

**RAINS FOOD**  
**Moses Lake, WA**  
**MONITORING WELL REPORT**

**11 MAY 2018**

prepared by  
**Soiltest Farm Consultants, Inc.**  
**2925 Driggs Drive**  
**Moses Lake, WA 98837**

## INTRODUCTION

The Rains Food Store and gasoline Station is located on the south frontage road approximately ½ mile west of Moses Lake, Washington, adjacent to exit 174 of Interstate 90. A fuel leak was discovered some years ago in an underground storage tank (UST) at the site. After removal of the tanks and contaminated soil, four monitor wells were installed (MW-A, MW-B, MW-C and MW-D, see Figure 1). The groundwater gradient is generally from NE to SW or from MW-D towards MW-B. Washington State Department of Ecology (DOE) required annual monitoring of these wells until the fall of 2009. At that time, it was determined that three of the four were clean and no longer in need of monitoring. One well, MW-C, still contained traces of some petroleum hydrocarbons in the August 2011 monitoring. Ecology determined that MWC should be monitored until it was clear of petroleum hydrocarbons. This document is to report the ongoing monitoring efforts for MW-C for May 2018.

## SAMPLING & FIELD ANALYSES

The monitor well sampling was conducted on 3 May 2018. The weather was mild and dry. In order to eliminate cross contamination possibilities, a dedicated Teflon tube and stainless-steel foot valve was installed in each well in 2006. Water samples were obtained using a Waterra inertial-lift pump. The water level in well MW-C was approximately 5 feet below the top of the well casing at sampling. The irrigation district lowers the water level in Moses Lake at the end of the irrigation season, which causes the water level to drop near or below the bottom of the well. When there is less than two feet of water depth, a different pump must be used. However, on 5/3/2018 the inertial pump worked well.

The wellhead was secured with bolts, but not locked. There was no evidence of tampering or damage at the time of sampling. Portable field instruments were used to measure temperature, pH, electrical conductivity and dissolved oxygen (DO). A 500 mL brown glass bottle was filled and submitted to Edge Analytical for petroleum hydrocarbon analyses. The recharge rate of the well was such that drawdown was minimal during the sampling event.

## LABORATORY ANALYSIS

Both laboratories used for the analyses are certified by the Washington State Department of Ecology. The sampling, field-testing, pH and EC were performed by Soiltest Farm Consultants, Inc. of Moses Lake, Washington (C157). The results are summarized in Table 1C, with all available historical data. Edge Analytical of Burlington, Washington (C1251) performed the total petroleum hydrocarbon analyses (NWTPH-Gx/BTEX). The historical and current hydrocarbon data is presented in Table 2C. A graphical presentation of the hydrocarbon data is in Figure 2. Copies of the current laboratory reports can be found in the Appendix.

