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April 30, 2018

Mr. Steve Teel
Washington State Department of Ecology
Southwest Regional Office
300 Desmond Drive SE
Lacey, WA 98503

SUBJECT: 2017 ANNUAL SUMMARY REPORT FOR GROUNDWATER COMPLIANCE MONITORING
Former Olympia Dry Cleaners Site
606 Union Avenue SE
Olympia, Washington

Dear Mr. Teel:

This groundwater compliance monitoring report is the fourth quarterly report for 2017, the 2017 annual summary report, and the first quarterly report for 2018 for the Former Olympia Dry Cleaners Site (Site), prepared on behalf of the Estate of Katherine Burleson and GJG, LLC, to meet the reporting requirements of Consent Decree No. 14-2-02104-3 (State of Washington 2014) and the Cleanup Action Plan (Ecology 2014). The Site is located at 606 Union Avenue SE in Olympia, Washington (Figure 1).

In September 2015, an excavation to remove accessible soil contaminated with chlorinated solvents was completed in accordance with the Remedial Action Work Plan (RAWP; Floyd|Snider 2015a) and RAWP Addendum (Floyd|Snider 2015b). After the remedial action was completed, a Compliance Monitoring Plan (CMP) for post-remediation monitoring was developed in coordination with the Washington State Department of Ecology (Ecology; Floyd|Snider 2016). The objective of this groundwater compliance monitoring report is to document the results of the post-remediation monitoring completed in January and March 2018 and to provide a summary of the water quality results from 2017. Source removal areas and compliance monitoring locations are shown on Figure 2.

1.0 COMPLIANCE MONITORING SAMPLE COLLECTION

The compliance monitoring network for long-term groundwater monitoring at the Site includes monitoring wells MW-06, MW-09, MW-11, MW-13, and MW-14. Per the CMP, and in concurrence with Ecology, the monitoring frequency was reduced to semiannually in 2017 after the first year of quarterly monitoring. The active seep, located along the Cherry Street SE curb line and north of the main excavation area, was monitored on a quarterly basis in 2017 to evaluate surface discharges of the groundwater seep.

This section describes the seep water sampling completed in January 2018 (fourth quarter monitoring extension was granted by Ecology) and March 2018 (first quarter 2018) and the first quarter groundwater monitoring completed in March 2018. There were no significant deviations from the CMP during the monitoring events; the field methods used were in substantive accordance with the CMP. The compliance monitoring locations are shown on Figure 2.

The fourth quarter (January 2018) water samples were submitted to Libby Environmental, Inc., in Olympia, Washington, and the first quarter (March 2018) water samples were submitted to Fremont Analytical, Inc. (Fremont), in Seattle, Washington. Samples were submitted under chain of custody for analysis of the chemicals of concern (COCs) at the Site, which are tetrachloroethene (PCE), trichloroethene (TCE), *cis*- and *trans*-1,2-dichloroethene (DCE), 1,1-DCE, and vinyl chloride.

The analytical results from the seep monitoring are provided in Table 1, and the groundwater results are summarized in Table 2. The 2017 and March 2018 seep/surface water and groundwater monitoring results are shown on Figure 3. A copy of the laboratory reports are included in Attachment 1.

1.1 Seep Treatment

As discussed in previous compliance monitoring reports, a carbon filter sock has been installed at the point of the seep expression and directly downgradient since September 2016. A second carbon sock was installed north of the primary sock along the curb line in March 2017 to provide more contact time to improve removal efficiency. During each quarterly monitoring event, the downgradient carbon sock was rotated and moved to the upgradient position and a new carbon sock was placed in the downgradient position. Both carbon socks are held in place by concrete screws in the curb with a hydraulic cement barrier on the upgradient edge to divert stormwater.

Filtered seep water samples were collected during the fourth quarter 2017 (January 2018) and first quarter 2018 (March 2018) and demonstrated that the filter sock is effective at reducing PCE, TCE, and vinyl chloride concentrations in seep water. During each sampling event, the sock was rotated over and lengthwise, then re-bolted to the curb on either end of the sock.

1.2 Seep Water Sample Collection and Results

The groundwater seep was observed to be flowing between curb sections along the curb line of Cherry Street SE, north of the main excavation area and the former seep area, and between the concrete curb and the asphalt roadway (Figure 2). The seep is being expressed through a small void in the asphalt under the curb at a relatively low flow rate (slow trickle). A grab sample was collected from the seep (SEEP) on January 4, 2018 (fourth quarter 2017), and on March 30, 2018 (first quarter 2018), while the carbon filter sock was removed for repositioning. A grab sample was also collected from the discharge of the filter sock after rotating and re-installing the activated carbon filter sock (SEEP-POST) during both events. It should be noted that due to a

vehicle parked in the vicinity of the sock that blocked access for sample collection, the SEEP-POST sample in January was collected on January 8, 2018, a few days after the collection of the SEEP sample. In addition, a sample was collected downhill of the seep at the point of discharge on the southern end of the catch basin on the west side of Cherry Street SE (SEEP-CB; Figure 2) during the March 2018 sampling event per Ecology's request. These results are presented in Table 1. Copies of laboratory reports for both monitoring events are included in Attachment 1.

The unfiltered seep water samples collected from the curb line (SEEP) had COC concentrations exceeding their respective cleanup levels during both monitoring events. The water samples taken at the seep immediately downstream of the carbon filter sock (SEEP-POST) demonstrated a significant improvement in water quality and results from both monitoring events confirm that the carbon filter sock is providing adequate treatment of seep water at the point of discharge from the carbon sock. The water sample collected in March 2018 at the point of compliance (POC), which is the point of discharge at the catch basin (SEEP-CB), did not have detectable concentrations of COCs, which demonstrates compliance with water quality standards and Site cleanup levels at the POC.

1.3 Groundwater Sample Collection and Results

Groundwater samples were collected from the five compliance wells (MW-06, MW-09, MW-11, MW-13, and MW-14) on March 30, 2018, using standard low-flow sampling methods described in the CMP. The depth to water was recorded with an electronic water level meter prior to sample collection at all monitoring wells. Monitoring well MW-14 (artesian) was flowing but at a slow enough rate that a low-flow sample was collected. Analytical results from this sampling event are presented in Table 2, groundwater elevations are presented in Table 3, a copy of the laboratory report is included in Attachment 1, and the groundwater sample collection forms are included in Attachment 2.

Site COCs were not detected at a concentration greater than Site cleanup levels during the March 2018 monitoring event. COCs were detected at concentrations less than the cleanup levels in the groundwater samples collected from monitoring wells MW-09, MW-11, and MW-14, and COCs were not detected at concentrations greater than laboratory detection limits in groundwater samples collected from monitoring wells MW-06 or MW-13. Monitoring well MW-06 was mostly dry with a slow recharge rate, consistent with previous monitoring events, and monitoring wells MW-11 and MW-14 were both artesian during this sampling event.

1.4 Data Validation

A Compliance Screening (Stages 1 and 2A) data quality review was performed on volatile organic compound data resulting from laboratory analysis by U.S. Environmental Protection Agency (USEPA) Method 8260C. The analytical data were validated by Floyd|Snider in accordance with the USEPA *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA 2017).

For all analyses, the analytical holding times were met and the method blanks had no detections. The surrogate, matrix spike, matrix spike duplicate, and laboratory control sample recoveries and sample/sample duplicate relative percent differences all met USEPA requirements. No qualifiers were added to the analytical results based on the data quality review. Data are determined to be of acceptable quality for use as reported by the laboratory.

