

June 16, 2019

Project 201942

Tim Grenier
Grenier Group
3 Cole Circle
East Greenwich, RI 02818

Re: Letter Report
Soil Sampling Results-VOCs, TPH
Residential Property
32 & 33 Exchange Street
East Greenwich, RI 02818

Dear Mr. Grenier:

Redwood Environmental Group, LLC (Redwood) has completed limited soil sampling at the address above (the Site) as requested by Grenier Group. Redwood arbitrarily selected 4 points across the Site and using a shovel, dug down approximately 12 to 18 inches into the soil. Soils were then collected from the sidewalls of the hole and placed in laboratory glassware. The soils were delivered to a Rhode Island Certified laboratory for the following analysis:

- Volatile organic compounds (VOCs) by U.S. EPA Method 8260 and
- Total Petroleum Hydrocarbons (TPH) by U.S. EPA Method 8100M

An orange flag was placed in each sample location. Figure 1 provides an approximate location of the sample points.

Table 1 attached shows the results of VOCs and TPH as compared to the Rhode Island Department of Environment Management (RI DEM) Residential Direct Exposure Criteria (RDEC) applicable to the Site. No VOCs or TPH were identified above RDEC standards applicable to the Site.

If you have any questions regarding this report, please call me at (401) 270-7000. Thank you for the opportunity to provide environmental assessment services.

Sincerely,

REDWOOD ENVIRONMENTAL GROUP, LLC

A handwritten signature in black ink that reads "Gary S. Kaufman".