## DISCUSSION OF RESULTS

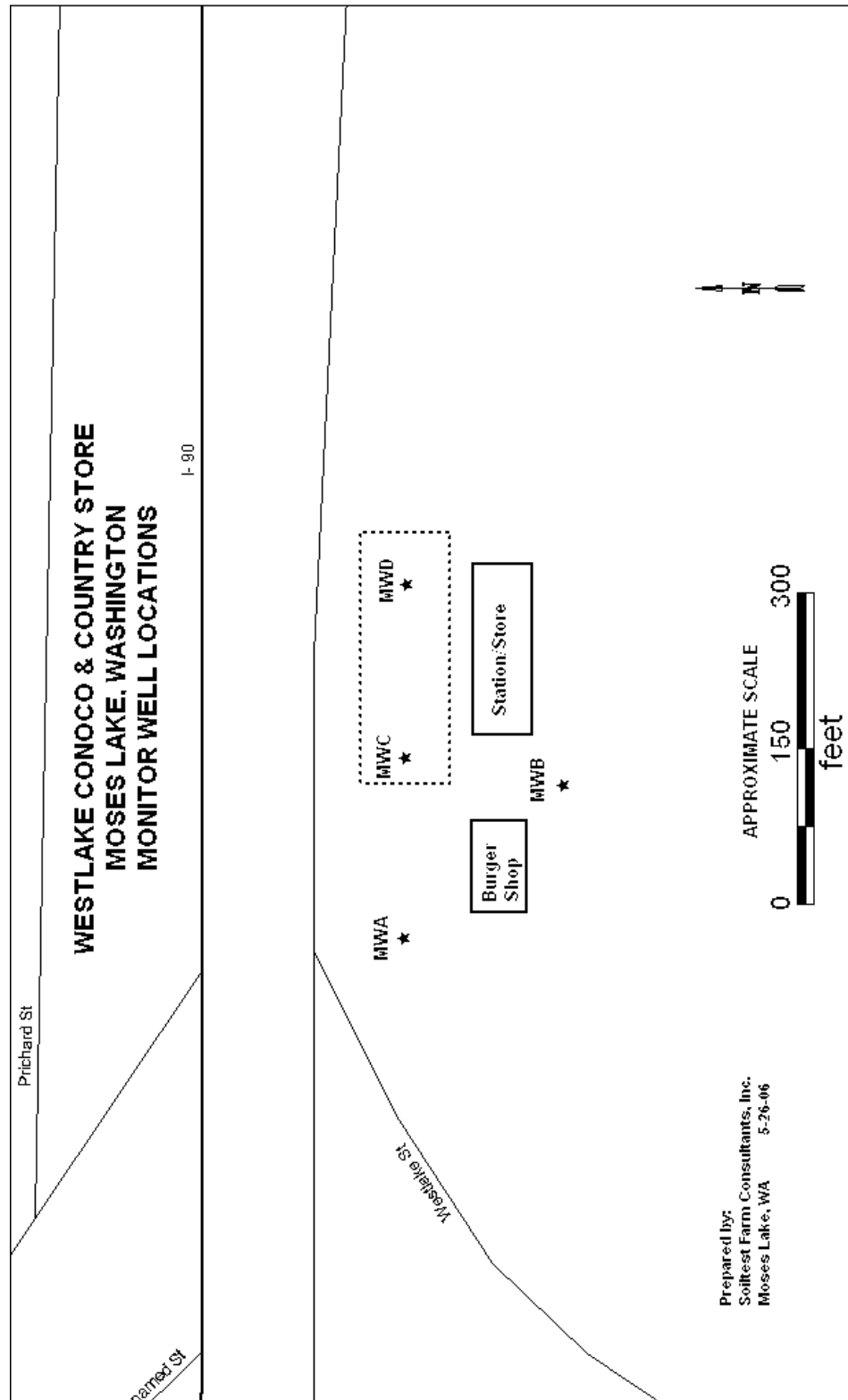
Field tests of DO, pH and temperature were typical of recent measurements and suggested high quality water. The electrical conductivity (EC), similar to 2011, was nearly double historical values and indicative of salt intrusion from some source. The water clarity was excellent.