2.0 2017 ANNUAL SUMMARY

In 2017, groundwater samples were collected on a semiannual basis (March and September), and seep samples were collected on a quarterly basis (March, June, September, and January 2018). Water samples were analyzed for the site COCs, which are PCE, TCE, *cis*- and *trans*-1,2-DCE, 1,1-DCE, and vinyl chloride. The analytical data for surface water, including the seep, are summarized in Table 1. A summary of the 2017 groundwater analytical results along with data from the pre-remediation sampling event in August 2013 (SES 2013) are provided in Table 2. The results of the March 2018 seep and groundwater sample event are also summarized in Tables 1 and 2. The compliance monitoring locations are shown on Figure 2, and the 2017 and March 2018 groundwater and surface water monitoring results are shown on Figure 3.

2.1 Groundwater Elevation Measurements

During each monitoring event, the depth to water was recorded with an electronic water level meter prior to sample collection at all monitoring wells. Groundwater elevations were determined using top-of-casing survey information from SoundEarth Strategies, Inc. Groundwater elevations collected in 2017 and March 2018 are summarized in Table 3. The primary groundwater flow direction at the Site is to the north.

2.2 Groundwater Analytical Summary

The second year of groundwater sampling has shown that groundwater conditions are stable or decreasing and that there has been an overall decline in groundwater contaminant concentrations at the Site since the completion of source removal activities in 2015. Site COCs have not historically been reported in groundwater samples collected from monitoring wells MW-06, MW-11, and MW-13, and continued to remain non-detect through 2017, suggesting that contaminant migration is not occurring.

During 2017, vinyl chloride was the only COC present at concentrations greater than the cleanup levels in groundwater collected from MW-09, and PCE, TCE, and vinyl chloride were present at concentrations greater than the cleanup levels in groundwater collected from monitoring well MW-14.

The historically low TCE concentrations observed in groundwater collected from well MW-09 and decreasing concentrations of lighter PCE breakdown products indicate that the remaining

groundwater plume is attenuating. Without further input from a soil source, this plume is expected to continue to attenuate.

The temporary post-excavation increase in PCE concentrations observed in groundwater collected from monitoring well MW-14 in 2016 was followed by decreases in PCE and its breakdown product concentrations later in 2016 and in 2017, indicating that the residual soil contamination that remains beneath the Q-Tip building is likely attenuating. With a limited amount of residual soil contamination left in place after excavation, groundwater concentrations are expected to continue to attenuate over time.

During the March 2018 monitoring event, Site COCs were not detected at concentrations greater than Site cleanup levels in groundwater collected from all compliance wells.

2.3 Seep Analytical Summary and Treatment

The concentrations of Site COCs at the seep during 2017 monitoring were relatively stable, with a slight increase observed during the wet season, consistent with 2016. However, the seep still contained PCE and vinyl chloride at concentrations greater than the cleanup levels during all four quarters of 2017. TCE was detected at a concentration greater than the cleanup level in the fourth quarter only, also consistent with 2016.

An additional seep grab sample was collected during the first quarter of 2018, downhill at the point of discharge on the southern end of the catch basin on the west side of Cherry Street SE (Figure 2). The water sample taken at the seep discharge location at the catch basin (SEEP-CB) had no detections of Site COCs, confirming that the water quality at the POC is in compliance.

Per the CMP, contingency actions for addressing the groundwater seep identified between the curb line and the asphalt roadway along Cherry Street SE (Figure 2) were evaluated, and an activated carbon filter sock was installed in September 2016. A second filer sock (in series) was installed in March 2017 to improve resonance time and removal efficiency. In accordance with permit requirements, a catch basin filter was also installed in the downgradient catch basin in 2016 as an added protection measure.

Water quality at the seep, which again showed increased TCE and PCE concentrations in the fourth quarter, suggests that infiltrating rain water may be continuing to remobilize shallow contaminants in the vicinity of the seep. Given the limited amount of residual contamination, however, long-term trends for the seep are expected to be similar to groundwater trends, which show overall decreasing concentrations. Overall, concentrations of detected COCs (PCE, TCE, *cis*-1,2-DCE and vinyl chloride) in the SEEP sample in 2017 were less than in 2016. Results confirmed that the carbon filters are providing adequate treatment for seep water at the point of discharge, sufficient to meet the cleanup levels.

3.0 COMPLIANCE MONITORING PLAN MODIFICATIONS AND SCHEDULE

Consistent with the CMP, the groundwater monitoring frequency was reduced to semiannual in 2017, after the first year of quarterly monitoring. After the completion of the second year of compliance monitoring and in consultation with Ecology during March 2018, an additional reduction in frequency for groundwater sample collection is recommended along with a reduced monitoring well network based on stable and decreasing concentrations, as described below.

3.1 Compliance Plan Modifications

Groundwater compliance monitoring will be conducted at a frequency of every 18 months and will alternate between September and March to obtain alternating dry and wet season data. Monitoring wells MW-11 and MW-13, which have historically not had detectable concentrations of Site COCs, are proposed to be removed from the future monitoring well network. Downgradient monitoring well MW-6, which is located more than 150 feet downgradient of well MW-14, also has never had detectable concentrations of COCs but will not be removed from the compliance well network at this time per Ecology's request.

Quarterly monitoring of the seep (pre-and post-treatment) will continue in 2018, until treatment of the seep is no longer required. The carbon sock will be replaced during each quarterly sampling event. If COCs are not detected in a seep sample or are detected at concentrations less than the cleanup levels for four quarters, additional monitoring of that seep will not be warranted.

3.2 Compliance Monitoring Schedule

The next compliance monitoring event will be completed in June 2018 and will consist of the collection of surface water samples from the seep and the discharge of the filter sock to continue documenting the treatment efficiency of the filter sock. Quarterly monitoring of the seep will also be performed in September and December 2018.

Upon Ecology concurrence of the modified compliance monitoring schedule described above in Section 3.1, additional groundwater monitoring will not be conducted in 2018. The next compliance monitoring of groundwater will occur in September 2019 and will be performed every 18 months thereafter for the foreseeable future. An annual summary report for 2018 will be submitted to Ecology by February 28, 2019.

3.3 Continued Seep Treatment

A right-of-way obstruction permit was acquired from the City of Olympia in September 2016 in order to install the activated carbon filter sock. An extension of the right-of-way permit was requested in March 2018 and granted through March 2019. The filtration socks are routinely changed out to ensure that breakthrough at concentrations greater than the cleanup level does

not occur. The filter sock is monitored by the owner on a weekly basis per the right-of-way obstruction permit requirements.

4.0 REFERENCES

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Sincerely yours,

FLOYD | SNIDER

Lynn Grochala
Senior Environmental Scientist

Encl.: Table 1 Surface Water Monitoring Data
Table 2 Groundwater Monitoring Data
Table 3 Groundwater Elevation Data
Figure 1 Site Vicinity Map
Figure 2 Source Removal Areas and Compliance Monitoring Locations
Figure 3 2017 and March 2018 Groundwater and Surface Water Monitoring Results
Attachment 1 Laboratory Reports
Attachment 2 Groundwater Sample Collection Field Forms

