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:

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October 23, 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.

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Title: Project Manager / Geologist

Date: October 23, 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 September 5, 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 August 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 September 5, 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 0.0006 foot per foot (ft/ft), consistent with historic conditions (Figure 3 and Appendix B). Groundwater elevations have decreased an average of 0.13 feet since the previous groundwater monitoring event in July 2017. 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 wells MW-1 and MW-2. 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 September 5, 2019. Total depths of the monitor wells were observed to be 1.23 feet to 3.55 feet shallower than indicated by the well completion logs. All 3 monitor wells were redeveloped using a submersible pump and new polyethylene tubing to remove the accumulated sediment, and to reduce turbidity. Redevelopment was performed until all sand and mud was removed from the bottoms of the wells and clear water was observed.

At least 10 well volumes were purged from each well prior to sample collection. 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 and a laboratory-prepared trip blank. The samples were delivered to Hall Environmental Analysis Laboratory, Inc. with complete chain-of-custody records. The samples and the trip blank were analyzed for volatile organic compounds (VOCs) + 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 wells MW-1 (7.0 µg/L) and MW-2 (9.4 µg/L), and for total naphthalenes in monitor well MW-1 (54 µg/L). Monitor well 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 (2.1 mg/L). Monitor wells MW-1 and MW-3 contained dissolved iron concentrations below the standard (0.36 mg/L and 0.37 mg/L, respectively).

Dissolved manganese concentrations exceeded the NMWQCC standard of 0.2 mg/L in all three monitor wells: MW-1 (0.45 mg/L), MW-2 (1.2 mg/L) and MW-3 (0.97 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.

D. Workplan Deviation

The workplan specified low-flow groundwater sampling with a peristaltic pump to obtain samples with low turbidity. However, turbidity was visually observed and gauging data indicated sediment accumulation in all 3 monitor wells. Therefore, HAI redeveloped all 3 monitor wells using a submersible pump and disposable polyethylene tubing. The pump was decontaminated with Alconox solution between wells and the tubing was replaced between wells. Upon completion of redevelopment, all 3 wells produced clear purge water and contained no settled sediment. Low-flow methods will be utilized in the next monitoring event, given the successful redevelopment and improved water clarity that was achieved during this event.

III. SUMMARY AND CONCLUSIONS

A. Discussion of Trends or Changes

Groundwater elevations have decreased an average of 0.13 feet since July 2017. Shallow groundwater flow direction and gradient are to the south-southeast at 0.0006 ft/ft. Groundwater elevations, flow direction and gradient are generally consistent with previously observed conditions.

MW-1: Dissolved benzene declined from 36 µg/L in July 2017 to 7.0 µg/L during this event, remaining slightly above the standard of 5 µg/L. Dissolved total naphthalenes declined from 669 µg/L in July 2017 to 54 µg/L during this event, remaining above the standard of 30 µg/L. Ethylbenzene was detected at 300 µg/L, remaining remain below the standard of 700 µg/L since February 1998. Total xylenes were detected at 14 µg/L, not having exceeded the standard of 620 µg/L since initial sampling in June 1992.

MW-1 contained a TDS concentration of 1,290 mg/L and a COD concentration of 14.3 mg/L.

MW-2: Dissolved benzene increased from <1.0 µg/L in January 2017 to 9.4 µg/L during this event, slightly exceeding the standard of 5 µg/L. All other dissolved petroleum contaminants remain below standards and/or laboratory detection limits.

MW-2 contained a TDS concentration of 1,290 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 1,360 mg/L and a COD concentration of 15.4 mg/L.

B. Conclusions and Recommendations

HAI recommends continued groundwater monitoring in accordance with Workplan ID #4076. The next quarterly groundwater monitoring event will be performed in early December 2019. Low-flow methods will be utilized in accordance with the workplan, given the successful redevelopment of all 3 wells on September 5, 2019.

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 & 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
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

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

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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

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

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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**
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

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

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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

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

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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
MW-2	09/05/19	**2.1**	**1.2**	1,290	<10.0
MW-3	09/05/19	0.37	**0.97**	1,360	15.4

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

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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
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
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

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

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FIGURES

IMAGE SOURCE: GOOGLE EARTH 05-05-19

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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

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SITE MAP

HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO

FIGURE
2

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WATER TABLE MAP

HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO

SEPTEMBER 5, 2019

FIGURE
3

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GROUNDWATER ORGANIC ANALYTICAL
HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO
SEPTEMBER 5, 2019

FIGURE
4

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GROUNDWATER INORGANIC ANALYTICAL
HALSELL'S GROCERY
112 SCHOOL STREET
HATCH, NEW MEXICO
SEPTEMBER 5, 2019

FIGURE
5

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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
SEPTEMBER 5, 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.

STANDARD OPERATING PROCEDURE
MONITOR WELL SAMPLING

PURPOSE

To purge stagnant water from the monitoring well and obtain representative samples of the formation groundwater.

PROCEDURE

- Remove well cap and allow water level to barometrically equilibrate for approximately 5 minutes. Note any damage to well or repairs needed on field log.

- Measure and record static depth to water and total depth using an incremented electronic water level indicator. Measurements must be made relative to established reference point on top of casing.

