrations have been decreasing over time, primarily dissolved benzene and total naphthalenes.

B. Monitoring Activities Performed

All 3 monitor wells were gauged and sampled on November 21, 2019. Low-flow purging and sampling was conducted using a peristaltic pump and new polyethylene tubing, which was replaced after each well. Each well was purged until field parameters stabilized at approximately 1 casing volume. Purge water was discharged on asphalt pavement at MW-1 and MW-3 and on gravel landscaping at MW-2. Field parameters of pH, specific conductivity, temperature, dissolved oxygen and oxidation-reduction potential were recorded during purging. Monitor well sampling data forms are presented in Appendix B.

The samples were labeled and placed in a cooler with ice. The samples were delivered to Hall Environmental Analysis Laboratory, Inc. with complete chain-of-custody records. The samples were analyzed for volatile organic compounds (VOCs) and total naphthalenes using EPA Method 8260B; ethylene dibromide (EDB) using EPA Method 504.1; dissolved iron and dissolved manganese using EPA Method 6010C and chemical oxygen demand (COD) using EPA Method 410.4. Sampling protocols are presented in Appendix A. The laboratory report is presented in Appendix D.

C. Containment of Release

Dissolved petroleum contaminant concentrations exceeded standards for benzene in monitor well MW-1 (13 µg/L), and for total naphthalenes in monitor well MW-1 (59 µg/L). Monitor wells MW-2 and MW-3 did not contain dissolved petroleum concentrations above standards or laboratory detection limits.

Dissolved iron concentrations exceeded the NMWQCC standard of 1.0 milligrams per liter (mg/L) in monitor well MW-2 (2.0 mg/L). Monitor wells MW-1 and MW-3 contained dissolved iron concentrations below the standard (0.22 mg/L and 0.33 mg/L, respectively).

Dissolved manganese concentrations exceeded the NMWQCC standard of 0.2 mg/L in all three monitor wells: MW-1 (0.29 mg/L), MW-2 (0.86 mg/L) and MW-3 (0.98 mg/L).

Actionable dissolved benzene appears to be largely contained on-site; however, low-level benzene may extend a limited distance south to Hall Street.

Groundwater analytical data are summarized on Figures 4 and 5.

III. SUMMARY AND CONCLUSIONS

A. Discussion of Trends or Changes

Groundwater elevations have decreased an average of 0.20 feet since September 2019. Shallow groundwater flow direction and gradient are to the south-southeast at 0.0007 ft/ft. Groundwater elevations, flow direction and gradient are generally consistent with previously observed conditions.

MW-1: Dissolved benzene increased from 7.0 µg/L in September 2019 to 13 µg/L during this event, remaining above the standard of 5 µg/L. Dissolved total naphthalenes slightly increased from 54 µg/L in September 2019 to 59 µg/L during this event, remaining above the standard of 30 µg/L. Ethylbenzene was detected at 330 µg/L, remaining remain below the standard of 700 µg/L since February 1998. Total xylenes were detected at 16 µg/L, not having exceeded the standard of 620 µg/L since initial sampling in June 1992.

MW-1 contained a TDS concentration of 1,150 mg/L and a COD concentration of 26.1 mg/L.

MW-2: Dissolved benzene decreased from 9.4 µg/L September 2019 to <1.0 µg/L during this event, falling below the standard of 5 µg/L. All other dissolved petroleum contaminants remain below standards and laboratory detection limits.

MW-2 contained a TDS concentration of 1,330 mg/L. COD was not detected (<10.0 mg/L).

MW-3: All dissolved petroleum contaminants of concern continue to remain below standards and laboratory detection limits.

MW-3 contained a TDS concentration of 1,390 mg/L and a COD concentration of 12.8 mg/L.

B. Conclusions and Recommendations

HAI recommends continued groundwater monitoring in accordance with the current groundwater monitoring workplan.

HAI understands that the property owner may soon limit or revoke site access. Therefore, the timetable for corrective action should be accelerated. HAI recommends in-situ remediation of dissolved petroleum contaminants in the vicinity of MW-2 using chemical injection methods. The remedial approach should include the following:

- Treatment solution designed to increase DO and immobilize dissolved petroleum contaminants
- Treatment solution concentration sufficient to compensate for elevated dissolved iron, manganese and COD around MW-2.
- Treatment area to begin upgradient of MW-2 and extend downgradient toward Hall Street.
- Injection points spaced no further than 5 to 8 feet apart to ensure overlapping radius of influence.
- Injection volumes sufficient to achieve complete contact with the actionable petroleum contaminant mass.
- Remedial design sufficiently robust to achieve objectives with one treatment.

TABLES

1. Groundwater Elevation Data
2. Groundwater Volatile Organic Analytical Data
3. Groundwater Inorganic Analytical Data
4. Groundwater Field Parameter Data

FIGURES

1. Site Location Map
2. Site Map
3. Water Table Map
4. Groundwater Organic Analytical Results
5. Groundwater Inorganic Analytical Results
6. Dissolved Oxygen and ORP

APPENDICES

A. Groundwater Sampling Protocol
B. Hydraulic Gradient Calculation
C. Well Sampling Field Data Forms
D. Laboratory Report

TABLES

Table 1. Groundwater Elevation Data
Halsells Grocery, Hatch, New Mexico

Well ID	Date	Top of Casing Elevation (ft MSL)	Depth to NAPL (ft)	NAPL Thickness (ft)	Depth to Water (ft)	Groundwater Elevation (ft MSL)
MW-1	05/04/00	4,054.98	---	---	6.64	4,048.34
	07/26/00		---	---	5.11	4,049.87
	03/14/01		---	---	7.41	4,047.57
	06/14/01		---	---	6.06	4,048.92
	09/12/01		---	---	6.03	4,048.95
	05/15/02		---	---	7.17	4,047.81
	08/15/02		---	---	6.73	4,048.25
	11/26/02		---	---	7.44	4,047.54
	02/19/03		---	---	8.09	4,046.89
	09/12/06		---	---	5.81	4,049.17
	06/02/09		---	---	7.94	4,047.04
	11/22/11		13.19	0.02	13.21	4,041.79
	05/31/12		12.70	1.50	14.20	4,041.91
	06/19/12		12.41	0.88	13.29	4,042.35
	01/08/15		13.51	1.27	14.78	4,041.15
	04/28/15		14.59	1.69	16.28	4,039.97
	07/29/15		13.34	0.08	13.42	4,041.62
	10/14/15		---	Sheen	13.04	4,041.94
	01/18/17		---	Sheen	11.47	4,043.51
	07/05/17		---	Sheen	10.27	4,044.71
	09/05/19		---	---	10.40	4,044.58
	11/21/19		---	---	10.60	4,044.38
MW-2	05/04/00	4,054.54	---	---	6.26	4,048.28
	07/26/00		---	---	1.70	4,052.84
	03/14/01		---	---	7.04	4,047.50
	06/14/01		---	---	5.62	4,048.92
	09/12/01		---	---	5.64	4,048.90
	05/15/02		---	---	6.76	4,047.78
	08/15/02		---	---	5.70	4,048.84
	02/19/03		---	---	7.72	4,046.82
	09/12/06		---	---	5.46	4,049.08
	06/02/09		---	---	7.58	4,046.96
	11/22/11		---	---	12.15	4,042.39
	05/31/12		---	---	12.72	4,041.82
	06/19/12		---	---	12.30	4,042.24
	01/08/15		---	---	13.89	4,040.65
	04/28/15		---	---	14.73	4,039.81
	07/29/15		---	---	13.07	4,041.47
	10/14/15		---	---	12.75	4,041.79
	01/18/17		---	---	11.13	4,043.41
	07/05/17		---	---	9.89	4,044.65
	09/05/19		---	---	10.02	4,044.52
	11/21/19		---	---	10.21	4,044.33