Tables

Table 1
Surface Water Monitoring Data

Sample Location	Status	Date	Tetrachloroethene (µg/L)	Trichloroethene (µg/L)	*cis* -1,2-Dichloroethene (µg/L)	*trans* -1,2-Dichloroethene (µg/L)	1,1-Dichloroethene (µg/L)	Vinyl Chloride (µg/L)
SEEP	Pre-remediation[1]	7/10/2008	**390**	**580**	2,500	12	2.6	**190**
	Post-remediation	3/8/2016	**33**	15	110	1.0 U	1.0 U	**15**
		3/30/2016	**23**	17	160	1.0 U	1.0 U	**22**
		6/9/2016	**16**	18	170	1.3	1.0 U	**20**
		9/29/2016	**16**	30	180	1.0 U	1.0 U	**16**
		12/20/2016	**56**	**44**	110	1.0 U	1.0 U	**10**
		3/10/2017	**13**	7.6	19	1.0 U	1.0 U	1.8 J
		6/21/2017	**12**	8.5	57	1.0 U	1.0 U	**6.2**
		10/31/2017	**14**	19	74	1.0 U	1.0 U	**12**
		1/4/2018	**20**	**34**	138	1.0 U	1.0 U	**7.6**
		3/30/2018	**19**	16	60	1.0 U	1.0 U	1.9
SEEP-CB[2]	Pre-remediation	10/15/2008	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
	Post-remediation	6/9/2016	1.0 U	0.50 U	1.8	1.0 U	1.0 U	0.20 U
		3/22/2017	1.0 U	0.72	1.3	1.0 U	1.0 U	0.20 U
		3/30/2018	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
SEEP-POST[3]	Post-remediation	9/29/2016	1.0 U	0.55	2.3	1.0 U	1.0 U	0.62
		12/20/2016	**10**	8.0	19	1.0 U	1.0 U	2.2
		3/10/2017	**3.4 J**	2.5	6.3	1.0 U	1.0 U	1.3
		3/22/2017	**4.8**	4.1	10	1.0 U	1.0 U	1.3
		3/30/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		6/21/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		10/31/2017	1.0 U	0.58	2.5	1.0 U	1.0 U	0.20 U
		1/8/2018[4]	1.0 U	0.76	2.8	1.0 U	1.0 U	0.20 U
		3/30/2018	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
Surface Water Cleanup Level (µg/L)			3.3	30	NA	10,000	3.2	2.4

Notes:

BOLD Indicates a concentration that exceeds the site cleanup level.

1 Pre-remediation seep samples were collected approximately 16 feet south of the current seep sampling location. However, both pre- and post-remediation samples are representative of the same source of seep water.

2 Sample collected at the downstream catch basin. Pre-remediation sample was collected by the Washington State Department of Ecology from approximately the same location and named "Street - 2."

3 Sample collected downstream of the carbon filter sock to demonstrate treatment efficiency.

4 The filter socks were inaccessible for changeout due to parked cars during January 4, 2018, sampling; filter sock changeout was completed on January 8, 2018, and the downstream sample was collected after changeout.

Abbreviations:

µg/L Micrograms per liter

NA Not applicable

Qualifiers:

J The analyte was detected; the concentration is considered to be an estimate.

U The analyte was not detected at the given reporting limit.

Table 2
Groundwater Monitoring Data

Sample Location	Status[1]	Date	Tetrachloroethene (µg/L)	Trichloroethene (µg/L)	*cis* -1,2-Dichloroethene (µg/L)	*trans* -1,2-Dichloroethene (µg/L)	1,1-Dichloroethene (µg/L)	Vinyl Chloride (µg/L)
MW-06	Pre-remediation	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/12/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		6/9/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		9/29/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		12/20/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		3/10/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		10/31/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		3/30/2018	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
MW-09	Pre-remediation	8/13/2013	1.0 U	1.0 U	4.1	1.0 U	1.0 U	**2.7**
	Post-remediation	3/12/2016	1.0 U	2.2	11	1.0 U	1.0 U	**5.0**
		6/9/2016	1.0 U	3.2	**26**	1.0 U	1.0 U	**9.8**
		9/29/2016	1.0 U	2.8	**27**	1.0 U	1.0 U	**11**
		12/20/2016	1.0 U	0.69	10	1.0 U	1.0 U	**6.9**
		3/10/2017	1.0 U	0.61	6.2	1.0 U	1.0 U	**2.6**
		10/31/2017	1.0 U	1.7	12	1.0 U	1.0 U	**6.0**
		3/30/2018	1.0 U	2.1	6.2	1.0 U	1.0 U	0.20 U
MW-11	Pre-remediation	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/12/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		6/9/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		9/29/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		12/20/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		3/10/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		10/31/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		3/30/2018	1.0 U	0.60	1.0 U	1.0 U	1.0 U	0.20 U
MW-13	Pre-remediation	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/12/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		6/9/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		9/29/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		12/20/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		3/10/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		10/31/2017	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		3/30/3018	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U

Table 2
Groundwater Monitoring Data

Sample Location	Status[1]	Date	Tetrachloroethene (µg/L)	Trichloroethene (µg/L)	*cis* -1,2-Dichloroethene (µg/L)	*trans* -1,2-Dichloroethene (µg/L)	1,1-Dichloroethene (µg/L)	Vinyl Chloride (µg/L)
MW-14	Pre-remediation	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/8/2016	**52**	**17**	**23**	1.0 U	1.0 U	**2.4**
		6/9/2016[2]	**99**	**34**	**33**	1.0 U	1.0 U	**2.8**
		9/29/2016	**96**	**40**	**42**	1.0 U	1.0 U	0.20 U
		12/20/2016[2]	**23**	**11**	7.3	1.0 U	1.0 U	**0.79**
		3/10/2017	**38**	**24**	14	1.0 U	1.0 U	0.20 U
		10/31/2017	**32**	**24**	15	1.0 U	1.0 U	**2.2**
		3/30/2018	1.2	2.0	2.2	1.0 U	1.0 U	0.20 U
Groundwater Cleanup Level (µg/L)			5.0	5.0	16	100	7.0	0.20

Notes:

BOLD Indicates a concentration that exceeds the site cleanup level.

1 Pre-remediation groundwater monitoring data collected by SoundEarth Strategies, Inc.

2 Field duplicate taken at this location on this date; the greatest concentration between the two samples is shown.

Abbreviation:

µg/L Micrograms per liter

Qualifier:

U The analyte was not detected at the given reporting limit.

Table 3
Groundwater Elevation Data

Well ID	Top of Casing Elevation (feet)[1,2]	Date	Depth to Water (feet)	Groundwater Elevation (feet)[2]
MW-06	20.12	3/12/2016	1.46	18.66
		6/9/2016	0.86	19.26
		9/29/2016	0.20	19.92
		12/20/2016	1.38	18.74
		3/10/2017	0.65	19.47
		10/31/2017	3.83	16.29
		3/30/2018	1.62	18.5
MW-09	30.56	3/12/2016	2.32	28.24
		6/9/2016	3.41	27.15
		9/29/2016	3.44	27.12
		12/20/2016	3.40	27.16
		3/10/2017	3.22	27.34
		10/31/2017	3.34	27.22
		3/30/2018	3.31	27.25
MW-11[3]	24.66	3/12/2016	0.00	24.66
		6/9/2016	0.00	24.66
		9/29/2016	0.00	24.66
		12/20/2016	0.50	24.16
		3/10/2017	0.38	24.28
		10/31/2017	0.34	24.32
		3/30/2018	0.39	24.27
MW-13	26.38	3/12/2016	0.07	26.31
		6/9/2016	0.17	26.21
		9/29/2016	0.42	25.96
		12/20/2016	0.20	26.18
		3/10/2017	0.16	26.22
		10/31/2017	1.33	25.05
		3/30/2018	0.18	26.2
MW-14[3]	26.00	3/12/2016	0.00	26.00
		6/9/2016	0.00	26.00
		9/29/2016	0.00	26.00
		12/20/2016	0.00	26.00
		3/10/2017	0.00	26.00
		10/31/2017	0.00	26.00
		3/30/2018	0.00	26.00

Notes:

1 Top of well casing survey information from SoundEarth Strategies, Inc.

2 Elevations reported in North American Vertical Datum of 1988.

3 Depth to water values of 0.00 feet indicate a location with artesian groundwater; reported groundwater elevations are considered estimates.