Gary S. Kaufman
Principal/Senior Project Manager

Attachments
Figure 1
Table 1

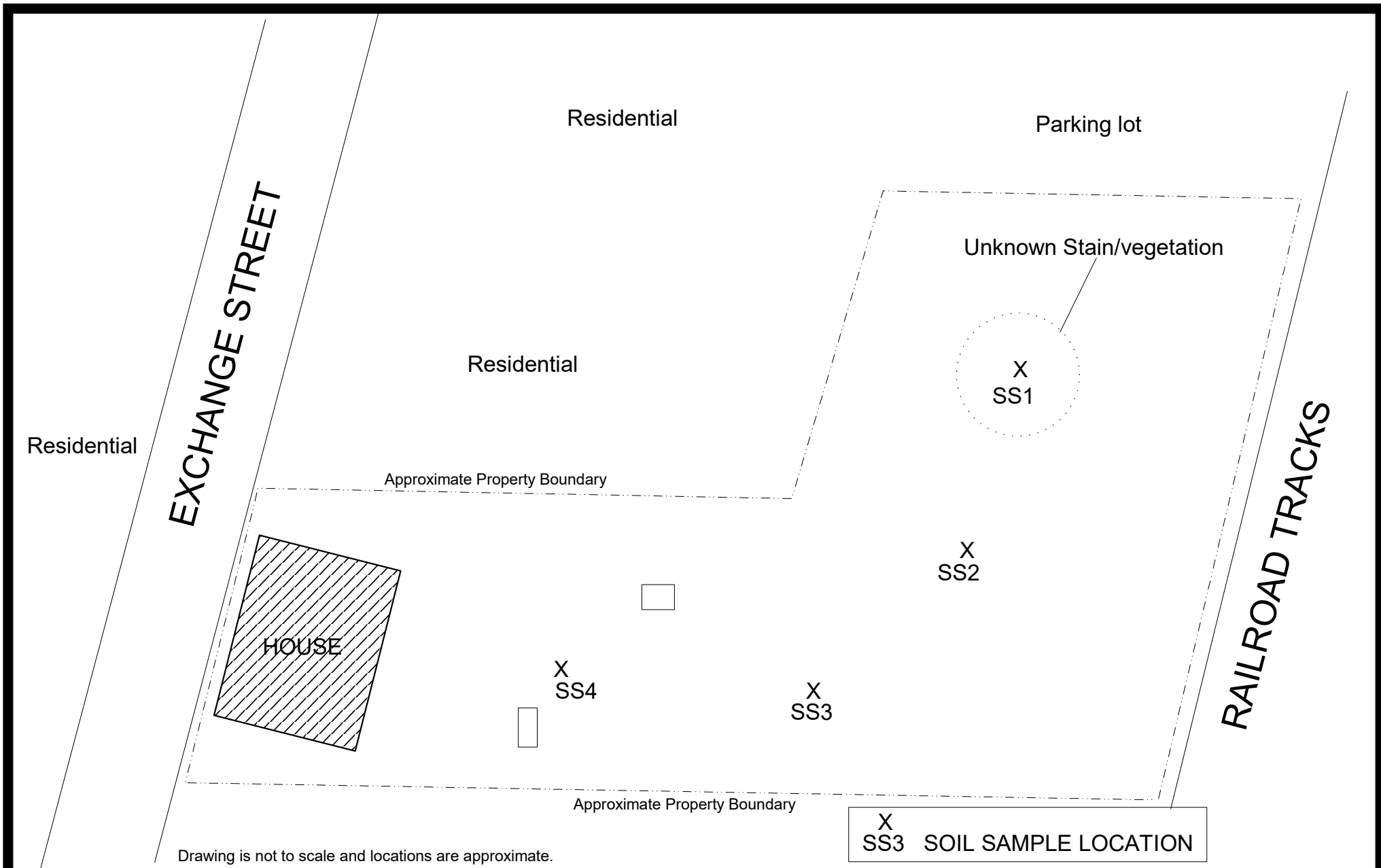


FIGURE 1
SAMPLING PLAN



SOIL SAMPLING
RESIDENTIAL PROPERTY
32&33 EXCHANGE STREET
EAST GREENWICH, RHODE ISLAND

NORTH
PROJECT NO. 201942



Laboratory Sample Designation		RES DEC	19F0081-01		19F0081-02		19F0081-03		19F0081-04	
Sample Designation			201942-SS1-060419		201942-SS2-060419		201942-SS3-060419		201942-SS4-060419	
Sample Date			06/04/2019		06/04/2019		06/04/2019		06/04/2019	
VOCs										
1,1,1,2-Tetrachloroethane	mg/kg	2.2	0.149	U	0.161	U	0.154	U	0.137	U
1,1,1-Trichloroethane	mg/kg	540	0.149	U	0.161	U	0.154	U	0.137	U
1,1,2,2-Tetrachloroethane	mg/kg	1.3	0.149	U	0.161	U	0.154	U	0.137	U
1,1,2-Trichloroethane	mg/kg	3.6	0.149	U	0.161	U	0.154	U	0.137	U
1,1-Dichloroethane	mg/kg	920	0.149	U	0.161	U	0.154	U	0.137	U
1,1-Dichloroethene	mg/kg	0.2	0.149	U	0.161	U	0.154	U	0.137	U
1,1-Dichloropropene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
1,2,3-Trichlorobenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
1,2,3-Trichloropropane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
1,2,4-Trichlorobenzene	mg/kg	96	0.149	U	0.161	U	0.154	U	0.137	U
1,2,4-Trimethylbenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
1,2-Dibromo-3-Chloropropane	mg/kg	0.5	0.744	U	0.806	U	0.77	U	0.683	U
1,2-Dibromoethane	mg/kg	0.01	0.149	U	0.161	U	0.154	U	0.137	U
1,2-Dichlorobenzene	mg/kg	510	0.149	U	0.161	U	0.154	U	0.137	U
1,2-Dichloroethane	mg/kg	0.9	0.149	U	0.161	U	0.154	U	0.137	U
1,2-Dichloropropane	mg/kg	1.9	0.149	U	0.161	U	0.154	U	0.137	U
1,3,5-Trimethylbenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
1,3-Dichlorobenzene	mg/kg	430	0.149	U	0.161	U	0.154	U	0.137	U
1,3-Dichloropropane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
1,4-Dichlorobenzene	mg/kg	27	0.149	U	0.161	U	0.154	U	0.137	U
1,4-Dioxane - Screen	mg/kg	NE	29.8	U	32.3	U	30.8	U	27.3	U
1-Chlorohexane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
2,2-Dichloropropane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
2-Butanone	mg/kg	10000	0.744	U	0.806	U	0.77	U	0.683	U
2-Chlorotoluene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
2-Hexanone	mg/kg	NE	0.744	U	0.806	U	0.77	U	0.683	U
4-Chlorotoluene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
4-Isopropyltoluene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
4-Methyl-2-Pentanone	mg/kg	1200	0.744	U	0.806	U	0.77	U	0.683	U
Acetone	mg/kg	7800	0.744	U	0.806	U	0.77	U	0.683	U
Benzene	mg/kg	2.5	0.149	U	0.161	U	0.154	U	0.137	U
Bromobenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U