--- not measured
ft feet
MSL mean sea level
NAPL non-aqueous phase liquid

Table 1. Groundwater Elevation Data
Halsells Grocery, Hatch, New Mexico

Well ID	Date	Top of Casing Elevation (ft MSL)	Depth to NAPL (ft)	NAPL Thickness (ft)	Depth to Water (ft)	Groundwater Elevation (ft MSL)
MW-3	05/04/00	4,054.85	---	---	6.48	4,048.37
	07/26/00		---	---	4.92	4,049.93
	03/14/01		---	---	7.31	4,047.54
	06/14/01		---	---	5.90	4,048.95
	09/12/01		---	---	5.91	4,048.94
	05/15/02		---	---	7.06	4,047.79
	08/15/02		---	---	6.58	4,048.27
	02/19/03		---	---	7.94	4,046.91
	09/12/06		---	---	5.64	4,049.21
	06/02/09		---	---	7.71	4,047.14
	11/22/11		---	---	12.28	4,042.57
	05/31/12		---	---	12.83	4,042.02
	06/19/12		---	---	12.39	4,042.46
	01/08/15		---	---	14.02	4,040.83
	04/28/15		---	---	14.80	4,040.05
	07/29/15		---	---	13.19	4,041.66
	10/14/15		---	---	12.83	4,042.02
	01/18/17		---	---	11.30	4,043.55
	07/05/17		---	---	10.06	4,044.79
	9/5/2019		---	---	10.19	4,044.66
	11/21/19		---	---	10.40	4,044.45

--- not measured
ft feet
MSL mean sea level
NAPL non-aqueous phase liquid

Table 2. Groundwater Volatile Organic Analytical Data
Halsells Grocery, Hatch, New Mexico

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDB (µg/L)	Total Naphthalenes (µg/L)
New Mexico Water Quality Control Commission Standard		**5**	**1,000**	**700**	**620**	**100**	**0.05**	**30**
MW-1	06/03/92	**863**	**4426**	**1165**	<0.2	--	--	--
	02/02/98	**84**	15	290	98	<25	--	--
	01/26/00	<5.0	<5.0	170	15	<5.0	<5.0	14
	05/02/00	**7.4**	2.1	130	20	<2.5	--	--
	07/27/00	**13**	2.3	120	19	7.8	<2.0	--
	03/14/01	**23**	<5.0	180	44	<25	<10	--
	06/15/01	**8.1**	1.4	67	13	<2.5	<1.0	--
	09/12/01	**14**	2.5	150	33	<2.5	<1.0	--
	05/15/02	**22**	<1.0	4.1	<4.5	<1.0	<1.0	<3.0
	08/15/02	**20**	<5.0	110	16	<25	--	--
	11/26/02	3.8	2.0	88	16	<2.5	--	--
	02/19/03	**7.1**	7.5	110	26	<25	--	--
	09/12/06	**81**	<10	220	130	<15	<10	**78**
	11/22/11	Not Sampled due to the Presence of NAPL						
	06/19/12	Not Sampled due to the Presence of NAPL						
	01/08/15	Not Sampled due to the Presence of NAPL						
	04/28/15	Not Sampled due to the Presence of NAPL						
	07/29/15	Not Sampled due to the Presence of NAPL						
	10/14/15	Not Sampled due to the Presence of NAPL						
	01/18/17	Not Sampled due to the Presence of NAPL						
	07/05/17	**36**	<5.0	470	99	<5.0	<0.0092	**669**
	09/05/19	**7.0**	<5.0	300	14	<5.0	<0.0094	**54**
	11/21/19	**13**	<5.0	330	16	<5.0	<0.0093	**59**
MW-2	06/03/92	**5.5**	26	6.1	27	--	--	--
	02/02/98	<0.5	<0.5	2.1	0.6	<2.5	--	--
	06/03/92	0.1	1.6	0.5	2.0	--	<0.1	--
	01/26/00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
	05/02/00	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
	07/27/00	<0.5	<0.5	<0.5	<0.5	<2.5	<1.0	--
	03/14/01	<0.5	<0.5	<0.5	<0.5	<2.5	<1.0	--
	06/15/01	<0.5	<0.5	2.2	1.0	<2.5	<1.0	--
	09/12/01	0.6	<0.5	<0.5	1.3	<2.5	<1.0	--
	05/15/02	1.1	<0.5	8.3	3.6	<2.5	--	--
	08/15/02	3.4	<2.5	<2.5	<5.0	<13	--	--
	02/19/03	<0.5	<0.5	<0.5	<1.0	<2.5	--	--
	09/12/06	**90**	<1.0	5.0	<3.0	<1.5	<1.0	3.9
	11/22/11	1.3	<1.0	1.1	<1.5	<1.0	<1.0	<2.0
	06/19/12	**5.6**	<1.0	<1.0	<1.5	<1.0	<1.0	<2.0
	01/08/15	<1.0	<1.0	<1.0	<1.5	<1.0	<0.010	<2.0
	04/28/15	<2.0	<2.0	<2.0	<3.0	<2.0	<0.010	<4.0
	07/29/15	<1.0	<1.0	<1.0	<1.5	<1.0	<0.010	<2.0
	10/14/15	<1.0	<1.0	<1.0	<1.5	<1.0	<0.010	<2.0
	01/18/17	<1.0	<1.0	<1.0	<1.5	<1.0	<0.010	<2.0
	07/05/17	Well Not Sampled						
	09/05/19	**9.4**	<1.0	1.0	<1.5	<1.0	<0.0094	13
	11/21/19	<1.0	<1.0	<1.0	<1.5	<1.0	<0.0094	<4.0

--- not analyzed
EDB ethylene dibromide
MTBE methyl tert-butyl-ether
ug/L micrograms per liter
Bolded values exceed NMWQCC Standard

Haller & Associates, Inc.
Environmental Services & Geoscience

Table 2. Groundwater Volatile Organic Analytical Data
Halsells Grocery, Hatch, New Mexico