Figures

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2017 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington

Figure 1
Site Vicinity Map

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\MXD\QuarterlyGroundwaterComplianceMonitoring\Figure 1 Vicinity Map.mxd
3/9/2018

Legend

- Compliance Monitoring Well
- Seep

Utilities

- E — Underground Electric Line
- GAS — Underground Gas Line
- OE — Overhead Electric Line
- SW — Underground Stormwater Line
- T — Overhead Telephone Line
- W — Underground Water Line
- SS — Underground Sanitary Sewer Line

- Sidewalk
- Concrete Pad
- Building Outline
- Property Boundary
- Building Awning
- Soil Excavation Limits (2015)
- Shrubs/Trees

ASPHALT LOT

GRASSY AREA

ASPHALT LOT

UNION AVE SOUTHEAST

MW-06

Cherry Street Q-Tip Trust Building

MW-09

Boiler Room

Dry Cleaner Machine

Former Olympia Dry Cleaners Building

Roof Line

ARTESIAN SUPPLY WELL

MW-14

MW-11

SEEP

FORMER SEEP AREA

CATCHBASIN

MANHOLE

MANHOLE

MANHOLE

CHERRY STREET SOUTHEAST

MW-13

N

0 12.5 25 50

Scale in Feet

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2017 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington

Figure 2
Source Removal Areas and Compliance Monitoring Locations

\\Gimli\enterprise\GIS\Projects\GTH-Olympia_Dry_Cleaners\MXD\QuarterlyGroundwaterComplianceMonitoring\2017\Figure 2 Source Removal Areas and Compliance Monitoring Locations.mxd
3/9/2018

Legend

- Compliance Monitoring Well
- Seep
- Sidewalk
- Concrete Pad
- Building Outline
- Property Boundary
- Building Awning
- Soil Excavation Limits (2015)
- Carbon Filter Sock
- Shrubs/Trees

Notes:
- All results reported in µg/L.
- **Bold** indicates a concentration that exceeds the cleanup level.
- The first quarter for 2018 (March) data is also shown on this figure and included in the 2017 Annual Summary Report for Groundwater Compliance Monitoring per Ecology's request.

Abbreviations:
DCE = Dichloroethene
µg/L = Micrograms per liter
PCE = Tetrachloroethene
TCE = Trichloroethene

Qualifiers:
J = The analyte was detected, the concentration is considered to be an estimate.
U = Analyte was not detected at the given reporting limit.

ASPHALT LOT

GRASSY AREA

ASPHALT LOT

UNION AVE SOUTHEAST

MW-09			
Analyte	3/10/17	10/31/17	3/30/2018
PCE	1.0 U	1.0 U	1.0 U
TCE	0.61	1.7	2.1
cis-1,2-DCE	6.2	12	6.2
trans-1,2-DCE	1.0 U	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U	1.0 U
Vinyl Chloride	**2.6**	**6.0**	0.20 U

MW-06	Analytes tested, but not detected.

Cherry Street Q-Tip Trust Building

Boiler Room

Dry Cleaner Machine

Former Olympia Dry Cleaners Building

Roof Line

MW-14			
Analyte	3/10/17	10/31/17	3/30/2018
PCE	**38**	**32**	1.2
TCE	**24**	**24**	2.0
cis-1,2-DCE	14	15	2.2
trans-1,2-DCE	1.0 U	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U	1.0 U
Vinyl Chloride	0.20 U	**2.2**	0.20 U

SEEP-CB		
Analyte	3/22/17	3/30/2018
PCE	1.0 U	1.0 U
TCE	0.72	0.50 U
cis-1,2-DCE	1.3	1.0 U
trans-1,2-DCE	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U
Vinyl Chloride	0.20 U	0.20 U

MW-11	Analytes tested, but not detected in 2017. TCE was detected at a concentration of 0.60 in March 2018.

CATCHBASIN

FORMER SEEP AREA

SEEP-POST					
Analyte	3/30/17	6/21/17	10/31/17	1/8/2018	3/30/2018
PCE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
TCE	0.50 U	0.50 U	0.58	0.76	0.50 U
cis-1,2-DCE	1.0 U	1.0 U	2.5	2.8	1.0 U
trans-1,2-DCE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

SEEP					
Analyte	3/10/17	6/21/17	10/31/17	1/4/2018	3/30/2018
PCE	**13**	**12**	**14**	**20**	**19**
TCE	7.6	8.5	19	**34**	16
cis-1,2-DCE	19	57	74	138	60
trans-1,2-DCE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Chloride	1.8 J	**6.2**	**12**	**7.6**	1.9

CHERRY STREET SOUTHEAST

MW-13	Analytes tested, but not detected.

N

0 12.5 25 50

Scale in Feet

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2017 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington

Figure 3
2017 and March 2018 Groundwater and Surface Water Monitoring Results

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\MXD\QuarterlyGroundwaterComplianceMonitoring\2017\Figure 3 2017 and March 2018 Groundwater and Surface Water Monitoring Results.mxd
4/26/2018

Attachment 1
Laboratory Reports

Libby Environmental, Inc.
4139 Libby Road NE • Olympia, WA 98506-2518

January 11, 2018

Steve Marshall
GJG, LLC
8150 West Mercer Way
Mercer Island, WA 98040

Dear Mr. Marshall:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaner Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@aol.com

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 1/4/2018 Page: 1 of 1

Client: GJG LLC

Project Manager: Steve Marshall

Address: 8150 West Mercer Way

Project Name: Former Olympia Dry Cleaner

City: Mercer Island State: WA Zip: 98040

Location: Olympia, WA City, State:

Phone: (206) 399-8987 Fax:

Collector: G. Burleson Date of Collection: 1/3/2018

Client Project #

Email: marshallsj@comcast.net

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	PLE + Breakdown	Field Notes
1	1	—	0855	855pm H_2O	1 VOA													X	~~Analysis TBD~~
2	~~2~~	~~—~~	~~0905~~	~~"~~	~~"~~														~~EB~~
3	~~3~~	~~—~~	~~915~~	~~"~~	~~"~~														~~EB~~
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	1/4/18 4:35 PM	Kodey Eley	1/4/18 4:35pm
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	(Y) N
Temp.	°C
Seals Intact?	(Y) N N/A
Total Number of Containers	3

Remarks: All 1 sample

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

FORMER OLYMPIA DRY CLEANER PROJECT
GJG, LLC
Olympia, Washington
Libby Project # L180104-2

Specific Halogenated and Aromatic Hydrocarbons (EPA 8260C) in Water

Sample Description		Method Blank	1	1 Dup	RPD
Date Sampled		n/a	1/3/18	1/3/18	
Date Analyzed	PQL (µg/L)	1/5/18 (µg/L)	1/5/18 (µg/L)	1/5/18 (µg/L)	
Vinyl Chloride (VC)	0.2	nd	7.6	6.6	14.1
1,1-Dichlorothene	1.0	nd	nd	nd	N/A
trans-1,2-Dichloroethene	1.0	nd	nd	nd	N/A
cis -1,2-Dichloroethene	1.0	nd	138	124	10.7
Trichloroethene (TCE)	0.5	nd	34	31	9.2
Tetrachloroethene (PCE)	1.0	nd	20	18	10.5
Surrogate Recovery					
Dibromofluoromethane		116	113	112	
1,2-Dichloroethane-d4		111	109	105	
Toluene-d8		99	99	100	
4-Bromofluorobenzene		103	107	101	