- Calculate height of water column in well by subtracting depth to water from total depth. Calculate volume of water in a 2-inch well by multiplying height of water column by 0.17 gallon per foot. Calculate volume of water in a 4-inch well by multiplying height of water column by 0.66 gallon per foot.

- Using a new disposable bailer, purge a minimum of 3 to 5 well volumes depending on workplan requirements. Purging should not be considered complete until minimal turbidity is observed and field measurements of specific conductivity, temperature, pH, dissolved oxygen and oxidation-reaction potential have stabilized to within ±10 percent over two successive well volumes.

- Discharge purge water on-site or containerize in accordance with workplan requirements. Record purge volume calculations, field parameter measurements, and actual purged volumes on the well sampling field form.

- Decant water samples from the bailer at a slow, nonturbulent rate into clean containers provided by the laboratory with pre-measured preservatives. Samples for volatile organic analyses will be decanted into 40-milliliter vials with no headspace or bubbles.

- Label all sample containers with respect to sample identifications (i.e., time, date, location, well, sampler initials, preservative and requested analyses).

- Immediately place all labeled sample containers in a cooler with ice or blue ice to preserve at 4 degrees Centigrade until delivered to analytical laboratory. Ensure samples are accompanied by completed chain-of-custody documentation.

Note: Refer to New Mexico Environment Department-Petroleum Storage Tank Bureau "Guidelines for Corrective Action" when sampling at LPST sites.

APPENDIX B

HYDRAULIC GRADIENT CALCULATION

HYDRAULIC GRADIENT CALCULATION

Halsell's Grocery
Hatch, New Mexico

Hydraulic Gradient – September 5, 2019:

$$\frac{4{,}044.66 - 4{,}044.55}{175 \text{ ft}} = \frac{0.11 \text{ ft}}{175 \text{ ft}} =$$ **0.0006 ft/ft to the south-southeast**

MW-3 groundwater elevation:	4,044.66 feet above Mean Sea Level
MW-2 groundwater elevation:	4,044.52 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 9/5/2019
Site Halsell's Grocery | Time Gauged 1259

Depth to NAPL -------- ft. | Well diameter 2 in
Depth to water 10.40 ft. | Height of fluid column 8.21 ft
Total Depth 18.61 ft. | Volume in well 1.4 gal

(Minimum 3 well volumes = 4.2 gallons)

GROUNDWATER SAMPLING DATA

Time/date purged 1420 9/5/19 | Purge method Sub pump ~~New PE Bailer~~

Temp. 23.83	Cond. 869	pH 7.46	ORP -165.4	DO 3.28	Gal 2.5
Temp. 23.89	Cond. 885	pH 7.42	ORP -169.9	DO 3.08	Gal 5.0
Temp. 23.79	Cond. 930	pH 7.35	ORP -179.7	DO 2.86	Gal 7.5
Temp. 23.78	Cond. 952	pH 7.33	ORP -185.1	DO 2.82	Gal 10.0
Temp. 23.79	Cond. 961	pH 7.31	ORP -194.9	DO 2.73	Gal 12.5
Temp.	Cond.	pH	ORP	DO	Gal
Temp.	Cond.	pH	ORP	DO	Gal
Temp.	Cond.	pH	ORP	DO	Gal

Actual purged volume 15.0 gal | Measurements stabilized within ±10%? YES

Time/date sampled 1448 9/5/2019 | Purged/Sampled by Micah Nauck

Sample method ~~from end of~~ Grab, ~~decant from bailer~~ from end of new PE tubing

Requested analyses 8260B (VOCs), 504.1 (EDB), 6010 (Dis Mn & Fe), 2540 (TDS), 410 COD

Comments/observations -Bottom of well soft & muddy
-TD after purging: 19.84' (Hard bottom), removed 1.23' of sand.
-Sample clear w/ strong organic 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 | Date Gauged 9/5/2019
Site Halsell's Grocery | Time Gauged 12.56

Depth to NAPL -------- ft. | Well diameter 2 in
Depth to water 10.02 ft. | Height of fluid column 8.28 ft
Total Depth 18.30 ft. | Volume in well 1.4 gal

(Minimum 3 well volumes = 4.2 gallons)

GROUNDWATER SAMPLING DATA

Time/date purged 1348 9/5/19 | Purge method Sub Pump ~~New PE Bailer~~

Temp. 23.92	Cond. 1973	pH 7.38	ORP -113.6	DO 4.27	Gal ~~2.5~~	2.5
Temp. 23.99	Cond. 1958	pH 7.32	ORP -116.5	DO 3.96	Gal ~~3.0~~	5.0
Temp. 23.95	Cond. 1949	pH 7.24	ORP -111.9	DO 3.37	Gal ~~4.5~~	7.5
Temp. 23.95	Cond. 1944	pH 7.18	ORP -105.7	DO 2.91	Gal ~~6.0~~	10.0
Temp. 23.94	Cond. 1945	pH 7.18	ORP -104.4	DO 2.84	Gal ~~7.5~~	12.5
Temp.	Cond.	pH	ORP	DO	Gal	
Temp.	Cond.	pH	ORP	DO	Gal	
Temp.	Cond.	pH	ORP	DO	Gal	