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	EDB (µg/L)	Total Naphthalenes (µg/L)
New Mexico Water Quality Control Commission Standard		**5**	**1,000**	**700**	**620**	**100**	**0.05**	**30**
MW-3	06/03/92	0.1	1.6	0.5	2.0	---	<0.1	---
	02/02/98	<0.5	<0.5	<0.5	<0.5	<2.5	---	---
	01/26/00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
	05/02/00	<0.5	<0.5	<0.5	<0.5	<2.5	---	---
	07/27/00	<0.5	<0.5	<0.5	<0.5	<2.5	<1.0	---
	03/14/01	<0.5	<0.5	<0.5	<0.5	<2.5	<1.0	---
	06/15/01	<0.5	<0.5	<0.5	<0.5	<2.5	<1.0	---
	09/12/01	<0.5	<0.5	<0.5	<0.5	<2.5	<1.0	---
	05/15/02	<0.5	<0.5	<0.5	<1.0	<2.5	---	---
	08/15/02	<0.5	<0.5	<0.5	<1.0	<2.5	---	---
	02/19/03	<0.5	<0.5	<0.5	<1.0	<2.5	---	---
	09/12/06	<1.0	<1.0	<1.0	<3.0	<1.5	<1.0	<2.0
	11/22/11	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<2.0
	06/19/12	<1.0	<1.0	<1.0	<1.5	<1.0	<1.0	<2.0
	01/08/15	<1.0	<1.0	<1.0	<1.5	<1.0	<0.010	<2.0
	04/28/15	Well Not Sampled						
	07/29/15	Well Not Sampled						
	10/14/15	Well Not Sampled						
	01/18/17	Well Not Sampled						
	07/05/17	Well Not Sampled						
	9/5/2019	<1.0	<1.0	<1.0	<1.5	<1.0	<0.0095	<4.0
	11/21/19	<1.0	<1.0	<1.0	<1.5	<1.0	<0.0094	<4.0

--- not analyzed
EDB ethylene dibromide
MTBE methyl tert-butyl-ether
ug/L micrograms per liter
Bolded values exceed NMWQCC Standard

Table 3. Groundwater Inorganic Analytical Data
Halsells Grocery, Hatch, New Mexico

Well ID	Date	Dissolved Iron	Dissolved Manganese	Total Dissolved Solids	Chemical Oxygen Demand
New Mexico Water Quality Control Commission Standard		**1.0**	**0.2**	**NA**	**NA**
MW-1	09/05/19	0.36	**0.45**	1,290	14.3
	11/21/19	0.22	**0.29**	1,150	26.1
MW-2	09/05/19	**2.1**	**1.2**	1,290	<10.0
	11/21/19	**2.0**	**0.86**	1,330	<10.0
MW-3	09/05/19	0.37	**0.97**	1,360	15.4
	11/21/19	0.33	**0.98**	1,390	12.8

NA not applicable
Results expressed in milligrams per liter
Bolded values exceed NMWQCC Standard

Haller & Associates, Inc.
Environmental Services & Geoscience

Table 4. Groundwater Field Parameter Data
Halsells Grocery, Hatch, New Mexico

Well ID	Date	pH	Specific Conductance (uS/cm)	Temperature (°C)	ORP (mv)	Dissolved Oxygen (mg/L)
MW-1	11/22/11	Not measured due to the presence of NAPL				
	06/19/12	Not measured due to the presence of NAPL				
	01/08/15	Not measured due to the presence of NAPL				
	04/28/15	Not measured due to the presence of NAPL				
	07/29/15	Not measured due to the presence of NAPL				
	10/14/15	Not measured due to the presence of NAPL				
	07/05/17	7.46	1,747	22.6	---	NM
	09/05/19	7.31	1,961	23.7	-194.9	2.73
	11/21/19	7.21	1,829	24.1	-313.0	0.00
MW-2	11/22/11	7.20	1,435	23.9	---	1.50
	06/19/12	7.29	1,560	23.5	---	NM
	01/08/15	7.25	1,631	22.0	---	1.06
	04/28/15	7.59	1,698	21.6	---	1.55
	07/29/15	7.31	717	22.5	---	1.17
	10/14/15	7.37	1,628	24.3	---	1.85
	01/18/17	7.17	1,837	21.4	---	1.52
	07/05/17	Well Not Sampled				
	09/05/19	7.18	1,945	23.9	-104.4	2.84
	11/21/19	7.22	1,966	23.3	-94.3	0.00
MW-3	11/22/11	7.25	1,485	22.8	---	1.64
	06/19/12	7.22	1,584	22.4	---	NM
	01/08/15	7.11	1,682	21.0	---	3.87
	04/28/15	Well Not Sampled				
	07/29/15	Well Not Sampled				
	10/14/15	Well Not Sampled				
	01/18/17	Well Not Sampled				
	07/05/17	Well Not Sampled				
	09/05/19	7.11	1,994	23.5	-34.6	3.36
	11/21/19	7.08	2,023	24.1	115.6	1.00

ORP oxidation-reduction potential
uS/cm microsiemens per centimeter
mV millivolts
mg/L milligrams per liter
--- not collected

FIGURES

IMAGE SOURCE: GOOGLE EARTH 05-05-19

Haller & Associates, Inc.
Environmental Services & Geoscience

P.O. BOX 1667, 12220 N. HWY 14, SUITE C
CEDAR CREST, NEW MEXICO 87008

SITE LOCATION MAP

HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO

FIGURE
1

Haller & Associates, Inc.
Environmental Services & Geoscience

P.O. BOX 1667, 12220 N. HWY 14, SUITE C
CEDAR CREST, NEW MEXICO 87008

SITE MAP

HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO

FIGURE
2

Haller & Associates, Inc.
Environmental Services & Geoscience

P.O. BOX 1667, 12220 N. HWY 14, SUITE C
CEDAR CREST, NEW MEXICO 87008

WATER TABLE MAP

HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO

NOVEMBER 21, 2019

FIGURE
3

Haller & Associates, Inc.
Environmental Services & Geoscience
P.O. BOX 1667, 12220 N. HWY 14, SUITE C
CEDAR CREST, NEW MEXICO 87008

GROUNDWATER ORGANIC ANALYTICAL

HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO
NOVEMBER 21, 2019

FIGURE
4

Haller & Associates, Inc.
Environmental Services & Geoscience
P.O. BOX 1667, 12220 N. HWY 14, SUITE C
CEDAR CREST, NEW MEXICO 87008

GROUNDWATER INORGANIC ANALYTICAL
HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO
NOVEMBER 21, 2019

FIGURE
5

Haller & Associates, Inc.
Environmental Services & Geoscience

P.O. BOX 1667, 12220 N. HWY 14, SUITE C
CEDAR CREST, NEW MEXICO 87008

DISSOLVED OXYGEN & ORP

HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO
NOVEMBER 21, 2019

FIGURE
6

APPENDIX A

GROUNDWATER SAMPLING PROTOCOLS

Haller & Associates, Inc.
Environmental Services & Geoscience

October 26, 2018

Mr. Christopher Holmes
New Mexico Environment Department
Petroleum Storage Tank Bureau
2905 Rodeo Park Drive, Building #1
Santa Fe, NM 87505

RE: Quarterly Groundwater Monitoring Workplan
Halsell's Grocery, 112 School Street, Hatch, New Mexico
Facility ID #6053 Release ID #287

Dear Mr. Holmes:

Haller & Associates, Inc. (HAI) is pleased to submit the enclosed workplan for one year of quarterly groundwater monitoring at the Halsell's Grocery state lead site in Hatch, New Mexico. Work will be subject to the conditions of Professional Services Contract #18-667-3200-0012.

The scope of work presented in this workplan is based on guidance received via email from the New Mexico Environment Department - Petroleum Storage Tank Bureau (NMED-PSTB) on October 18, 2018. The purpose of this groundwater monitoring workplan is to evaluate and prepare for chemical injection to remediate the site with the goal of moving the site to "No Further Action Status." This scope of work consists of quarterly monitoring of all three on-site monitor wells.

If you have questions or workplan modifications, please call me at (505) 281-9333.

Sincerely,

HALLER & ASSOCIATES, INC.