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

FORMER OLYMPIA DRY CLEANER PROJECT
GJG, LLC
Olympia, Washington
Libby Project # L180104-2

QA/QC Data - EPA 8260C Analyses

Sample Identification: 1							
	Matrix Spike			Matrix Spike Dup			RPD
	Spiked Conc. (µg/L)	Measured Conc. (µg/L)	Spike Recovery (%)	Spiked Conc. (µg/L)	Measured Conc. (µg/L)	Spike Recovery (%)	
1,1-Dichloroethene	10	7.1	71	10	7.4	74	4.1
Chlorobenzene	10	10.3	103	10	10.3	103	0.0
Trichloroethene (TCE)	10	7.0	70	10	7.0	70	0.0
Surrogate Recovery							
Dibromofluoromethane			115			110	
1,2-Dichloroethane-d4			107			98	
Toluene-d8			99			100	
4-Bromofluorobenzene			101			100	

Laboratory Control Sample			
	Spiked Conc. (µg/L)	Measured Conc. (µg/L)	Spike Recovery (%)
1,1-Dichloroethene	10	7.0	70
Chlorobenzene	10	10.0	100
Trichloroethene (TCE)	10	8.2	82
Surrogate Recovery			
Dibromofluoromethane			117
1,2-Dichloroethane-d4			110
Toluene-d8			100
4-Bromofluorobenzene			106

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

4139 Libby Road NE • Olympia, WA 98506-2518

January 15, 2018

Steve Marshall
GJG, LLC
8150 West Mercer Way
Mercer Island, WA 98040

Dear Mr. Marshall:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaner Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@aol.com

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 1/8/2018 Page: 1 of 1

Client: GJG LLC

Project Manager: Steve Marshall

Address: 8150 West Mercer Way

Project Name: Former Olympia Dry Cleaners

City: Mercer Island State: WA Zip: 98040

Location: Olympia City, State: WA

Phone: (206)399-8987 Fax:

Collector: G. Burleson Date of Collection: 1/6/2018

Client Project #

Email: marshallsj@comcast.net

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	PCE & Breakdown			Field Notes
1 #2		7:50PM	H2O	40 VOA													✓			
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				

Relinquished by:	Date / Time	Received by:	Date / Time
S. Burleson	1/8/2018 4:15 PM	Kayley Eley	1/8/18 4:15pm
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition? (Y) N

Temp. °C

Seals Intact? (Y) N N/A

Total Number of Containers: 3

Remarks:

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

FORMER OLYMPIA DRY CLEANER PROJECT
GJG, LLC
Olympia, Washington
Libby Project # L180108-3

Specific Halogenated and Aromatic Hydrocarbons (EPA 8260C) in Water

Sample Description		Method Blank	2
Date Sampled		n/a	1/6/18
Date Analyzed	PQL (µg/L)	1/11/18 (µg/L)	1/11/18 (µg/L)
Vinyl Chloride (VC)	0.2	nd	nd
1,1-Dichlorothene	1.0	nd	nd
trans-1,2-Dichloroethene	1.0	nd	nd
cis -1,2-Dichloroethene	1.0	nd	2.8
Trichloroethene (TCE)	0.5	nd	0.76
Tetrachloroethene (PCE)	1.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane		99	100
1,2-Dichloroethane-d4		89	100
Toluene-d8		96	97
4-Bromofluorobenzene		93	96

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@aol.com

FORMER OLYMPIA DRY CLEANER PROJECT
GJG, LLC
Olympia, Washington
Libby Project # L180108-3

QA/QC Data - EPA 8260C Analyses

Sample Identification: L180110-3							
	Matrix Spike			Matrix Spike Dup			RPD
	Spiked Conc. (µg/L)	Measured Conc. (µg/L)	Spike Recovery (%)	Spiked Conc. (µg/L)	Measured Conc. (µg/L)	Spike Recovery (%)	
1,1-Dichloroethene	10	8.1	81	10	6.9	69	16.0
Chlorobenzene	10	9.9	99	10	10.2	102	3.0
Trichloroethene (TCE)	10	8.3	83	10	8.4	84	1.2
Surrogate Recovery							
Dibromofluoromethane			99			102	
1,2-Dichloroethane-d4			92			93	
Toluene-d8			95			99	
4-Bromofluorobenzene			80			95	

Laboratory Control Sample			
	Spiked Conc. (µg/L)	Measured Conc. (µg/L)	Spike Recovery (%)
1,1-Dichloroethene	10	7.8	78
Chlorobenzene	10	10.0	100
Trichloroethene (TCE)	10	8.2	82
Surrogate Recovery			
Dibromofluoromethane			104
1,2-Dichloroethane-d4			101
Toluene-d8			98
4-Bromofluorobenzene			98

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Floyd | Snider
Lynn Grochala
601 Union St., Suite 600
Seattle, WA 98101

RE: GTH - Olympia Dry Cleaners
Work Order Number: 1804003

April 09, 2018

Attention Lynn Grochala:

Fremont Analytical, Inc. received 9 sample(s) on 3/30/2018 for the analyses presented in the following report.

Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *04/09/2018*

CLIENT: Floyd | Snider
Project: GTH - Olympia Dry Cleaners
Work Order: 1804003

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1804003-001	SEEP-CB-033018	03/30/2018 10:00 AM	03/30/2018 3:21 PM
1804003-002	MW-06-033018	03/30/2018 10:10 AM	03/30/2018 3:21 PM
1804003-003	MW-13-033018	03/30/2018 10:50 AM	03/30/2018 3:21 PM
1804003-004	SEEP-033018	03/30/2018 11:10 AM	03/30/2018 3:21 PM
1804003-005	MW-14-033018	03/30/2018 12:00 PM	03/30/2018 3:21 PM
1804003-006	MW-11-033018	03/30/2018 12:36 PM	03/30/2018 3:21 PM
1804003-007	MW-09-033018	03/30/2018 1:15 PM	03/30/2018 3:21 PM
1804003-008	SEEP-POST-033018	03/30/2018 1:30 PM	03/30/2018 3:21 PM
1804003-009	Trip Blank	03/26/2018 12:52 PM	03/30/2018 3:21 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1804003**
Date: **4/9/2018**

CLIENT: Floyd | Snider
Project: GTH - Olympia Dry Cleaners

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-001
Client Sample ID: **SEEP-CB-033018**

Collection Date: 3/30/2018 10:00:00 AM
Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	ND	0.200		µg/L	1	4/4/2018 3:50:05 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 3:50:05 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 3:50:05 PM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 3:50:05 PM
Trichloroethene (TCE)	ND	0.500		µg/L	1	4/4/2018 3:50:05 PM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	4/4/2018 3:50:05 PM
Surr: Dibromofluoromethane	87.9	45.4 - 152		%Rec	1	4/4/2018 3:50:05 PM
Surr: Toluene-d8	92.4	40.1 - 139		%Rec	1	4/4/2018 3:50:05 PM
Surr: 1-Bromo-4-fluorobenzene	102	64.2 - 128		%Rec	1	4/4/2018 3:50:05 PM

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-002
Client Sample ID: **MW-06-033018**

Collection Date: 3/30/2018 10:10:00 AM
Matrix: Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	ND	0.200		µg/L	1	4/4/2018 11:44:21 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 11:44:21 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 11:44:21 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 11:44:21 AM
Trichloroethene (TCE)	ND	0.500		µg/L	1	4/4/2018 11:44:21 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	4/4/2018 11:44:21 AM
Surr: Dibromofluoromethane	94.0	45.4 - 152		%Rec	1	4/4/2018 11:44:21 AM
Surr: Toluene-d8	87.9	40.1 - 139		%Rec	1	4/4/2018 11:44:21 AM
Surr: 1-Bromo-4-fluorobenzene	99.5	64.2 - 128		%Rec	1	4/4/2018 11:44:21 AM