Actual purged volume 15.0 gal | Measurements stabilized within ±10%? Yes

Time/date sampled 1411 9/5/2019 | Purged/Sampled by Micah Nauck

Sample method Grab, ~~decant from bailer~~ from new pe tubing

Requested analyses 8260B (VOCs), 504.1 (EDB), 6010 (Dis. Mn & Fe), 2540 (TDS), 410 (COD)

Comments/observations -Bottom of well soft. -TD after purge: 20.05
Remove 2.75' of sand from well
-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*

Haller & Associates, Inc.
Environmental Services & Geoscience

MONITOR WELL SAMPLING FIELD FORM

Well ID	MW-3	Date Gauged	9/5/2019
Site	Halsell's Grocery	Time Gauged	1250
Depth to NAPL	-------- ft.	Well diameter	2 in
Depth to water	10.19 ft.	Height of fluid column	6.19 ft
Total Depth	16.38 ft.	Volume in well	1.0 gal

(Minimum 3 well volumes = 3.0 gallons)

GROUNDWATER SAMPLING DATA

Sub. Pump

Time/date purged 1303 9/5/19 Purge method ~~New PE Bailer~~

Temp.	23.75	Cond.	1880	pH	6.91	ORP	-10.4	DO	4.03	Gal	2.5
Temp.	23.72	Cond.	1735	pH	6.95	ORP	-32.0	DO	3.66	Gal	5.0
Temp.	23.62	Cond.	1943	pH	7.10	ORP	-22.2	DO	3.56	Gal	7.5
Temp.	23.56	Cond.	1896	pH	7.09	ORP	-33.7	DO	3.42	Gal	10.0
Temp.	23.53	Cond.	1894	pH	7.11	ORP	-34.6	DO	3.36	Gal	12.5
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	
Temp.		Cond.		pH		ORP		DO		Gal	

Actual purged volume 15.0 gal Measurements stabilized within ±10%? Yes

Time/date sampled 1330 9/5/2019 Purged/Sampled by Micah Nauck

Sample method ~~Grab, decant from bailer~~ Grab, from New PE tubing

Requested analyses 8260B (VOCs), 504.1 (EDB), 6010 (Dis. Mn & Fe), 2540 (TDS), 410 (COD)

Comments/observations -Bottom of well soft. - TD after purge: 19.93'
3.55' of sand from well.
-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

STANDARD OPERATING PROCEDURE
MONITOR WELL GAUGING

PURPOSE

To obtain accurate measurements of depth to groundwater and depth to phase-separated hydrocarbon in a monitoring well, water well, recovery well or piezometer.

PROCEDURE

- Remove well cap and allow water level to barometrically equilibrate for approximately 5 minutes. Note any damage to well or repairs needed on field log.

- Identify measuring point on casing either visually or by review of well construction logs, survey data or other documentation. If the measuring point is not marked or indicated on well construction log, use the north side of the top of the well casing as the assumed measuring point.

- If non-aqueous phase liquid (NAPL) is known or suspected to be present, measurements are to be performed using an incremented electronic hydrocarbon interface probe. Measure and record the static depth to NAPL to the nearest 0.01 foot relative to the top of casing reference point.

- Measure and record the static depth to water to the nearest 0.01 foot relative to the top of casing reference point. If NAPL is previously known to be absent at the site, measurements can be performed using an incremented electronic water level indicator.

- If NAPL is not present, calculate the groundwater elevation by subtracting the depth to water measurement from the top of casing reference point elevation.

- If NAPL is present, calculate the apparent thickness by subtracting the depth to NAPL measurement from the depth to water measurement. Calculate the correction factor by multiplying the apparent thickness by the specific gravity of the NAPL.

- Subtract the correction factor from the depth to water measurement to obtain the corrected depth to water. The NAPL-corrected groundwater elevation is then obtained by subtracting the corrected depth to water from the top of casing reference point elevation.

- Decontaminate water level indicator or hydrocarbon interface probe prior to proceeding to the next well.

Note: Gauge monitor wells in order of increasing contaminant concentrations, i.e., gauge clean wells first and contaminated wells last to minimize the potential of cross-contamination.

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

September 25, 2019

Micah Nauck

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

RE: Halsells Grocery OrderNo.: 1909259

Dear Micah Nauck:

Hall Environmental Analysis Laboratory received 4 sample(s) on 9/6/2019 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: 9/5/2019 2:48:00 PM
Lab ID: 1909259-001
Matrix: AQUEOUS
Received Date: 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **JMT**	
Total Dissolved Solids	1290	20.0	*	mg/L	1	9/11/2019 1:50:00 PM	47372
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Iron	0.36	0.020		mg/L	1	9/20/2019 9:32:15 AM	A63074
Manganese	0.45	0.0020		mg/L	1	9/20/2019 9:32:15 AM	A63074
EPA METHOD 8011/504.1: EDB						Analyst: **CLP**	
1,2-Dibromoethane	ND	0.0094		µg/L	1	9/13/2019 3:11:54 PM	47434
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Benzene	7.0	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Toluene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Ethylbenzene	300	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Methyl tert-butyl ether (MTBE)	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2,4-Trimethylbenzene	15	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,3,5-Trimethylbenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2-Dichloroethane (EDC)	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2-Dibromoethane (EDB)	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Naphthalene	28	10		µg/L	5	9/17/2019 1:24:00 PM	R62981
1-Methylnaphthalene	27	20		µg/L	5	9/17/2019 1:24:00 PM	R62981
2-Methylnaphthalene	ND	20		µg/L	5	9/17/2019 1:24:00 PM	R62981
Acetone	ND	50		µg/L	5	9/17/2019 1:24:00 PM	R62981
Bromobenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Bromodichloromethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Bromoform	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Bromomethane	ND	15		µg/L	5	9/17/2019 1:24:00 PM	R62981
2-Butanone	ND	50		µg/L	5	9/17/2019 1:24:00 PM	R62981
Carbon disulfide	ND	50		µg/L	5	9/17/2019 1:24:00 PM	R62981
Carbon Tetrachloride	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Chlorobenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Chloroethane	ND	10		µg/L	5	9/17/2019 1:24:00 PM	R62981
Chloroform	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Chloromethane	ND	15		µg/L	5	9/17/2019 1:24:00 PM	R62981
2-Chlorotoluene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
4-Chlorotoluene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
cis-1,2-DCE	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
cis-1,3-Dichloropropene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2-Dibromo-3-chloropropane	ND	10		µg/L	5	9/17/2019 1:24:00 PM	R62981
Dibromochloromethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Dibromomethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2-Dichlorobenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981

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: 9/5/2019 2:48:00 PM
Lab ID: 1909259-001 **Matrix:** AQUEOUS **Received Date:** 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
1,3-Dichlorobenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,4-Dichlorobenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Dichlorodifluoromethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,1-Dichloroethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,1-Dichloroethene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2-Dichloropropane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,3-Dichloropropane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
2,2-Dichloropropane	ND	10		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,1-Dichloropropene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Hexachlorobutadiene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
2-Hexanone	ND	50		µg/L	5	9/17/2019 1:24:00 PM	R62981
Isopropylbenzene	50	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
4-Isopropyltoluene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
4-Methyl-2-pentanone	ND	50		µg/L	5	9/17/2019 1:24:00 PM	R62981
Methylene Chloride	ND	15		µg/L	5	9/17/2019 1:24:00 PM	R62981
n-Butylbenzene	ND	15		µg/L	5	9/17/2019 1:24:00 PM	R62981
n-Propylbenzene	95	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
sec-Butylbenzene	10	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Styrene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
tert-Butylbenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,1,1,2-Tetrachloroethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,1,2,2-Tetrachloroethane	ND	10		µg/L	5	9/17/2019 1:24:00 PM	R62981
Tetrachloroethene (PCE)	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
trans-1,2-DCE	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
trans-1,3-Dichloropropene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2,3-Trichlorobenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2,4-Trichlorobenzene	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,1,1-Trichloroethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,1,2-Trichloroethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Trichloroethene (TCE)	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Trichlorofluoromethane	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
1,2,3-Trichloropropane	ND	10		µg/L	5	9/17/2019 1:24:00 PM	R62981
Vinyl chloride	ND	5.0		µg/L	5	9/17/2019 1:24:00 PM	R62981
Xylenes, Total	14	7.5		µg/L	5	9/17/2019 1:24:00 PM	R62981
Surr: 1,2-Dichloroethane-d4	99.7	70-130		%Rec	5	9/17/2019 1:24:00 PM	R62981
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	5	9/17/2019 1:24:00 PM	R62981
Surr: Dibromofluoromethane	97.8	70-130		%Rec	5	9/17/2019 1:24:00 PM	R62981
Surr: Toluene-d8	97.0	70-130		%Rec	5	9/17/2019 1:24:00 PM	R62981

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: 9/5/2019 2:11:00 PM
Lab ID: 1909259-002
Matrix: AQUEOUS
Received Date: 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **JMT**	
Total Dissolved Solids	1290	40.0	*D	mg/L	1	9/11/2019 1:50:00 PM	47372
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Iron	2.1	0.10		mg/L	5	9/20/2019 9:34:05 AM	A63074
Manganese	1.2	0.010		mg/L	5	9/20/2019 9:34:05 AM	A63074
EPA METHOD 8011/504.1: EDB						Analyst: **CLP**	
1,2-Dibromoethane	ND	0.0094		µg/L	1	9/13/2019 3:57:37 PM	47434
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Benzene	9.4	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Toluene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Ethylbenzene	1.0	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Naphthalene	3.3	2.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1-Methylnaphthalene	10	4.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
2-Methylnaphthalene	ND	4.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Acetone	ND	10		µg/L	1	9/17/2019 1:48:00 PM	R62981
Bromobenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Bromodichloromethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Bromoform	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Bromomethane	ND	3.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
2-Butanone	ND	10		µg/L	1	9/17/2019 1:48:00 PM	R62981
Carbon disulfide	ND	10		µg/L	1	9/17/2019 1:48:00 PM	R62981
Carbon Tetrachloride	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Chlorobenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Chloroethane	ND	2.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Chloroform	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Chloromethane	ND	3.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
2-Chlorotoluene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
4-Chlorotoluene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
cis-1,2-DCE	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Dibromochloromethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Dibromomethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981