Micah D. Nauck
Project Manager / Geologist

Enclosure: Halsell's Grocery Quarterly GM Workplan

QUARTERLY GROUNDWATER MONITORING WORKPLAN
HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO

1.0 OVERVIEW

The scope of this workplan consists of four quarters of groundwater monitoring and associated reports. All 3 onsite monitor wells will be gauged and sampled each quarter. Field and laboratory data will be presented in quarterly groundwater monitoring reports. A certified professional geologist will have direct supervisory control over all fieldwork and report preparation.

Groundwater samples will be collected each quarter from the following monitor wells: MW-1, MW-1 and MW-3. The quarterly monitoring regimen is summarized in Table 1.

2.0 GROUNDWATER MONITORING

2.1 Static Water Levels

Prior to sampling, all 3 monitor wells (MW-1, MW-2 and MW-3) will be opened and allowed to barometrically equilibrate for several minutes before gauging. Static water levels will then be gauged in all 3 monitor wells. The wells will be gauged in order of increasing contaminant concentrations, based on historic data. Static water levels and total depths will be measured to the nearest 0.01 foot using an electronic interface probe. The probe will be decontaminated prior to use and between wells using an Alconox detergent solution and clean tap water rinse.

2.2 Monitor Well Sampling

Each monitor well will be sampled using the low-flow method to minimize sample turbidity. Low-flow sampling will be conducted using a peristaltic pump and new tubing for each well. Polyethylene tubing will be used in the well which will be attached to silicone tubing at the pump-head on the surface. Purge water will be observed for the presence of petroleum sheen and/or odor. Field measurements of pH, specific conductivity, temperature, dissolved oxygen (DO) and oxidation-reduction potential (ORP) will be collected through a flow-cell and recorded during purging. Purge water will be ground-discharged in close proximity to each well. Field data will be recorded on monitor well field sampling forms and presented in each quarterly groundwater monitoring report.

2.3 Groundwater Sample Analysis

Groundwater samples from all 3 monitor wells will be analyzed for the following:

- Volatile Organic Compounds (VOCs) – EPA Method 8260B
- Ethylene Dibromide (EDB) – EPA Method 504.1 (for quarter 1 only)
- Dissolved Iron (Fe) & Manganese (Mn) – EPA Method 6010
- Total Dissolved Solids (TDS) – Standard Method 2540C
- Chemical Oxygen Demand (COD) – EPA Method 410

Samples for VOCs and EDB analysis will be pumped at a slow, non-turbulent rate into clean 40-milliliter (mL) glass vials with mercuric chloride ($HgCl_2$) and sodium thiosulfate ($Na_2S_2O_3$) preservatives, respectively. Each vial will be filled leaving no bubbles or headspace.

Dissolved Fe and Mn samples will be pumped through a high-capacity inline 0.45-micron filter into a 250-mL plastic bottle with nitric acid (HNO_3) preservative. TDS samples will be pumped into a 250-mL plastic bottle. COD samples will be pumped into a 125-mL plastic bottle with sulfuric acid (H_2SO_4) preservative. Analytical quality control requirements are summarized in Table 2.

2.4 Sample Custody and Quality Control

Each sample container will be labeled with respect to sample ID, site name, time and date of collection, preservative, sampler's initials and requested analyses. The samples will be placed in a cooler with ice. The samples will be delivered to Hall Environmental Analysis Laboratory, Inc., with complete chain-of-custody records.

New disposable bailers, tubing and filters will be used to sample each monitor. After each groundwater monitoring event is complete, the tubing and filters will be disposed. New disposable bailers, tubing and filters will be provided for each subsequent event.

3.0 QUARTERLY MONITORING REPORTS

Each quarterly groundwater monitoring report will present updated discussion of changes and trends in groundwater elevations, flow direction, VOC concentrations, dissolved Fe and Mn concentrations, TDS, COD, DO and ORP.

Field and laboratory data will be summarized in cumulative tables. Figures and appendices will include a site location map, site map based on satellite imagery, water table map with groundwater flow direction, groundwater analytical results maps, COD map, DO and ORP map, laboratory report, field data forms, and hydraulic gradient calculation. The quarterly groundwater monitoring reports will substantially conform to PSTB report format.

4.0 COMPENSATION

The first quarterly groundwater monitoring event and associated report will be completed as described herein for a Fixed Fee of $5,561.15, including NMGRT. The second through fourth quarterly monitoring events and associated reports will be completed as described herein for a Fixed Fee of $5,417.46, including NMGRT. The total cost for four quarters of groundwater monitoring and associated reports is $21,813.53, including NMGRT. Costs will not be exceeded without PSTB's prior written approval.

Professional services and associated costs will be subject to conditions of Professional Services Contract #18-667-3200-0012.

APPENDIX B

HYDRAULIC GRADIENT CALCULATION

HYDRAULIC GRADIENT CALCULATION

Halsell's Grocery
Hatch, New Mexico

Hydraulic Gradient – November 21, 2019:

$$\frac{4{,}044.45 - 4{,}044.33}{175 \text{ ft}} = \frac{0.12 \text{ ft}}{175 \text{ ft}} =$$ **0.0007 ft/ft to the south-southeast**

MW-3 groundwater elevation:	4,044.45 feet above Mean Sea Level
MW-2 groundwater elevation:	4,044.33 feet above Mean Sea Level
Distance from MW-3 to MW-2:	175 feet

APPENDIX C

WELL SAMPLING FIELD DATA FORMS

Haller & Associates, Inc.
Environmental Services & Geoscience

MONITOR WELL SAMPLING FIELD FORM

Well ID MW-1 | Date Gauged 11/21/2019
Site Halsell's Grocery | Time Gauged 1250

Depth to NAPL --- ft. | Well diameter 2 in
Depth to water 10.60 ft. | Fluid column height 9.24 ft
Total Depth 19.84 ft. | Volume in well 1.6 gal

(Minimum 3 well volumes = 4.8 gallons)

GROUNDWATER SAMPLING DATA

Time/date purged 1349 11/21/2019 | Purge method Low-Flow Peristaltic Pump

Temp.	24.23	Cond.	1869	pH	7.09	ORP	-283.0	DO	0.22	Gal	Init.
Temp.	24.17	Cond.	1845	pH	7.14	ORP	-308.6	DO	0.00	Gal	0.50
Temp.	24.05	Cond.	1837	pH	7.19	ORP	-313.0	DO	0.00	Gal	0.75
Temp.	24.10	Cond.	1829	pH	7.21	ORP	-313.0	DO	0.00	Gal	1.00
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	

Actual purged volume 1.10 gal | Measurements stabilized within ±10%? Yes

Time/date sampled 1505 11/21/2019 | Purged/Sampled by MN

Sample method Sample from end of new PE tubing

Requested analyses 8260B, 504.1, 6010, 2540C, 410

Comments/observations Sample clear. Degraded HC + Sulfur odor

Common Well Casing Volume Data

2" Casing = 0.17 gal/ft	*4" Casing = 0.66 gal/ft*	*6" Casing = 1.50 gal/ft*	*8" Casing = 2.63 gal/ft*

Haller & Associates, Inc.
Environmental Services & Geoscience

MONITOR WELL SAMPLING FIELD FORM

Well ID: MW-2
Site: **Halsell's Grocery**
Date Gauged: **11/21/2019**
Time Gauged: 1241