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-003
Client Sample ID: **MW-13-033018**

Collection Date: 3/30/2018 10:50:00 AM
Matrix: Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	ND	0.200		µg/L	1	4/4/2018 12:45:49 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 12:45:49 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 12:45:49 PM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 12:45:49 PM
Trichloroethene (TCE)	ND	0.500		µg/L	1	4/4/2018 12:45:49 PM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	4/4/2018 12:45:49 PM
Surr: Dibromofluoromethane	87.0	45.4 - 152		%Rec	1	4/4/2018 12:45:49 PM
Surr: Toluene-d8	88.3	40.1 - 139		%Rec	1	4/4/2018 12:45:49 PM
Surr: 1-Bromo-4-fluorobenzene	99.1	64.2 - 128		%Rec	1	4/4/2018 12:45:49 PM

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Collection Date: 3/30/2018 11:10:00 AM
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-004
Matrix: Water
Client Sample ID: **SEEP-033018**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	1.92	0.200		µg/L	1	4/4/2018 4:21:00 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 4:21:00 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 4:21:00 PM
cis-1,2-Dichloroethene	59.8	10.0	D	µg/L	10	4/6/2018 6:46:24 AM
Trichloroethene (TCE)	15.9	0.500		µg/L	1	4/4/2018 4:21:00 PM
Tetrachloroethene (PCE)	19.4	1.00		µg/L	1	4/4/2018 4:21:00 PM
Surr: Dibromofluoromethane	92.5	45.4 - 152		%Rec	1	4/4/2018 4:21:00 PM
Surr: Toluene-d8	88.4	40.1 - 139		%Rec	1	4/4/2018 4:21:00 PM
Surr: 1-Bromo-4-fluorobenzene	104	64.2 - 128		%Rec	1	4/4/2018 4:21:00 PM

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-005
Client Sample ID: **MW-14-033018**

Collection Date: 3/30/2018 12:00:00 PM
Matrix: Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	ND	0.200		µg/L	1	4/4/2018 3:19:22 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 3:19:22 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 3:19:22 PM
cis-1,2-Dichloroethene	2.15	1.00		µg/L	1	4/4/2018 3:19:22 PM
Trichloroethene (TCE)	1.96	0.500		µg/L	1	4/4/2018 3:19:22 PM
Tetrachloroethene (PCE)	1.19	1.00		µg/L	1	4/4/2018 3:19:22 PM
Surr: Dibromofluoromethane	95.3	45.4 - 152		%Rec	1	4/4/2018 3:19:22 PM
Surr: Toluene-d8	89.2	40.1 - 139		%Rec	1	4/4/2018 3:19:22 PM
Surr: 1-Bromo-4-fluorobenzene	102	64.2 - 128		%Rec	1	4/4/2018 3:19:22 PM

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-006
Client Sample ID: **MW-11-033018**

Collection Date: 3/30/2018 12:36:00 PM
Matrix: Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	ND	0.200		µg/L	1	4/9/2018 3:41:30 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/9/2018 3:41:30 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/9/2018 3:41:30 PM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	4/9/2018 3:41:30 PM
Trichloroethene (TCE)	0.603	0.500		µg/L	1	4/9/2018 3:41:30 PM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	4/9/2018 3:41:30 PM
Surr: Dibromofluoromethane	107	45.4 - 152		%Rec	1	4/9/2018 3:41:30 PM
Surr: Toluene-d8	97.3	40.1 - 139		%Rec	1	4/9/2018 3:41:30 PM
Surr: 1-Bromo-4-fluorobenzene	97.1	64.2 - 128		%Rec	1	4/9/2018 3:41:30 PM

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-007
Client Sample ID: **MW-09-033018**

Collection Date: 3/30/2018 1:15:00 PM
Matrix: Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	ND	0.200		µg/L	1	4/4/2018 2:17:54 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 2:17:54 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 2:17:54 PM
cis-1,2-Dichloroethene	6.18	1.00		µg/L	1	4/4/2018 2:17:54 PM
Trichloroethene (TCE)	2.08	0.500		µg/L	1	4/4/2018 2:17:54 PM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	4/4/2018 2:17:54 PM
Surr: Dibromofluoromethane	92.2	45.4 - 152		%Rec	1	4/4/2018 2:17:54 PM
Surr: Toluene-d8	89.7	40.1 - 139		%Rec	1	4/4/2018 2:17:54 PM
Surr: 1-Bromo-4-fluorobenzene	103	64.2 - 128		%Rec	1	4/4/2018 2:17:54 PM

Analytical Report

Work Order: **1804003**
Date Reported: **4/9/2018**

Client: Floyd | Snider
Collection Date: 3/30/2018 1:30:00 PM
Project: GTH - Olympia Dry Cleaners
Lab ID: 1804003-008
Matrix: Water
Client Sample ID: **SEEP-POST-033018**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: 20259		Analyst: TN
Vinyl chloride	ND	0.200		µg/L	1	4/4/2018 2:48:42 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 2:48:42 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 2:48:42 PM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	4/4/2018 2:48:42 PM
Trichloroethene (TCE)	ND	0.500		µg/L	1	4/4/2018 2:48:42 PM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	4/4/2018 2:48:42 PM
Surr: Dibromofluoromethane	83.2	45.4 - 152		%Rec	1	4/4/2018 2:48:42 PM
Surr: Toluene-d8	91.0	40.1 - 139		%Rec	1	4/4/2018 2:48:42 PM
Surr: 1-Bromo-4-fluorobenzene	99.4	64.2 - 128		%Rec	1	4/4/2018 2:48:42 PM

Work Order: 1804003
CLIENT: Floyd | Snider
Project: GTH - Olympia Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-20259** SampType: **LCS** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **LCSW** Batch ID: **20259** Analysis Date: **4/3/2018** SeqNo: **824072**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	20.6	0.200	20.00	0	103	48	145				
1,1-Dichloroethene	19.0	1.00	20.00	0	95.1	57.5	150				
trans-1,2-Dichloroethene	19.0	1.00	20.00	0	94.8	71.7	129				
cis-1,2-Dichloroethene	18.4	1.00	20.00	0	92.0	70.2	139				
Trichloroethene (TCE)	18.8	0.500	20.00	0	93.8	65.2	136				
Tetrachloroethene (PCE)	20.1	1.00	20.00	0	101	47.5	147				
Surr: Dibromofluoromethane	25.1		25.00		100	45.4	152				
Surr: Toluene-d8	23.2		25.00		92.6	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.7		25.00		103	64.2	128				

Sample ID **MB-20259** SampType: **MBLK** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **MBLKW** Batch ID: **20259** Analysis Date: **4/3/2018** SeqNo: **824073**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.200									
1,1-Dichloroethene	ND	1.00									
trans-1,2-Dichloroethene	ND	1.00									
cis-1,2-Dichloroethene	ND	1.00									
Trichloroethene (TCE)	ND	0.500									
Tetrachloroethene (PCE)	ND	1.00									
Surr: Dibromofluoromethane	23.5		25.00		94.0	45.4	152				
Surr: Toluene-d8	22.8		25.00		91.3	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.7		25.00		103	64.2	128				

Sample ID **1804021-002ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **BATCH** Batch ID: **20259** Analysis Date: **4/3/2018** SeqNo: **824067**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.200						0		30	
1,1-Dichloroethene	ND	1.00						0		30	