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: 9/5/2019 2:11:00 PM
Lab ID: 1909259-002
Matrix: AQUEOUS
Received Date: 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,1-Dichloroethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,1-Dichloroethene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2-Dichloropropane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,3-Dichloropropane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
2,2-Dichloropropane	ND	2.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,1-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Hexachlorobutadiene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
2-Hexanone	ND	10		µg/L	1	9/17/2019 1:48:00 PM	R62981
Isopropylbenzene	24	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
4-Isopropyltoluene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
4-Methyl-2-pentanone	ND	10		µg/L	1	9/17/2019 1:48:00 PM	R62981
Methylene Chloride	ND	3.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
n-Butylbenzene	ND	3.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
n-Propylbenzene	10	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
sec-Butylbenzene	5.4	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Styrene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
tert-Butylbenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
trans-1,2-DCE	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Trichlorofluoromethane	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Vinyl chloride	ND	1.0		µg/L	1	9/17/2019 1:48:00 PM	R62981
Xylenes, Total	ND	1.5		µg/L	1	9/17/2019 1:48:00 PM	R62981
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	9/17/2019 1:48:00 PM	R62981
Surr: 4-Bromofluorobenzene	103	70-130		%Rec	1	9/17/2019 1:48:00 PM	R62981
Surr: Dibromofluoromethane	99.4	70-130		%Rec	1	9/17/2019 1:48:00 PM	R62981
Surr: Toluene-d8	99.1	70-130		%Rec	1	9/17/2019 1:48:00 PM	R62981

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: 9/5/2019 1:30:00 PM
Lab ID: 1909259-003
Matrix: AQUEOUS
Received Date: 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
SM2540C MOD: TOTAL DISSOLVED SOLIDS						Analyst: **JMT**	
Total Dissolved Solids	1360	40.0	*D	mg/L	1	9/11/2019 1:50:00 PM	47372
EPA METHOD 6010B: DISSOLVED METALS						Analyst: **ELS**	
Iron	0.37	0.020		mg/L	1	9/20/2019 9:35:57 AM	A63074
Manganese	0.97	0.0020		mg/L	1	9/20/2019 9:35:57 AM	A63074
EPA METHOD 8011/504.1: EDB						Analyst: **CLP**	
1,2-Dibromoethane	ND	0.0095		µg/L	1	9/13/2019 4:12:49 PM	47434
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Benzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Toluene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Ethylbenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Naphthalene	ND	2.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1-Methylnaphthalene	ND	4.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
2-Methylnaphthalene	ND	4.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Acetone	ND	10		µg/L	1	9/17/2019 3:00:00 PM	R62981
Bromobenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Bromodichloromethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Bromoform	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Bromomethane	ND	3.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
2-Butanone	ND	10		µg/L	1	9/17/2019 3:00:00 PM	R62981
Carbon disulfide	ND	10		µg/L	1	9/17/2019 3:00:00 PM	R62981
Carbon Tetrachloride	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Chlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Chloroethane	ND	2.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Chloroform	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Chloromethane	ND	3.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
2-Chlorotoluene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
4-Chlorotoluene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
cis-1,2-DCE	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Dibromochloromethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Dibromomethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981

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: 9/5/2019 1:30:00 PM
Lab ID: 1909259-003 **Matrix:** AQUEOUS **Received Date:** 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,1-Dichloroethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,1-Dichloroethene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2-Dichloropropane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,3-Dichloropropane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
2,2-Dichloropropane	ND	2.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,1-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Hexachlorobutadiene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
2-Hexanone	ND	10		µg/L	1	9/17/2019 3:00:00 PM	R62981
Isopropylbenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
4-Isopropyltoluene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
4-Methyl-2-pentanone	ND	10		µg/L	1	9/17/2019 3:00:00 PM	R62981
Methylene Chloride	ND	3.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
n-Butylbenzene	ND	3.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
n-Propylbenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
sec-Butylbenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Styrene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
tert-Butylbenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
trans-1,2-DCE	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Trichlorofluoromethane	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Vinyl chloride	ND	1.0		µg/L	1	9/17/2019 3:00:00 PM	R62981
Xylenes, Total	ND	1.5		µg/L	1	9/17/2019 3:00:00 PM	R62981
Surr: 1,2-Dichloroethane-d4	99.4	70-130		%Rec	1	9/17/2019 3:00:00 PM	R62981
Surr: 4-Bromofluorobenzene	98.5	70-130		%Rec	1	9/17/2019 3:00:00 PM	R62981
Surr: Dibromofluoromethane	98.5	70-130		%Rec	1	9/17/2019 3:00:00 PM	R62981
Surr: Toluene-d8	98.6	70-130		%Rec	1	9/17/2019 3:00:00 PM	R62981