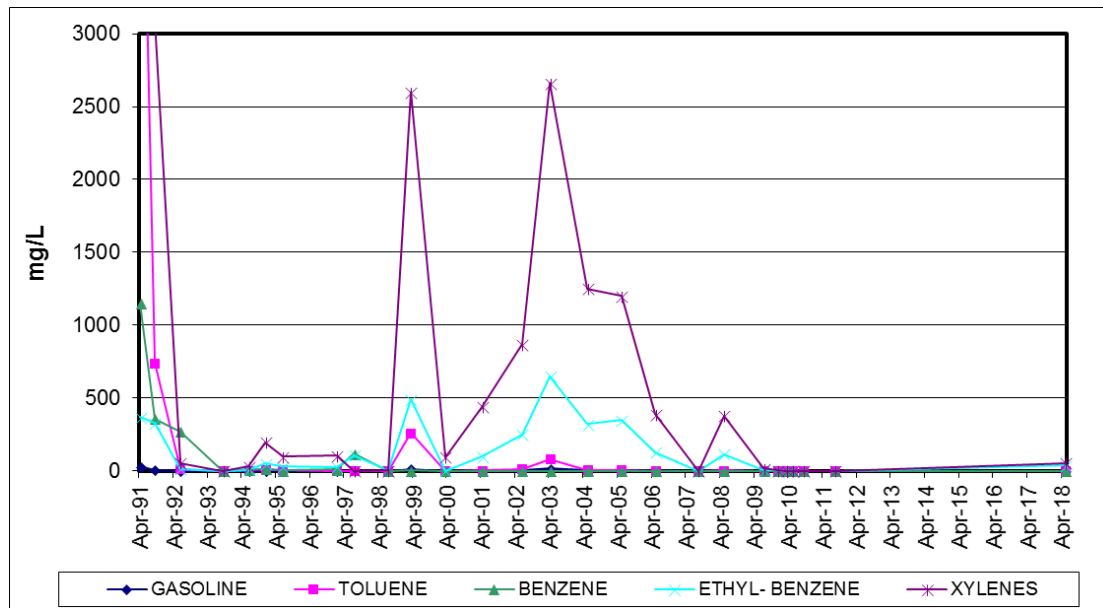
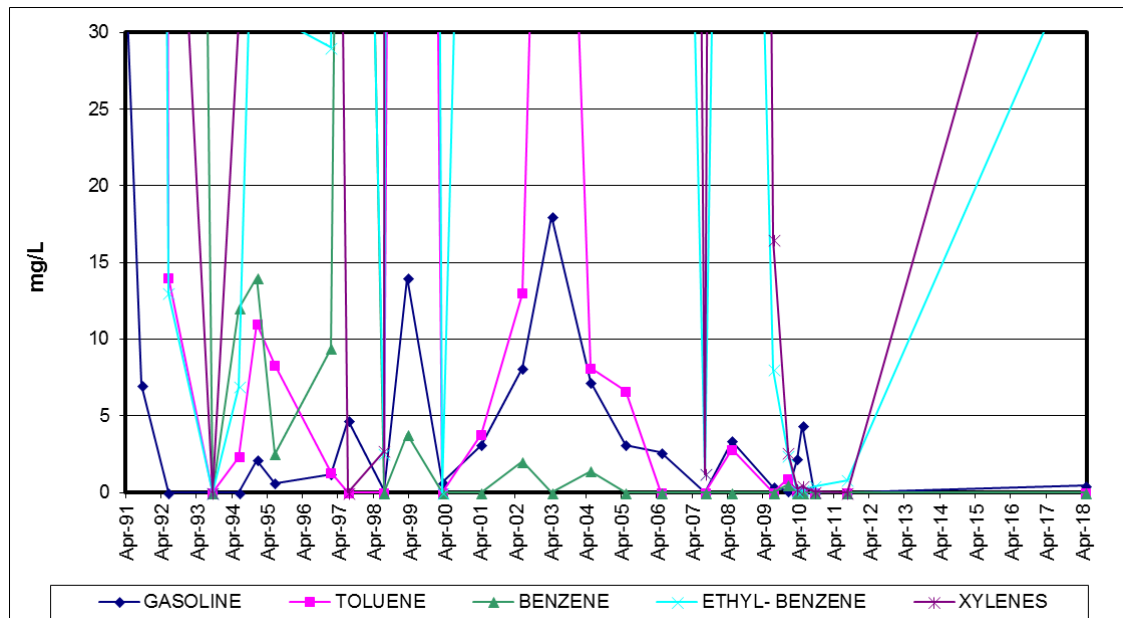
All hydrocarbons were either not detected (ND) or present in concentrations well below the cleanup levels for groundwater.