Work Order: 1804003
CLIENT: Floyd | Snider
Project: GTH - Olympia Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1804021-002ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **BATCH** Batch ID: **20259** Analysis Date: **4/3/2018** SeqNo: **824067**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,2-Dichloroethene	ND	1.00						0		30	
cis-1,2-Dichloroethene	ND	1.00						0		30	
Trichloroethene (TCE)	ND	0.500						0		30	
Tetrachloroethene (PCE)	ND	1.00						0		30	
Surr: Dibromofluoromethane	23.6		25.00		94.6	45.4	152		0		
Surr: Toluene-d8	23.0		25.00		92.1	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	25.0		25.00		100	64.2	128		0		

Sample ID **1803397-004AMS** SampType: **MS** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **BATCH** Batch ID: **20259** Analysis Date: **4/4/2018** SeqNo: **824049**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	23.4	0.200	20.00	0	117	41	165				
1,1-Dichloroethene	21.6	1.00	20.00	0	108	51.6	164				
trans-1,2-Dichloroethene	20.5	1.00	20.00	0	103	63.5	138				
cis-1,2-Dichloroethene	19.4	1.00	20.00	0	96.8	60	154				
Trichloroethene (TCE)	20.1	0.500	20.00	0	100	60.4	134				
Tetrachloroethene (PCE)	22.1	1.00	20.00	0	110	50.3	133				
Surr: Dibromofluoromethane	25.0		25.00		100	45.4	152				
Surr: Toluene-d8	23.1		25.00		92.2	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.4		25.00		102	64.2	128				

Sample ID **1803397-004AMSD** SampType: **MSD** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **BATCH** Batch ID: **20259** Analysis Date: **4/4/2018** SeqNo: **824050**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	24.8	0.200	20.00	0	124	41	165	23.42	5.84	30	
1,1-Dichloroethene	22.3	1.00	20.00	0	111	51.6	164	21.58	3.21	30	
trans-1,2-Dichloroethene	21.5	1.00	20.00	0	108	63.5	138	20.52	4.73	30	
cis-1,2-Dichloroethene	20.4	1.00	20.00	0	102	60	154	19.36	5.44	30	

Work Order: 1804003
CLIENT: Floyd | Snider
Project: GTH - Olympia Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1803397-004AMSD** SampType: **MSD** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **BATCH** Batch ID: **20259** Analysis Date: **4/4/2018** SeqNo: **824050**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	21.5	0.500	20.00	0	108	60.4	134	20.06	6.96	30	
Tetrachloroethene (PCE)	23.2	1.00	20.00	0	116	50.3	133	22.10	4.81	30	
Surr: Dibromofluoromethane	25.3		25.00		101	45.4	152		0		
Surr: Toluene-d8	23.3		25.00		93.4	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	25.4		25.00		102	64.2	128		0		

Sample ID **1804003-002ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **4/3/2018** RunNo: **42672**
Client ID: **MW-06-033018** Batch ID: **20259** Analysis Date: **4/4/2018** SeqNo: **824058**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.200						0		30	
1,1-Dichloroethene	ND	1.00						0		30	
trans-1,2-Dichloroethene	ND	1.00						0		30	
cis-1,2-Dichloroethene	ND	1.00						0		30	
Trichloroethene (TCE)	ND	0.500						0		30	
Tetrachloroethene (PCE)	ND	1.00						0		30	
Surr: Dibromofluoromethane	23.4		25.00		93.7	45.4	152		0		
Surr: Toluene-d8	22.0		25.00		88.1	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	25.0		25.00		100	64.2	128		0		

Sample ID **CCV-20259A** SampType: **CCV** Units: **µg/L** Prep Date: **4/6/2018** RunNo: **42705**
Client ID: **CCV** Batch ID: **20259** Analysis Date: **4/6/2018** SeqNo: **824970**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
cis-1,2-Dichloroethene	18.6	1.00	20.00	0	93.2	80	120				
Surr: Dibromofluoromethane	26.1		25.00		104	72.1	122				
Surr: Toluene-d8	25.8		25.00		103	62.1	129				
Surr: 1-Bromo-4-fluorobenzene	25.5		25.00		102	63.3	132				

Work Order: 1804003
CLIENT: Floyd | Snider
Project: GTH - Olympia Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **CCV-20259A** SampType: **CCV** Units: **µg/L** Prep Date: **4/9/2018** RunNo: **42760**
Client ID: **CCV** Batch ID: **20259** Analysis Date: **4/9/2018** SeqNo: **826092**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	21.5	0.200	20.00	0	107	80	120				
1,1-Dichloroethene	19.1	1.00	20.00	0	95.7	80	120				
trans-1,2-Dichloroethene	18.3	1.00	20.00	0	91.3	80	120				
cis-1,2-Dichloroethene	17.8	1.00	20.00	0	88.8	80	120				
Trichloroethene (TCE)	18.4	0.500	20.00	0	91.8	80	120				
Tetrachloroethene (PCE)	18.6	1.00	20.00	0	92.8	80	120				
Surr: Dibromofluoromethane	25.6		25.00		103	72.1	122				
Surr: Toluene-d8	24.9		25.00		99.7	62.1	129				
Surr: 1-Bromo-4-fluorobenzene	25.2		25.00		101	63.3	132				

Sample Log-In Check List

Client Name:	**FS**	Work Order Number:	**1804003**
Logged by:	**Brianna Barnes**	Date Received:	**3/30/2018 3:21:00 PM**

Chain of Custody

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

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >0°C to 10.0°C*	Yes ☐	No ☑	NA ☐
	Samples received at appropriate temperature.			
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☑	NA ☐
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	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: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler	8.1
Sample	9.6
Temp Blank	11.4

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 3/30/18 Page: 1 of: 1

Laboratory Project No (internal): 1804003

Project Name: GTH-Olympia Dry Cleaners

Special Remarks: CVOCs: PCE, TCE, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethen, and vinyl chloride

Client: Floyd Snider

Project No:

Address: 601 Union St, Suite 600

Collected by: P. Osterhout

City, State, Zip: Seattle, WA 98101

Location: Olympia, WA

Telephone: 206-292-2078

Report To (PM): Lynn Grochala

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Fax:

PM Email: Lynn.Grochala@FloydSnider.com

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (8011)	CVOCs by 8260B				Comments
1	SEEP-CB-033018	3/30/18	1000	W													X					
2	MW-06-033018		1010	GW													X					
3	MW-13-033018		1050	GW													X					
4	SEEP-033018		1110	W													X					
5	MW-14-033018		1200	GW													X					
6	MW-11-033018		1236	GW													X					Extra volume
7	MW-09-033018		1315	GW													X					
8	SEEP-POST-033018	↓	1330	W													X					
9																						
10																						

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x [signature]	3/30/18 1521	x [signature]	3/30/18 1521
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-around Time:

- ☒ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

Attachment 2
Groundwater Sample Collection Field Forms

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: T-9
Date of Collection: 3/30/2018
Field Personnel: P. Osterhout

Purge Data

Well ID: MW-6
Secure: ☒ Yes ☐ No
Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No
One Casing Volume (gal):
Depth of water (from top of well casing): 1.62'
Well Casing Type/Diameter/Screened Interval: 3/4 inch, 10-20'
After 5 minutes of purging (from top of casing): ? Can't measure
Begin purge (time): 0938
End purge (time): 1014
Gallons purged: 0.75 gal
Purge water disposal method: Infiltrate on site

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO mg/L	Conductivity mS/cm	Turbidity	Temp °C	ORP mV	Comments
0948	–	0.5 L	6.77	0.74	0.285	19.5	12.10	23	
0953	–	1.00	6.60	0.29	0.305	42.5	12.01	-19	
0958	–	1.75	6.58	0.26	0.339	46.0	12.01	-33	
1003	–	2.25	6.58	0.16	0.432	56.9	12.11	-63	
1008		2.00	6.59	0.37	0.454	58.8	12.22	-76	

Sampling Data

Sample No: MW-06-033018
Location and Depth:
Date Collected (mo/dy/yr): 3/30/18
Time Collected: 1010 ☒ AM ☐ PM
Weather: partly cloudy
Type: ☒ Ground Water ☐ Surface Water Other:
Sample: ☐ Filtered ☒ Unfiltered Other:
Sample Collected with: ☐ Bailer ☒ Pump Other:
Type: peristaltic
Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other:
Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:
Sample Description (Color, Turbidity, Odor, Other): No odor, slightly turbid, clear (purge water has mild H_2S odor)

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER) ☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	VOCs	(HCl) ☒

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40mL VOA w/ HCl	3	None	Well barely productive. Tubing set at bottom of well to be able to purge.