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: Trip Blank
Project: Halsells Grocery
Collection Date:
Lab ID: 1909259-004
Matrix: AQUEOUS
Received Date: 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8011/504.1: EDB						Analyst: **CLP**	
1,2-Dibromoethane	ND	0.0095		µg/L	1	9/13/2019 4:28:00 PM	47434
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
Benzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Toluene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Ethylbenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Naphthalene	ND	2.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1-Methylnaphthalene	ND	4.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
2-Methylnaphthalene	ND	4.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Acetone	ND	10		µg/L	1	9/17/2019 3:24:00 PM	R62981
Bromobenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Bromodichloromethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Bromoform	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Bromomethane	ND	3.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
2-Butanone	ND	10		µg/L	1	9/17/2019 3:24:00 PM	R62981
Carbon disulfide	ND	10		µg/L	1	9/17/2019 3:24:00 PM	R62981
Carbon Tetrachloride	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Chlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Chloroethane	ND	2.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Chloroform	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Chloromethane	ND	3.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
2-Chlorotoluene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
4-Chlorotoluene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
cis-1,2-DCE	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Dibromochloromethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Dibromomethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,3-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,4-Dichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Dichlorodifluoromethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,1-Dichloroethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,1-Dichloroethene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2-Dichloropropane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981

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: Trip Blank
Project: Halsells Grocery
Collection Date:
Lab ID: 1909259-004
Matrix: AQUEOUS
Received Date: 9/6/2019 8:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst: **CCM**	
1,3-Dichloropropane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
2,2-Dichloropropane	ND	2.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,1-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Hexachlorobutadiene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
2-Hexanone	ND	10		µg/L	1	9/17/2019 3:24:00 PM	R62981
Isopropylbenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
4-Isopropyltoluene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
4-Methyl-2-pentanone	ND	10		µg/L	1	9/17/2019 3:24:00 PM	R62981
Methylene Chloride	ND	3.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
n-Butylbenzene	ND	3.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
n-Propylbenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
sec-Butylbenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Styrene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
tert-Butylbenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,1,1,2-Tetrachloroethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,1,2,2-Tetrachloroethane	ND	2.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Tetrachloroethene (PCE)	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
trans-1,2-DCE	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
trans-1,3-Dichloropropene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2,3-Trichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2,4-Trichlorobenzene	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,1,1-Trichloroethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,1,2-Trichloroethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Trichloroethene (TCE)	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Trichlorofluoromethane	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
1,2,3-Trichloropropane	ND	2.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Vinyl chloride	ND	1.0		µg/L	1	9/17/2019 3:24:00 PM	R62981
Xylenes, Total	ND	1.5		µg/L	1	9/17/2019 3:24:00 PM	R62981
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	9/17/2019 3:24:00 PM	R62981
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	1	9/17/2019 3:24:00 PM	R62981
Surr: Dibromofluoromethane	97.0	70-130		%Rec	1	9/17/2019 3:24:00 PM	R62981
Surr: Toluene-d8	98.6	70-130		%Rec	1	9/17/2019 3:24:00 PM	R62981

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

September 12, 2019

Hall Environmental Analysis Laboratory

Sample Delivery Group: L1137405

Samples Received: 09/10/2019

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

	Collected by	Collected date/time	Received date/time
1909259-001E MW-1 L1137405-01 WW		09/05/19 14:48	09/10/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 410.4	WG1343438	1	09/11/19 10:00	09/11/19 14:12	BAM	Mt. Juliet, TN

	Collected by	Collected date/time	Received date/time
1909259-002E MW-2 L1137405-02 WW		08/05/19 14:11	09/10/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 410.4	WG1343438	1	09/11/19 10:00	09/11/19 14:12	BAM	Mt. Juliet, TN

	Collected by	Collected date/time	Received date/time
1909259-003E MW-3 L1137405-03 WW		09/05/19 13:30	09/10/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 410.4	WG1343438	1	09/11/19 10:00	09/11/19 14:13	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	14.3		10.0	1	09/11/2019 14:12	WG1343438

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
COD	ND	T8	10.0	1	09/11/2019 14:12	WG1343438

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
COD	15.4		10.0	1	09/11/2019 14:13	WG1343438

Method Blank (MB)

(MB) R3449532-1 09/11/19 14:11

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

L1137299-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1137299-01 09/11/19 14:11 • (DUP) R3449532-3 09/11/19 14:12

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	45.6	45.6	1	0.0219		20

L1137648-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1137648-01 09/11/19 14:13 • (DUP) R3449532-4 09/11/19 14:13

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	91.4	92.0	1	0.592		20

Laboratory Control Sample (LCS)

(LCS) R3449532-2 09/11/19 14:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	222	233	105	90.0-110	

L1137648-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1137648-02 09/11/19 14:14 • (MS) R3449532-5 09/11/19 14:14 • (MSD) R3449532-6 09/11/19 14:14

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	49.0	461	461	103	103	1	80.0-120			0.00217	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
T8	Sample(s) received past/too close to holding time expiration.