Bromochloromethane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Bromodichloromethane	mg/kg	10	0.149	U	0.161	U	0.154	U	0.137	U
Bromoform	mg/kg	81	0.149	U	0.161	U	0.154	U	0.137	U
Bromomethane	mg/kg	0.8	0.149	U	0.161	U	0.154	U	0.137	U
Carbon Disulfide	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Carbon Tetrachloride	mg/kg	1.5	0.149	U	0.161	U	0.154	U	0.137	U
Chlorobenzene	mg/kg	210	0.149	U	0.161	U	0.154	U	0.137	U
Chloroethane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Chloroform	mg/kg	1.2	0.149	U	0.161	U	0.154	U	0.137	U
Chloromethane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
cis-1,2-Dichloroethene	mg/kg	630	0.149	U	0.161	U	0.154	U	0.137	U
cis-1,3-Dichloropropene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Dibromochloromethane	mg/kg	7.6	0.149	U	0.161	U	0.154	U	0.137	U
Dibromomethane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Dichlorodifluoromethane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Diethyl Ether	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Di-isopropyl ether	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Ethyl tertiary-butyl ether	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Ethylbenzene	mg/kg	71	0.149	U	0.161	U	0.154	U	0.137	U
Hexachlorobutadiene	mg/kg	8.2	0.149	U	0.161	U	0.154	U	0.137	U
Isopropylbenzene	mg/kg	27	0.149	U	0.161	U	0.154	U	0.137	U
Methyl tert-Butyl Ether	mg/kg	390	0.149	U	0.161	U	0.154	U	0.137	U
Methylene Chloride	mg/kg	45	0.0610	J	0.0758	J	0.0447	J	0.0656	J
Naphthalene	mg/kg	54	0.149	U	0.161	U	0.0416	J	0.137	U
n-Butylbenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
n-Propylbenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
sec-Butylbenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Styrene	mg/kg	13	0.149	U	0.161	U	0.154	U	0.137	U
tert-Butylbenzene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Tertiary-amyl methyl ether	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Tetrachloroethene	mg/kg	12	0.149	U	0.161	U	0.154	U	0.137	U
Tetrahydrofuran	mg/kg	NE	0.744	U	0.806	U	0.77	U	0.683	U
Toluene	mg/kg	190	0.149	U	0.0258	J	0.154	U	0.137	U
trans-1,2-Dichloroethene	mg/kg	1100	0.149	U	0.161	U	0.154	U	0.137	U
trans-1,3-Dichloropropene	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Trichloroethene	mg/kg	13	0.149	U	0.161	U	0.154	U	0.137	U
Trichlorofluoromethane	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U
Vinyl Acetate	mg/kg	NE	0.149	U	0.161	U	0.154	U	0.137	U

Vinyl Chloride	mg/kg	0.02	0.149	U	0.161	U	0.154	U	0.137	U
Xylene O	mg/kg	110	0.149	U	0.161	U	0.154	U	0.137	U
Xylene P,M	mg/kg	110	0.298	U	0.323	U	0.308	U	0.273	U
Xylenes (Total)	mg/kg	110	0.298	U, D	0.323	U, D	0.308	U, D	0.273	U, D
TPH - ETPH										
Total Petroleum Hydrocarbons	mg/kg	500	167	-	142	-	111	-	41	U

Qualifier	Description
U	Undetected
J	Reported between MDL and MRL
D	Diluted



CERTIFICATE OF ANALYSIS

Gary Kaufman
Redwood Environmental Group
10 Elmgrove Avenue
Providence, RI 02906

RE: Exchange Street (201942)
ESS Laboratory Work Order Number: 19F0081

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED

By ESS Laboratory at 12:43 pm, Jun 11, 2019

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

SAMPLE RECEIPT

The following samples were received on June 04, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
19F0081-01	201942-SS1-060419	Soil	8100M, 8260B
19F0081-02	201942-SS2-060419	Soil	8100M, 8260B
19F0081-03	201942-SS3-060419	Soil	8100M, 8260B
19F0081-04	201942-SS4-060419	Soil	8100M, 8260B
19F0081-05	Trip Blank	Soil	8260B



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

C9F0141-CCV1

1,4-Dioxane - Screen (43% @ 30%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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[Redacted content]



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - ICP MS
- 7010 - Graphite Furnace
- 7196A - Hexavalent Chromium
- 7470A - Aqueous Mercury
- 7471B - Solid Mercury
- 8011 - EDB/DBCP/TCP
- 8015C - GRO/DRO
- 8081B - Pesticides
- 8082A - PCB
- 8100M - TPH
- 8151A - Herbicides
- 8260B - VOA
- 8270D - SVOA
- 8270D SIM - SVOA Low Level
- 9014 - Cyanide
- 9038 - Sulfate
- 9040C - Aqueous pH
- 9045D - Solid pH (Corrosivity)
- 9050A - Specific Conductance
- 9056A - Anions (IC)
- 9060A - TOC
- 9095B - Paint Filter
- MADEP 04-1.1 - EPH
- MADEP 18-2.1 - VPH