Depth to NAPL: --- ft.
Depth to water: 10.21 ft.
Total Depth: 20.05 ft.
Well diameter: **2** in
Fluid column height: 9.84 ft
Volume in well: 1.7 gal

(Minimum 3 well volumes = 5.1 gallons)

GROUNDWATER SAMPLING DATA

Time/date purged: 1400 **11/21/2019** Purge method: **Low-Flow Peristaltic Pump**

Temp.	23.18	Cond.	1973	pH	6.91	ORP	0.8	DO 2.71	Gal Initial
Temp.	23.39	Cond.	1972	pH	7.19	ORP	-71.9	DO 0.52	Gal 0.5
Temp.	23.41	Cond.	1982	pH	7.22	ORP	-91.7	DO 0.00	Gal 1.0
Temp.	23.33	Cond.	1966	pH	7.22	ORP	-94.3	DO 0.00	Gal 1.5
Temp.		Cond.		pH		ORP		DO	Gal
Temp.		Cond.		pH		ORP		DO	Gal
Temp.		Cond.		pH		ORP		DO	Gal
Temp.		Cond.		pH		ORP		DO	Gal

Actual purged volume: 1.6 gal
Measurements stabilized within ±10%? Yes

Time/date sampled: 1427 **11/21/2019** Purged/Sampled by: **MN**

Sample method: **Sample from end of new PE tubing**

Requested analyses: **8260B, 504.1, 6010, 2540C, 410**

Comments/observations: Sample clear. Degraded HC odor

Common Well Casing Volume Data

2" Casing = 0.17 gal/ft	*4" Casing = 0.66 gal/ft*	*6" Casing = 1.50 gal/ft*	*8" Casing = 2.63 gal/ft*

Haller & Associates, Inc.
Environmental Services & Geoscience

MONITOR WELL SAMPLING FIELD FORM

Well ID: MW-3 | Date Gauged: 11/21/2019
Site: Halsell's Grocery | Time Gauged: 1235

Depth to NAPL	---	ft.	Well diameter	2	in
Depth to water	10.40	ft.	Fluid column height	9.53	ft
Total Depth	19.93	ft.	Volume in well	1.6	gal

(Minimum 3 well volumes = 4.8 gallons)

GROUNDWATER SAMPLING DATA

Time/date purged: 1310 11/21/2019 | Purge method: Low-Flow Peristaltic Pump

Temp.	24.32	Cond.	2005	pH	6.95	ORP	185.9	DO	4.03	Gal	Initial
Temp.	24.45	Cond.	2023	pH	7.06	ORP	185.2	DO	2.26	Gal	0.50
Temp.	24.28	Cond.	2020	pH	7.09	ORP	118.2	DO	1.03	Gal	0.75
Temp.	24.11	Cond.	2023	pH	7.08	ORP	115.6	DO	1.00	Gal	1.00
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	

Actual purged volume: 1.25 gal | Measurements stabilized within ±10%? Yes

Time/date sampled: 1340 11/21/2019 | Purged/Sampled by: MN

Sample method: Sample from end of new PE tubing

Requested analyses: 8260B, 504.1, 6010, 2540C, 410

Comments/observations: Sample clear, no odor

Common Well Casing Volume Data

2" Casing = 0.17 gal/ft	*4" Casing = 0.66 gal/ft*	*6" Casing = 1.50 gal/ft*	*8" Casing = 2.63 gal/ft*

APPENDIX D

LABORATORY REPORT

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

December 11, 2019

Micah Nauck
Haller and Associates
P. O. Box 1667
Cedar Crest, NM 87008-1667
TEL:
FAX:

RE: Halsells Grocery OrderNo.: 1911A64

Dear Micah Nauck:

Hall Environmental Analysis Laboratory received 3 sample(s) on 11/22/2019 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 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-1
Project: Halsells Grocery
Collection Date: 11/21/2019 3:05:00 PM
Lab ID: 1911A64-001 **Matrix:** AQUEOUS **Received Date:** 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1150	20.0	*	mg/L	1	11/27/2019 7:55:00 PM	49041
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **pmf**	
Iron	0.22	0.020		mg/L	1	12/9/2019 2:00:07 PM	B65036
Manganese	0.29	0.0020		mg/L	1	12/9/2019 2:00:07 PM	B65036
EPA METHOD 8011/504.1: EDB						Analyst: **CLP**	
1,2-Dibromoethane	ND	0.0093		µg/L	1	11/26/2019 7:28:15 AM	48980
NOTES: No trip blank was included with work order							
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Benzene	13	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Toluene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Ethylbenzene	330	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2,4-Trimethylbenzene	12	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,3,5-Trimethylbenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Naphthalene	25	10		µg/L	5	11/26/2019 12:06:00 PM	R64771
1-Methylnaphthalene	34	20		µg/L	5	11/26/2019 12:06:00 PM	R64771
2-Methylnaphthalene	ND	20		µg/L	5	11/26/2019 12:06:00 PM	R64771
Acetone	ND	50		µg/L	5	11/26/2019 12:06:00 PM	R64771
Bromobenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Bromodichloromethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Bromoform	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Bromomethane	ND	15		µg/L	5	11/26/2019 12:06:00 PM	R64771
2-Butanone	ND	50		µg/L	5	11/26/2019 12:06:00 PM	R64771
Carbon disulfide	ND	50		µg/L	5	11/26/2019 12:06:00 PM	R64771
Carbon Tetrachloride	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Chlorobenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Chloroethane	ND	10		µg/L	5	11/26/2019 12:06:00 PM	R64771
Chloroform	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Chloromethane	ND	15		µg/L	5	11/26/2019 12:06:00 PM	R64771
2-Chlorotoluene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
4-Chlorotoluene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
cis-1,2-DCE	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	11/26/2019 12:06:00 PM	R64771
Dibromochloromethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-1
Project: Halsells Grocery
Collection Date: 11/21/2019 3:05:00 PM
Lab ID: 1911A64-001
Matrix: AQUEOUS
Received Date: 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Dibromomethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2-Dichlorobenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,3-Dichlorobenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,4-Dichlorobenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Dichlorodifluoromethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,1-Dichloroethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,1-Dichloroethene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2-Dichloropropane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,3-Dichloropropane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
2,2-Dichloropropane	ND	10		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,1-Dichloropropene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Hexachlorobutadiene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
2-Hexanone	ND	50		µg/L	5	11/26/2019 12:06:00 PM	R64771
Isopropylbenzene	57	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
4-Isopropyltoluene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
4-Methyl-2-pentanone	ND	50		µg/L	5	11/26/2019 12:06:00 PM	R64771
Methylene Chloride	ND	15		µg/L	5	11/26/2019 12:06:00 PM	R64771
n-Butylbenzene	ND	15		µg/L	5	11/26/2019 12:06:00 PM	R64771
n-Propylbenzene	100	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
sec-Butylbenzene	8.7	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Styrene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
tert-Butylbenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	11/26/2019 12:06:00 PM	R64771
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
trans-1,2-DCE	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,1,1-Trichloroethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,1,2-Trichloroethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Trichloroethene (TCE)	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Trichlorofluoromethane	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
1,2,3-Trichloropropane	ND	10		µg/L	5	11/26/2019 12:06:00 PM	R64771
Vinyl chloride	ND	5.0		µg/L	5	11/26/2019 12:06:00 PM	R64771
Xylenes, Total	16	7.5		µg/L	5	11/26/2019 12:06:00 PM	R64771
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	5	11/26/2019 12:06:00 PM	R64771
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	5	11/26/2019 12:06:00 PM	R64771
Surr: Dibromofluoromethane	94.4	70-130		%Rec	5	11/26/2019 12:06:00 PM	R64771