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

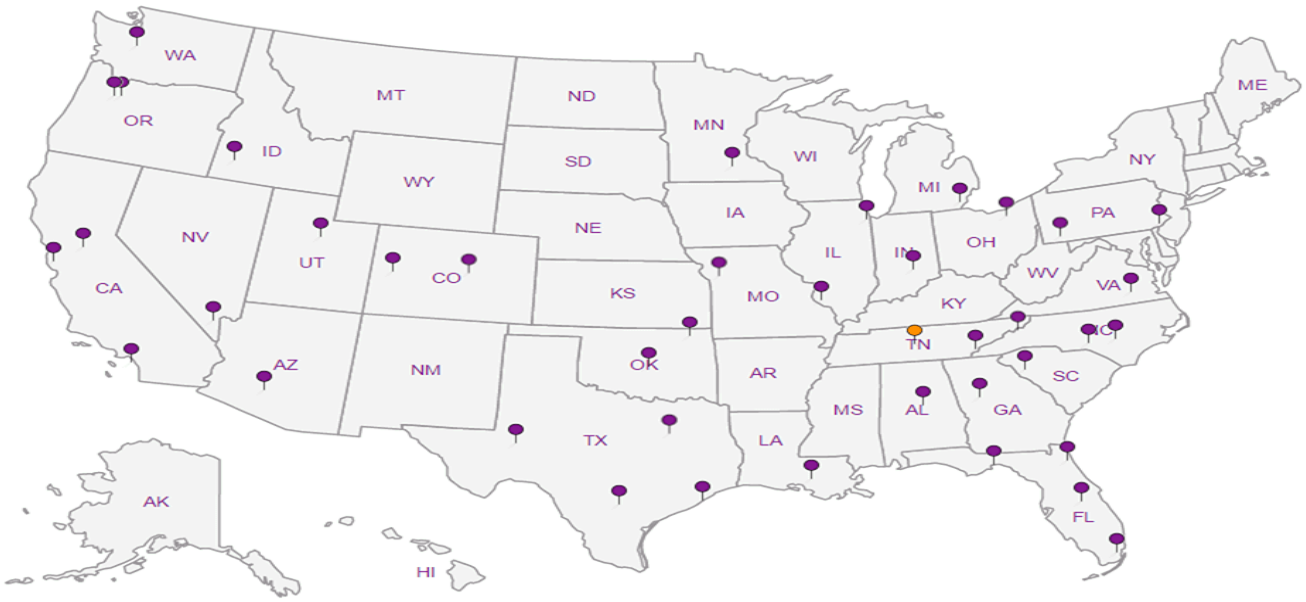
Third Party Federal Accreditations

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.



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

C204

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

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				

ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	1909259-001E	MW-1	500HDPEH2SO4	Aqueous	9/5/2019 2:48:00 PM	1	COD C2 1137405 -01
2	1909259-002E	MW-2	500HDPEH2SO4	Aqueous	8/5/2019 2:11:00 PM	1	COD 02
3	1909259-003E	MW-3	500HDPEH2SO4	Aqueous	9/5/2019 1:30:00 PM	1	COD 03

RAD SCREEN: <0.5 mR/hr

FedEx 4510 1668 9701

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: 9/6/2019	Time: 9:56 AM	Received By:	Date: 9/10/19	Time: 8:45
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

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 2.6+.3=2.9 AS CK Attempt to Cool ? _____

Comments: _____

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: HALLENVIANM	1137405	
Cooler Received/Opened On: 9/16/19 Temperature:	2.9	
Received By: Adam Burns		
Signature:		

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#: **1909259**

25-Sep-19

Client: Haller and Associates

Project: Halsells Grocery

Sample ID: **MB-47434** SampType: **MBLK** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **PBW** Batch ID: **47434** RunNo: **62947**

Prep Date: **9/12/2019** Analysis Date: **9/13/2019** SeqNo: **2145480** 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-47434** SampType: **LCS** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **LCSW** Batch ID: **47434** RunNo: **62947**

Prep Date: **9/12/2019** Analysis Date: **9/13/2019** SeqNo: **2145481** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.097	0.010	0.1000	0	97.0	70	130			

Sample ID: **1909259-001BMS** SampType: **MS** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **MW-1** Batch ID: **47434** RunNo: **62947**

Prep Date: **9/12/2019** Analysis Date: **9/13/2019** SeqNo: **2145524** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.088	0.0095	0.09485	0	92.8	65	135			

Sample ID: **1909259-001BMSD** SampType: **MSD** TestCode: **EPA Method 8011/504.1: EDB**

Client ID: **MW-1** Batch ID: **47434** RunNo: **62947**

Prep Date: **9/12/2019** Analysis Date: **9/13/2019** SeqNo: **2145525** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
1,2-Dibromoethane	0.075	0.0095	0.09459	0	79.8	65	135	15.3	20	

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#: **1909259**

25-Sep-19

Client: Haller and Associates

Project: Halsells Grocery

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **LCSW**	Batch ID: **R62981**	RunNo: **62981**
Prep Date:	Analysis Date: **9/17/2019**	SeqNo: **2148056** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	103	70	130			
Toluene	21	1.0	20.00	0	103	70	130			
Chlorobenzene	22	1.0	20.00	0	109	70	130			
1,1-Dichloroethene	20	1.0	20.00	0	98.3	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	98.2	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		103	70	130			
Surr: Toluene-d8	10		10.00		100	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R62981**	RunNo: **62981**
Prep Date:	Analysis Date: **9/17/2019**	SeqNo: **2148057** 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#: **1909259**
25-Sep-19

Client: Haller and Associates
Project: Halsells Grocery

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R62981**	RunNo: **62981**
Prep Date:	Analysis Date: **9/17/2019**	SeqNo: **2148057** 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#: **1909259**