Ecology requires continued monitoring MWC in order to verify continued low levels of petroleum products. A few more monitoring events may be required to ensure the gasoline concentration stays below the clean-up level.

## LIMITATIONS

The historical data prior to 2006 contained in this report was obtained from a report prepared by DWR Consultants and provided by the client, Dick Aldrich of Westlake Country Store. No warranty or responsibility is expressed for the historical data. The data from 2006 and later were obtained using methods and procedures accepted by the Washington State Department of Ecology. To the best of our ability and knowledge, the results obtained reflect the conditions of the groundwater body at the dates observed.

**FIGURE 1: LOCATION MAP**

**FIGURE 2A: MW-C PETROLEUM HYDROCARBON MONITORING-large scale****FIGURE 2B: MW-C PETROLEUM HYDROCARBON MONITORING-small scale**

**TABLE 1C: STANDARD TEST RESULTS SUMMARY MONITORING WELL C**

SAMPLE DATE	WATER DEPTH (feet)	pH s.u.	CONDUCTIVITY (micro-siemens)	TEMPERATURE (centigrade)	DISSOLVED OXYGEN %	TURBIDITY (NTU)
26-Aug-92		NT	936	NT	14	
16-Sep-93		7.11	675	21.2	34	
11-Jun-94		7.19	1,529	21.3	5	
27-Dec-94		7.59	1,586	19.3		
28-Jun-95			684	19.4		
20-Jan-97	10.2	6.1	628	5.9	5.7	80.8
23-Jul-97	8.56	7.06	695	19.2	25.4	22.2
28-Jul-98	10.8	6.89	598	20.6	17.9	20.5
23-Mar-99	6.96	7.97	641	13.6	NT	8.4
28-Mar-00	7.33	6.76	628	13.7	12.2	55.9
18-Apr-01	8.13	8.88	632	12.8	25.5	52.8
10-Jun-02	5.22	7.08	650	20.6	28.5	1.68
29-Apr-03	7.05	7.09	676	15.1	0.82	9.7
12-May-04	8.0	6.82	728	16.1	12.2	NT
10-May-05	5.27	7.21	688	14.7	5.16	5.6
26-May-06	4.82	6.9	619	13.9	27	12.1
27-Aug-07	8.89	8.1	888	21.3	49.9	3.4
14-May-08	4.69	7.6	733	13.8	72.6	17.6
21-Jul-09	7.62	7.0	740	19.6	47	18.0
9-Dec-09	11.02	7.5	910	10.8	71	NT
18-Mar-10	6.71	7.2	594	15.3	53	<0.1
19-May-10	5.44	7.3	628	15.3	40.4	<0.5
9-Sep-10	8.94	7.6	1326	20.8	46.8	0.8
15-Aug-11	8.00	7.4	1227	19.7	35.0	0.5
3-May-18	5.22	6.9	1342	13.9	39.4	2.3