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-1
Project: Halsells Grocery
Collection Date: 11/21/2019 3:05:00 PM
Lab ID: 1911A64-001
Matrix: AQUEOUS
Received Date: 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Surr: Toluene-d8	93.6	70-130		%Rec	5	11/26/2019 12:06:00 PM	R64771

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

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-2
Project: Halsells Grocery
Collection Date: 11/21/2019 2:27:00 PM
Lab ID: 1911A64-002 **Matrix:** AQUEOUS **Received Date:** 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1330	20.0	*	mg/L	1	11/27/2019 7:55:00 PM	49041
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **pmf**	
Iron	2.0	0.10		mg/L	5	12/9/2019 2:27:30 PM	B65036
Manganese	0.86	0.0020		mg/L	1	12/9/2019 2:01:56 PM	B65036
EPA METHOD 8011/504.1: EDB						Analyst: **CLP**	
1,2-Dibromoethane	ND	0.0094		µg/L	1	11/26/2019 7:43:18 AM	48980
NOTES:							
No trip blank was included with work order							
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Benzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Toluene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Ethylbenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Naphthalene	ND	2.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1-Methylnaphthalene	ND	4.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
2-Methylnaphthalene	ND	4.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Acetone	ND	10		µg/L	1	11/26/2019 1:17:00 PM	R64771
Bromobenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Bromodichloromethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Bromoform	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Bromomethane	ND	3.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
2-Butanone	ND	10		µg/L	1	11/26/2019 1:17:00 PM	R64771
Carbon disulfide	ND	10		µg/L	1	11/26/2019 1:17:00 PM	R64771
Carbon Tetrachloride	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Chlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Chloroethane	ND	2.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Chloroform	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Chloromethane	ND	3.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
2-Chlorotoluene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
4-Chlorotoluene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
cis-1,2-DCE	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Dibromochloromethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-2
Project: Halsells Grocery
Collection Date: 11/21/2019 2:27:00 PM
Lab ID: 1911A64-002 **Matrix:** AQUEOUS **Received Date:** 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Dibromomethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,1-Dichloroethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,1-Dichloroethene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2-Dichloropropane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,3-Dichloropropane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
2,2-Dichloropropane	ND	2.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,1-Dichloropropene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Hexachlorobutadiene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
2-Hexanone	ND	10		µg/L	1	11/26/2019 1:17:00 PM	R64771
Isopropylbenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
4-Isopropyltoluene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
4-Methyl-2-pentanone	ND	10		µg/L	1	11/26/2019 1:17:00 PM	R64771
Methylene Chloride	ND	3.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
n-Butylbenzene	ND	3.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
n-Propylbenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
sec-Butylbenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Styrene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
tert-Butylbenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
trans-1,2-DCE	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Trichloroethene (TCE)	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Trichlorofluoromethane	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Vinyl chloride	ND	1.0		µg/L	1	11/26/2019 1:17:00 PM	R64771
Xylenes, Total	ND	1.5		µg/L	1	11/26/2019 1:17:00 PM	R64771
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	11/26/2019 1:17:00 PM	R64771
Surr: 4-Bromofluorobenzene	95.6	70-130		%Rec	1	11/26/2019 1:17:00 PM	R64771
Surr: Dibromofluoromethane	101	70-130		%Rec	1	11/26/2019 1:17:00 PM	R64771

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-2
Project: Halsells Grocery
Collection Date: 11/21/2019 2:27:00 PM
Lab ID: 1911A64-002
Matrix: AQUEOUS
Received Date: 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Surr: Toluene-d8	93.9	70-130		%Rec	1	11/26/2019 1:17:00 PM	R64771

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

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-3
Project: Halsells Grocery
Collection Date: 11/21/2019 1:40:00 PM
Lab ID: 1911A64-003 **Matrix:** AQUEOUS **Received Date:** 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **KS**	
Total Dissolved Solids	1390	20.0	*	mg/L	1	11/27/2019 7:55:00 PM	49041
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **pmf**	
Iron	0.33	0.020		mg/L	1	12/9/2019 2:03:37 PM	B65036
Manganese	0.98	0.0020		mg/L	1	12/9/2019 2:03:37 PM	B65036
EPA METHOD 8011/504.1: EDB						Analyst: **CLP**	
1,2-Dibromoethane	ND	0.0094		µg/L	1	11/26/2019 7:58:19 AM	48980
NOTES:							
No trip blank was included with work order							
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Benzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Toluene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Ethylbenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Naphthalene	ND	2.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1-Methylnaphthalene	ND	4.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
2-Methylnaphthalene	ND	4.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Acetone	ND	10		µg/L	1	11/26/2019 1:41:00 PM	R64771
Bromobenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Bromodichloromethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Bromoform	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Bromomethane	ND	3.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
2-Butanone	ND	10		µg/L	1	11/26/2019 1:41:00 PM	R64771
Carbon disulfide	ND	10		µg/L	1	11/26/2019 1:41:00 PM	R64771
Carbon Tetrachloride	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Chlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Chloroethane	ND	2.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Chloroform	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Chloromethane	ND	3.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
2-Chlorotoluene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
4-Chlorotoluene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
cis-1,2-DCE	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Dibromochloromethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-3
Project: Halsells Grocery
Collection Date: 11/21/2019 1:40:00 PM
Lab ID: 1911A64-003 **Matrix:** AQUEOUS **Received Date:** 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Dibromomethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2-Dichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,3-Dichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,4-Dichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Dichlorodifluoromethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,1-Dichloroethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,1-Dichloroethene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2-Dichloropropane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,3-Dichloropropane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
2,2-Dichloropropane	ND	2.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,1-Dichloropropene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Hexachlorobutadiene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
2-Hexanone	ND	10		µg/L	1	11/26/2019 1:41:00 PM	R64771
Isopropylbenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
4-Isopropyltoluene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
4-Methyl-2-pentanone	ND	10		µg/L	1	11/26/2019 1:41:00 PM	R64771
Methylene Chloride	ND	3.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
n-Butylbenzene	ND	3.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
n-Propylbenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
sec-Butylbenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Styrene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
tert-Butylbenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
trans-1,2-DCE	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,1,1-Trichloroethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,1,2-Trichloroethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Trichloroethene (TCE)	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Trichlorofluoromethane	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
1,2,3-Trichloropropane	ND	2.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Vinyl chloride	ND	1.0		µg/L	1	11/26/2019 1:41:00 PM	R64771
Xylenes, Total	ND	1.5		µg/L	1	11/26/2019 1:41:00 PM	R64771
Surr: 1,2-Dichloroethane-d4	107	70-130		%Rec	1	11/26/2019 1:41:00 PM	R64771
Surr: 4-Bromofluorobenzene	96.9	70-130		%Rec	1	11/26/2019 1:41:00 PM	R64771
Surr: Dibromofluoromethane	99.0	70-130		%Rec	1	11/26/2019 1:41:00 PM	R64771