25-Sep-19

Client: Haller and Associates

Project: Halsells Grocery

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **PBW**	Batch ID: **R62981**	RunNo: **62981**
Prep Date:	Analysis Date: **9/17/2019**	SeqNo: **2148057** 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	10		10.00		102	70	130			
Surr: 4-Bromofluorobenzene	9.7		10.00		97.2	70	130			
Surr: Dibromofluoromethane	10		10.00		105	70	130			
Surr: Toluene-d8	9.8		10.00		97.9	70	130			

Sample ID: **1909259-002ams**	SampType: **MS**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW-2**	Batch ID: **R62981**	RunNo: **62981**
Prep Date:	Analysis Date: **9/17/2019**	SeqNo: **2148061** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	25	1.0	20.00	9.434	78.9	70	130			
Toluene	16	1.0	20.00	0	81.9	70	130			
Chlorobenzene	17	1.0	20.00	0	86.8	70	130			
1,1-Dichloroethene	15	1.0	20.00	0	74.7	70	130			
Trichloroethene (TCE)	16	1.0	20.00	0	77.8	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		97.6	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	9.7		10.00		96.9	70	130			
Surr: Toluene-d8	9.7		10.00		97.0	70	130			

Sample ID: **1909259-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8260B: VOLATILES**
Client ID: **MW-2**	Batch ID: **R62981**	RunNo: **62981**
Prep Date:	Analysis Date: **9/17/2019**	SeqNo: **2148062** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	24	1.0	20.00	9.434	72.9	70	130	4.83	20	
Toluene	16	1.0	20.00	0	78.9	70	130	3.77	20	
Chlorobenzene	17	1.0	20.00	0	82.6	70	130	4.97	20	
1,1-Dichloroethene	14	1.0	20.00	0	69.2	70	130	7.71	20	S
Trichloroethene (TCE)	15	1.0	20.00	0	73.2	70	130	6.08	20	
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130	0	0	
Surr: 4-Bromofluorobenzene	10		10.00		103	70	130	0	0	
Surr: Dibromofluoromethane	9.9		10.00		98.7	70	130	0	0	
Surr: Toluene-d8	9.8		10.00		98.1	70	130	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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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#: **1909259**

25-Sep-19

Client: Haller and Associates

Project: Halsells Grocery

Sample ID: **MB-A**	SampType: **MBLK**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **PBW**	Batch ID: **A63074**	RunNo: **63074**
Prep Date:	Analysis Date: **9/20/2019**	SeqNo: **2151039** 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-A**	SampType: **LCS**	TestCode: **EPA Method 6010B: Dissolved Metals**
Client ID: **LCSW**	Batch ID: **A63074**	RunNo: **63074**
Prep Date:	Analysis Date: **9/20/2019**	SeqNo: **2151040** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Iron	0.49	0.020	0.5000	0	97.5	80	120			
Manganese	0.48	0.0020	0.5000	0	95.5	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#: **1909259**
25-Sep-19

Client: Haller and Associates
Project: Halsells Grocery

Sample ID: **MB-47372**	SampType: **MBLK**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **PBW**	Batch ID: **47372**	RunNo: **62826**
Prep Date: **9/10/2019**	Analysis Date: **9/11/2019**	SeqNo: **2140745** 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-47372**	SampType: **LCS**	TestCode: **SM2540C MOD: Total Dissolved Solids**
Client ID: **LCSW**	Batch ID: **47372**	RunNo: **62826**
Prep Date: **9/10/2019**	Analysis Date: **9/11/2019**	SeqNo: **2140746** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids	1000	20.0	1000	0	100	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

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: 1909259 | RcptNo: 1

Received By: **Anne Thorne** 9/6/2019 8:30:00 AM Anne Thorne

Completed By: **Anne Thorne** 9/6/2019 9:14:26 AM Anne Thorne

Reviewed By: ENM 9/6/19

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 9/6/19

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	1.2	Good	Not Present			

Chain-of-Custody Record

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: 1.3+0.4 = 1.2

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. 1909259	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)
9/5/19	1448	Aq	MW-1	3x 40ml glass	$HgCl_2$	001					X	X				X		X	X			
				3x 40ml glass	SOTH																	
				1x 125ml poly	HNO_3	004																
				2x 500ml poly	None/H_2SO_4																	
9/5/19	1411	Aq	MW-2	3x 40ml glass	$HgCl_2$						X	X				X		X	X			
				2x 40ml glass	SOTH	002																
				1x 125ml poly	HNO_3																	
				2x 500ml poly	None/H_2SO_4	002																
9/5/19	1330	Aq	MW-3	3x 40ml glass	$HgCl_2$						X	X				X		X	X			
				2x 40ml glass	SOTH	003																
				1x 125ml poly	HNO_3																	
				2x 500ml poly	None/H_2SO_4	003																
			Trip Blank	3x 40ml glass	$HgCl_2$	004					X					X						

Analysis Request

Date	Time	Relinquished by:	Received by:	Date Time	Remarks:
9-6-19	0830			09/06/19 0830	
Date:	Time:	Relinquished by:	Received by:	Date Time	

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.