Wells A, B and D were not sampled per Ecology determination that they are clear

**TABLE 2C: TPH TEST RESULT SUMMARY MONITOR WELL C**

SAMPLE DATE	GASOLINE (ppm, mg/L)	BENZENE (ppb, ug/L)	TOLUENE (ppb, ug/L)	ETHYL- BENZENE (ppb, ug/L)	TOTAL XYLENES (ppb, ug/L)
24-Apr-91	31.3	1,150	5,390	369	3,700
12-Sep-91	7.0	360	740	330	3,090
29-Jun-92	NT	270	14	13	56
17-Sep-93	NT	NT	NT	NT	NT
11-Jun-94	ND	12	2.3	6.9	30.7
28-Dec-94	2.1	14	11	50	198
28-Jun-95	0.62	2.5	8.3	31	100
20-Jan-97	1.2	9.4	1.3	29	104
23-Jul-97	4.7	120	390 <sup>E</sup>	110	470 <sup>E</sup>
28-Jul-98	0.11	ND	ND	2.5	2.7
23-Mar-99	14	3.8	260	490	2,600
28-Mar-00	0.63	ND	ND	ND	93.5
18-Apr-01	3.1	ND	3.8	100	440
10-Jun-02	8.1	2.0	13.0	250	870
29-Apr-03	18.0	ND	82	650	2,660
12-May-04	7.2	1.4	8.1	320	1,250
10-May-05	3.1	ND	6.6	350	1,200
26-May-06	2.6	ND	ND	130	390
27-Aug-07	ND	ND	ND	1.2	1.2
14-May-08	3.37	ND	2.8	115	378
21-Jul-09	0.333	ND	ND	8.0	17
9-Dec-09	0.102	0.5	0.9	2.4	2.6
18-Mar-10	2.164	ND	0.0007	0.081	0.243
19-May-10	4.36	ND	0.002	0.142	0.415
9-Sep-10	ND	ND	ND	0.400	0.060
15-Aug-11	ND	ND	ND	0.800	ND
3-May-18	0.446	ND	ND	36.3	54.9
MTCA	1	5	1,000	700	1,000
PQL	0.1	0.4	0.4	0.4	0.8

**Notes:** MTCA WAC clean up levels for contaminants in water

NT Not Tested

< less than laboratory quantification limit or not detected

ND Not Detected

PQL Practical Quantitation Limit

E value Exceeds the quantification range of the instrument, value is estimated

Wells A, B and D were not sampled after 2009 per Ecology determination that they are clear

## **APPENDIX**

### **LABORATORY REPORTS**





CASH SALES

**WATER ANALYSIS**

Lab Number: W18-01455  
 Sampler: KB  
 Date Received: 5/3/2018  
 Date Reported: 5/23/2018  
 Date Sampled: 5/3/2018

Field Sample I.D.  
MW-D

	Method	MDL	PQL	Units	Result
Turbidity	SM 2130 B	0.10	0.40	NTU	2.3
FIELD DATA:					
pH	SM 4500 H			N/A	6.9
E.C.	SM 2510 B			uS	1342
D.O.	SM 4500 -O G			mg/L	3.5
Temperature	Field Temperature			°C	13.9
Water Depth	tape			ft	5.22

Note: "u" indicates that the element was analyzed for but not detected

ALL LABORATORY TESTING COMPLIES WITH THE PROVISIONS  
 SET FORTH IN CHAPTER 173-50 WAC. DOE ACCREDITATION #C157

This is your Invoice W18-01455 Account #: 143000 Reviewed by: KEB List Cost: \$0.00



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## Hydrocarbon Data Report

Client Name: Soiltest Farm Consultants, Inc.  
2925 Driggs Drive  
Moses Lake, WA 98837

Reference Number: **18-15649**  
Project: Rains Food  
Report Date: 5/22/18  
Date Received: 5/4/18  
Approved By: co  
Authorized by:

Lawrence J. Henderson, PhD  
Director of Laboratories, Vice President

Sample Description: C								Sample Date: 5/3/18 9:45			
Lab Number: 32216								Collected By:			
Date Analyzed: 5/9/18								Analyzed By: HY			
Parameter	Result	Flag	DF	Cleanup Level	PQL	MDL	Units	Method	Lab	Batch	Comment
NWTPH-Gx											
BENZENE	ND		1	0.005	0.0004	0.00014	mg/L	8260C/5030B	a	GXXW_180509	
TOLUENE	ND		1	1.00	0.0004	7.00E-05	mg/L	8260C/5030B	a	GXXW_180509	
ETHYLBENZENE	0.0363		2	0.70	0.0008	0.00018	mg/L	8260C/5030B	a	GXXW_180509	
TOTAL XYLENES	0.0549		1	1.00	0.0008		mg/L	8260C/5030B	a	GXXW_180509	
GASOLINE (C8 - C12)	0.446		1	1	0.10		mg/L	8260C/5030B	a	GXXW_180509	