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Haller and Associates
Client Sample ID: MW-3
Project: Halsells Grocery
Collection Date: 11/21/2019 1:40:00 PM
Lab ID: 1911A64-003
Matrix: AQUEOUS
Received Date: 11/22/2019 8:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Surr: Toluene-d8	93.5	70-130		%Rec	1	11/26/2019 1:41:00 PM	R64771

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

December 05, 2019

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1165099

Samples Received: 11/26/2019

Project Number:

Description:

Report To:

4901 Hawkins NE

Albuquerque, NM 87109

Entire Report Reviewed By: Daphne R Richards

Daphne Richards
Project Manager

TABLE OF CONTENTS

1911A64-001E MW-1 L1165099-01 WW

Collected by | Collected date/time 11/21/19 15:05 | Received date/time 11/26/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 410.4	WG1390314	1	12/04/19 11:00	12/04/19 15:29	BAM	Mt. Juliet, TN

1911A64-002E MW-2 L1165099-02 WW

Collected by | Collected date/time 11/21/19 14:27 | Received date/time 11/26/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 410.4	WG1390314	1	12/04/19 11:00	12/04/19 15:29	BAM	Mt. Juliet, TN

1911A64-003E MW-3 L1165099-03 WW

Collected by | Collected date/time 11/21/19 13:40 | Received date/time 11/26/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 410.4	WG1390314	1	12/04/19 11:00	12/04/19 15:29	BAM	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Daphne R Richards

Daphne Richards
Project Manager

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
COD	26.1		10.0	1	12/04/2019 15:29	WG1390314

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
COD	ND		10.0	1	12/04/2019 15:29	WG1390314

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
COD	12.8		10.0	1	12/04/2019 15:29	WG1390314

Method Blank (MB)

(MB) R3479091-1 12/04/19 15:26

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
COD	U		3.00	10.0

L1164756-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1164756-01 12/04/19 15:26 • (DUP) R3479091-3 12/04/19 15:26

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	ND	8.00	1	0.000		20

L1165099-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1165099-03 12/04/19 15:29 • (DUP) R3479091-6 12/04/19 15:30

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	12.8	12.7	1	0.978		20

Laboratory Control Sample (LCS)

(LCS) R3479091-2 12/04/19 15:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	222	223	101	90.0-110	

L1164796-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1164796-01 12/04/19 15:28 • (MS) R3479091-4 12/04/19 15:28 • (MSD) R3479091-5 12/04/19 15:28

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	400	88.3	504	499	104	103	1	80.0-120			0.976	20

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

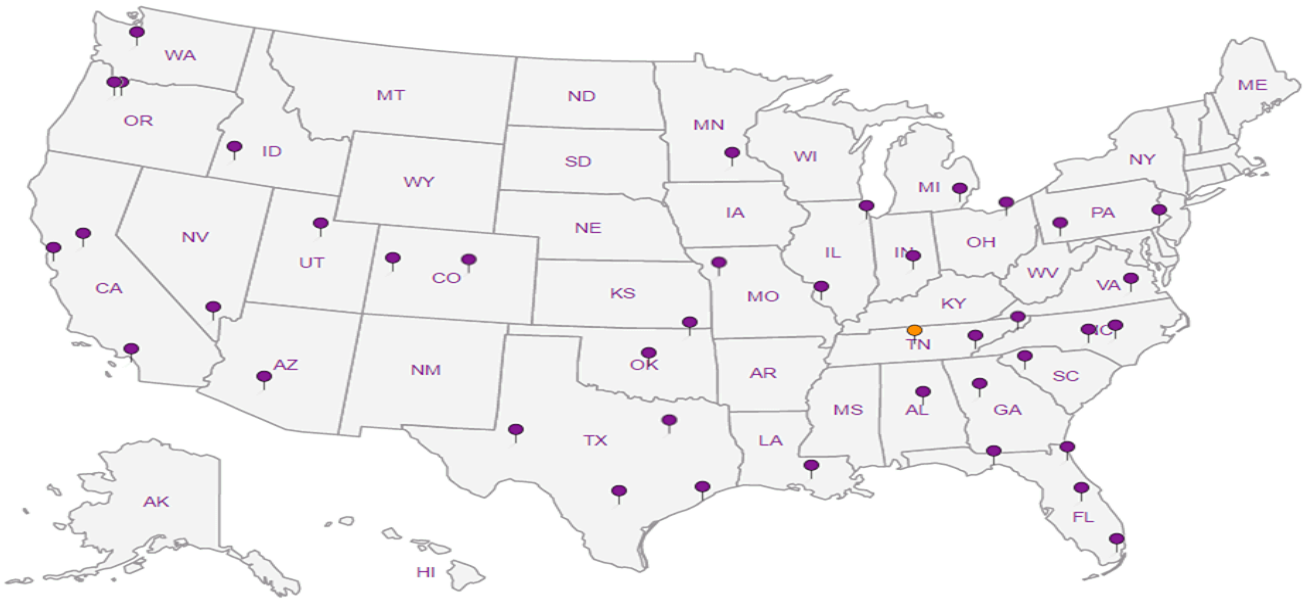
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



HALL ENVIRONMENTAL ANALYSIS LABORATORY

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 CONTRATOR:	ESC PACE	COMPANY: ESC PACE	PHONE: (800) 767-5859	FAX: (615) 758-5859	
ADDRESS:	12065 Lebanon Rd		ACCOUNT #:	EMAIL:	
CITY, STATE, ZIP:	Mt. Juliet, TN 37122				L1165099

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS	
1	1911A64-001E	MW-1	500HDPEH2SO4	Aqueous	11/21/2019 3:05:00 PM	1	COD	-01
2	1911A64-002E	MW-2	500HDPEH2SO4	Aqueous	11/21/2019 2:27:00 PM	1	COD	-02
3	1911A64-003E	MW-3	500HDPEH2SO4	Aqueous	11/21/2019 1:40:00 PM	1	COD	-03

B048

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.

RAD SCREEN: <0.5 mR/hr

Relinquished By:	Date: 11/22/2019	Time: 8:33 AM	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date: 11/26/19	Time: 0830

TAT: Standard ☒ RUSH Next BD ☐ 2nd BD ☐ 3rd BD ☐

REPORT TRANSMITTAL DESIRED:
☐ HARDCOPY (extra cost) ☐ FAX ☐ EMAIL ☐ ONLINE

FOR LAB USE ONLY
Temp of samples 0.3+1.2=1.5 BA Attempt to Cool ? Y
Comments: COLST

Tracking # 9510 1669 2031
Containers Received 3

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: HALLENVANM	L1165099	
Cooler Received/Opened On: 11/26/19 Temperature: 0.3		
Received By: Willie Taylor 0830		
Signature: Willie Taylor		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?		✓	
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?		✓	

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911A64**

11-Dec-19

Client: Haller and Associates

Project: Halsells Grocery

Sample ID: **MB-48980**	SampType: **MBLK**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **PBW**	Batch ID: **48980**	RunNo: **64768**
Prep Date: **11/25/2019**	Analysis Date: **11/25/2019**	SeqNo: **2219509** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Sample ID: **LCS-48980**	SampType: **LCS**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **LCSW**	Batch ID: **48980**	RunNo: **64768**
Prep Date: **11/25/2019**	Analysis Date: **11/25/2019**	SeqNo: **2219512** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.12	0.010	0.1000	0	118	70	130			