Signature: P. Osterhout
Date: 3/30/18

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: T-9
Date of Collection: 3/30/2018
Field Personnel: P. Osterhout

Purge Data

Well ID: MW-09 Secure: ☒ Yes ☐ No Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No
One Casing Volume (gal):
Depth of water (from top of well casing): 3.31'
Well Casing Type/Diameter/Screened Interval: 2" PVC, 3-16'
After 5 minutes of purging (from top of casing): 3.37'
Begin purge (time): 12:51
End purge (time): 1316
Gallons purged: 1
Purge water disposal method: infiltrate on site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO mg/L	Conductivity mS/cm	Turbidity	Temp °C	ORP mV	Comments
1256	3.37'	0.5L	7.33	1.86	0.232	22.2	12.77	-75	
1301	3.40'	1L	7.34	0.41	0.234	4.7	12.92	-82	
1306	3.41'	1.75L	7.37	0.14	0.239	2.6	12.91	-92	
1311	3.42'	2.25L	7.38	0.00	0.240	2.6	12.68	-95	

Sampling Data

Sample No: MW-09-033018 Location and Depth:
Date Collected (mo/dy/yr): 3/30/18 Time Collected: 1315 ☐ AM ☒ PM Weather: partly cloudy
Type: ☒ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☒ Unfiltered Other:
Sample Collected with: ☐ Bailer ☒ Pump Other: Type: peristaltic
Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other:
Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:
Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER) ☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	VOCs	(HCl) ☒

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40 mL VOAs w/ HCl	3	None	Purge water has orange flock.

Signature: Date: 3/30/18

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: T-9
Date of Collection: 3/30/18
Field Personnel: P. Osterhout

Purge Data

Well ID: MW-11 Secure: ☒ Yes ☐ No Well Condition/Damage Description: Missing one bolt

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal):

Depth of water (from top of well casing): 0.39 (Artesian) Well Casing Type/Diameter/Screened Interval: 2" PVC, 5-10'

After 5 minutes of purging (from top of casing):

Begin purge (time): 1215

End purge (time): 1240

Gallons purged: 0.75

Purge water disposal method: Infiltrate on site

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO mg/L	Conductivity mS/cm	Turbidity	Temp °C	ORP mV	Comments
1220	0.44'	0.75L	7.49	1.81	0.180	3.7	10.94	-73	
1225	0.53'	1.5L	7.37	0.40	0.180	0.0	10.47	-83	slowed pump
1230	0.52'	2.00L	7.34	0.03	0.180	0.0	10.41	-86	
1235	0.54'	2.50L	7.33	0.00	0.180	0.0	10.31	-88	

Sampling Data

Sample No: MW-11-033018 Location and Depth:

Date Collected (mo/dy/yr): 3/30/18 Time Collected: 1236 ☐ AM ☒ PM Weather: Partly cloudy

Type: ☒ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☒ Unfiltered Other:

Sample Collected with: ☐ Bailer ☒ Pump Other: Type: peristaltic

Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other:

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER)☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	VOCs	(HCl) ☒

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40 mL VOA w/ HCl	5	None	Water level at 0.39' when I opened well, but slowly began to rise.
			Extra volume for lab QC

Signature: Date: 3/30/18

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia
Project Number: T-9
Date of Collection: 3/30/18
Field Personnel: P. Osterhout

Purge Data

Well ID: MW-13
Secure: ☑ Yes ☐ No
Well Condition/Damage Description: Filled w/ water

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No
One Casing Volume (gal):
Depth of water (from top of well casing): 0.18
Well Casing Type/Diameter/Screened Interval: 2" PVC, 4.5-9.5'
After 5 minutes of purging (from top of casing): 1.35'
Begin purge (time): 1028
End purge (time): 1053
Gallons purged: 0.9 gals
Purge water disposal method: Infiltrate on site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO mg/L	Conductivity mS/cm	Turbidity	Temp °C	ORP mV	Comments
1033	1.35'	1L	7.38	0.72	0.229	11.5	10.82	-130	slowed pump
1038	1.88'	1.75	7.64	0.46	0.223	8.0	10.61	-145	
1043	2.23'	2.25L	7.79	0.13	0.221	5.1	10.62	-152	
1048	2.36'	2.75L	7.89	0.06	0.220	2.7	10.65	-153	

Sampling Data

Sample No: MW-13-033018
Location and Depth:
Date Collected (mo/dy/yr): 3/30/2018
Time Collected: 1050 ☑ AM ☐ PM
Weather: Partly cloudy
Type: ☑ Ground Water ☐ Surface Water Other:
Sample: ☐ Filtered ☑ Unfiltered Other:
Sample Collected with: ☐ Bailer ☑ Pump Other:
Type: peristaltic
Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☑ Horiba U-50 Other:
Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:
Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER)☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	VOCs	(HCl) ☑

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40mL VOA w/HCl	3	None	

Signature: [signature]
Date: 3/30/18

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia
Project Number: T-9
Date of Collection: 3/30/18
Field Personnel: P. Osterhout

Purge Data

Well ID: MW-14 Secure: ☒ Yes ☐ No Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No N/A

One Casing Volume (gal):

Depth of water (from top of well casing): Artesian

Well Casing Type/Diameter/Screened Interval: 2" PVC, 10-15' angled

After 5 minutes of purging (from top of casing):

Begin purge (time): 1133

End purge (time): 1202

Gallons purged: 1.75

Purge water disposal method: infiltrate on site

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged	pH	DO mg/L	Conductivity mS/cm	Turbidity	Temp °C	ORP mV	Comments
1138	Artesian	1L	7.81	1.99	0.191	6.1	11.07	-38	
1143	" "	2L	7.55	0.51	0.192	0.0	11.19	-75	
1148	" "	3.5L	7.44	0.30	0.196	0.0	11.37	-87	
1153	" "	5L	7.36	0.18	0.201	0.0	11.48	-93	
1158	" "	6.5L	7.34	0.00	0.202	3.9	11.42	-97	

Sampling Data

Sample No: MW-14-033018 Location and Depth:

Date Collected (mo/dy/yr): 3/30/18 Time Collected: 1200 ☐ AM ☒ PM Weather: partly cloudy

Type: ☒ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☒ Unfiltered Other:

Sample Collected with: ☐ Bailer ☒ Pump Other: Type: peristaltic

Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other:

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:

Sample Description (Color, Turbidity, Odor, Other): Clear, no odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER) ☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	VOCs	(HCl) ☒

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40 mL VOA w/ HCl	3	~~MW-~~ None	

Signature: [signature] Date: 3/30/18