Sample ID: **LCS-48980-2**	SampType: **LCS**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **LCSW**	Batch ID: **48980**	RunNo: **64768**
Prep Date: **11/25/2019**	Analysis Date: **11/25/2019**	SeqNo: **2219513** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.12	0.010	0.1000	0	121	70	130			

Sample ID: **MB-48980**	SampType: **MBLK**	TestCode: **EPA Method 8011/504.1: EDB**
Client ID: **PBW**	Batch ID: **48980**	RunNo: **64768**
Prep Date: **11/25/2019**	Analysis Date: **11/25/2019**	SeqNo: **2219572** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	ND	0.010								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911A64**

11-Dec-19

Client: Haller and Associates

Project: Halsells Grocery

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R64771**	RunNo: **64771**
Prep Date:	Analysis Date: **11/26/2019**	SeqNo: **2221293** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	19	1.0	20.00	0	96.9	70	130			
Chlorobenzene	20	1.0	20.00	0	99.1	70	130			
1,1-Dichloroethene	19	1.0	20.00	0	94.6	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	98.2	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		97.5	70	130			
Surr: Dibromofluoromethane	9.5		10.00		94.7	70	130			
Surr: Toluene-d8	9.5		10.00		94.8	70	130			

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64771**	RunNo: **64771**
Prep Date:	Analysis Date: **11/26/2019**	SeqNo: **2221296** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911A64**
11-Dec-19

Client: Haller and Associates
Project: Halsells Grocery

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64771**	RunNo: **64771**
Prep Date:	Analysis Date: **11/26/2019**	SeqNo: **2221296** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyltoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911A64**

11-Dec-19

Client: Haller and Associates

Project: Halsells Grocery

Sample ID: **RB**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R64771**	RunNo: **64771**
Prep Date:	Analysis Date: **11/26/2019**	SeqNo: **2221296** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	11		10.00		106	70	130			
Surr: 4-Bromofluorobenzene	9.9		10.00		99.4	70	130			
Surr: Dibromofluoromethane	9.6		10.00		95.8	70	130			
Surr: Toluene-d8	9.5		10.00		94.5	70	130			

Sample ID: **1911A64-001ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW-1**	Batch ID: **R64771**	RunNo: **64771**
Prep Date:	Analysis Date: **11/26/2019**	SeqNo: **2221298** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	110	5.0	100.0	12.71	99.8	70	130			
Toluene	97	5.0	100.0	2.530	94.2	70	130			
Chlorobenzene	96	5.0	100.0	0	96.0	70	130			
1,1-Dichloroethene	95	5.0	100.0	0	95.2	70	130			
Trichloroethene (TCE)	96	5.0	100.0	0	96.0	70	130			
Surr: 1,2-Dichloroethane-d4	51		50.00		101	70	130			
Surr: 4-Bromofluorobenzene	52		50.00		103	70	130			
Surr: Dibromofluoromethane	47		50.00		94.5	70	130			
Surr: Toluene-d8	46		50.00		92.1	70	130			

Sample ID: **1911A64-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW-1**	Batch ID: **R64771**	RunNo: **64771**
Prep Date:	Analysis Date: **11/26/2019**	SeqNo: **2221299** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	110	5.0	100.0	12.71	95.8	70	130	3.57	20	
Toluene	93	5.0	100.0	2.530	90.4	70	130	4.01	20	
Chlorobenzene	92	5.0	100.0	0	91.8	70	130	4.44	20	
1,1-Dichloroethene	88	5.0	100.0	0	88.3	70	130	7.53	20	
Trichloroethene (TCE)	93	5.0	100.0	0	92.8	70	130	3.41	20	
Surr: 1,2-Dichloroethane-d4	51		50.00		103	70	130	0	0	
Surr: 4-Bromofluorobenzene	51		50.00		102	70	130	0	0	
Surr: Dibromofluoromethane	47		50.00		94.2	70	130	0	0	
Surr: Toluene-d8	47		50.00		93.5	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	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911A64**
11-Dec-19

Client: Haller and Associates
Project: Halsells Grocery

Sample ID: **MB**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **B65036**	RunNo: **65036**
Prep Date:	Analysis Date: **12/9/2019**	SeqNo: **2231033** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	ND	0.020								
Manganese	ND	0.0020								

Sample ID: **LCS**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **B65036**	RunNo: **65036**
Prep Date:	Analysis Date: **12/9/2019**	SeqNo: **2231035** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.50	0.020	0.5000	0	101	80	120			
Manganese	0.50	0.0020	0.5000	0	99.1	80	120			

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 Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911A64**
11-Dec-19

Client: Haller and Associates
Project: Halsells Grocery

Sample ID: **MB-49041** SampType: **MBLK** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW** Batch ID: **49041** RunNo: **64826**
Prep Date: **11/26/2019** Analysis Date: **11/27/2019** SeqNo: **2222199** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	ND	20.0								

Sample ID: **LCS-49041** SampType: **LCS** TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW** Batch ID: **49041** RunNo: **64826**
Prep Date: **11/26/2019** Analysis Date: **11/27/2019** SeqNo: **2222200** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	998	20.0	1000	0	99.8	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
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 Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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: HAL | Work Order Number: 1911A64 | RcptNo: 1

Received By: **Anne Thorne** 11/22/2019 8:20:00 AM

Completed By: **Desiree Dominguez** 11/22/2019 8:27:57 AM

Reviewed By: DM 11/22/19

Chain of Custody

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

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. VOA vials have zero headspace?	Yes ☑	No ☐	No VOA Vials ☐
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
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? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: 6
(<2 or >12 unless noted)
Adjusted? NO
Checked by: DAD 11/22/19

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	1.0	Good	Not Present			

Chain-of-Custody Record

A 11/22/19

Client: **Haller & Associates, Inc.** Environmental Services & Geoscience

Mailing Address: P.O. Box 1667, Cedar Crest, NM 87008

Phone #: 505-281-9333 or 505-228-0492

email or Fax#: mnauck@vcimail.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:

☒ Standard ☐ Rush_____

Project Name: **Halsell's Grocery**

Project #: **1920**

Project Manager: **Micah Nauck**

Sampler: Micah Nauck

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.2 - 0.2 = 1.0°

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1911A64
11/21/19	1505	Aq	MW-1	3x 40ml glass 3x 40ml glass 1x 125ml poly 2x 500ml poly	$HgCl_2$ SOTH HNO_3 None	-001
11/21/19	1427	Aq	MW-2	3x 40ml glass 2x 40ml glass 1x 125ml poly 2x 500ml poly	$HgCl_2$ SOTH HNO_3 None	-002
11/21/19	1340	Aq	MW-3	3x 40ml glass 2x 40ml glass 1x 125ml poly 2x 500ml poly	$HgCl_2$ SOTH HNO_3 None	-003
			~~Trip Blank~~ DAD 11/22/19	3x 40ml glass	$HgCl_2$	-004

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel	TPH (Method 418.1)	EDB (Method 504.1)	6010 (Dissolved Fe & Mn)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	2540C (TDS)	410 (COD)			Air Bubbles (Y or N)
				X	X				X		X	X			
				X	X				X		X	X			
				X	X				X		X	X			
				X					X						

Date	Time	Relinquished by:	Received by:	Date	Time
11/22/19	0800			11/22/19	0820
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Trip Blanks not recieved - DAD 11/22/19

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.