Prep Methods

- 3005A - Aqueous ICP Digestion
- 3020A - Aqueous Graphite Furnace / ICP MS Digestion
- 3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
- 3060A - Solid Hexavalent Chromium Digestion
- 3510C - Separatory Funnel Extraction
- 3520C - Liquid / Liquid Extraction
- 3540C - Manual Soxhlet Extraction
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS1-060419
Date Sampled: 06/04/19 14:30
Percent Solids: 94
Initial Volume: 23.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,1,1-Trichloroethane	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,1,2,2-Tetrachloroethane	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,1,2-Trichloroethane	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,1-Dichloroethane	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,1-Dichloroethene	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,1-Dichloropropene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2,3-Trichlorobenzene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2,3-Trichloropropane	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2,4-Trichlorobenzene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2,4-Trimethylbenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2-Dibromo-3-Chloropropane	ND (0.744)	0.149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2-Dibromoethane	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2-Dichlorobenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2-Dichloroethane	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,2-Dichloropropane	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,3,5-Trimethylbenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,3-Dichlorobenzene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,3-Dichloropropane	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,4-Dichlorobenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
1,4-Dioxane - Screen	ND (29.8)	28.3	8260B		1	06/10/19 13:43	C9F0141	CF91031
1-Chlorohexane	ND (0.149)	0.0596	8260B		1	06/10/19 13:43	C9F0141	CF91031
2,2-Dichloropropane	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
2-Butanone	ND (0.744)	0.506	8260B		1	06/10/19 13:43	C9F0141	CF91031
2-Chlorotoluene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
2-Hexanone	ND (0.744)	0.223	8260B		1	06/10/19 13:43	C9F0141	CF91031
4-Chlorotoluene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
4-Isopropyltoluene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
4-Methyl-2-Pentanone	ND (0.744)	0.238	8260B		1	06/10/19 13:43	C9F0141	CF91031
Acetone	ND (0.744)	0.402	8260B		1	06/10/19 13:43	C9F0141	CF91031
Benzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Bromobenzene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS1-060419
Date Sampled: 06/04/19 14:30
Percent Solids: 94
Initial Volume: 23.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
Bromodichloromethane	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Bromoform	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Bromomethane	ND (0.149)	0.0596	8260B		1	06/10/19 13:43	C9F0141	CF91031
Carbon Disulfide	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Carbon Tetrachloride	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Chlorobenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Chloroethane	ND (0.149)	0.0596	8260B		1	06/10/19 13:43	C9F0141	CF91031
Chloroform	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Chloromethane	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
cis-1,2-Dichloroethene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
cis-1,3-Dichloropropene	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
Dibromochloromethane	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Dibromomethane	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
Dichlorodifluoromethane	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
Diethyl Ether	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
Di-isopropyl ether	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Ethyl tertiary-butyl ether	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Ethylbenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Hexachlorobutadiene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Isopropylbenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Methyl tert-Butyl Ether	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
Methylene Chloride	J 0.0610 (0.298)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Naphthalene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
n-Butylbenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
n-Propylbenzene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
sec-Butylbenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Styrene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
tert-Butylbenzene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Tertiary-amyl methyl ether	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Tetrachloroethene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Tetrahydrofuran	ND (0.744)	0.238	8260B		1	06/10/19 13:43	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS1-060419
Date Sampled: 06/04/19 14:30
Percent Solids: 94
Initial Volume: 23.4
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
trans-1,2-Dichloroethene	ND (0.149)	0.0447	8260B		1	06/10/19 13:43	C9F0141	CF91031
trans-1,3-Dichloropropene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Trichloroethene	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Trichlorofluoromethane	ND (0.149)	0.0596	8260B		1	06/10/19 13:43	C9F0141	CF91031
Vinyl Acetate	ND (0.149)	0.0744	8260B		1	06/10/19 13:43	C9F0141	CF91031
Vinyl Chloride	ND (0.149)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Xylene O	ND (0.149)	0.0149	8260B		1	06/10/19 13:43	C9F0141	CF91031
Xylene P,M	ND (0.298)	0.0298	8260B		1	06/10/19 13:43	C9F0141	CF91031
Xylenes (Total)	ND (0.298)		8260B		1	06/10/19 13:43		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>84 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>86 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>87 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>86 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS1-060419
Date Sampled: 06/04/19 14:30
Percent Solids: 94
Initial Volume: 20.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 6/5/19 12:38

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons	167 (38.1)		8100M		1	06/07/19 17:04	C9F0107	CF90516
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		85 %		40-140				



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS2-060419
Date Sampled: 06/04/19 14:45
Percent Solids: 94
Initial Volume: 21.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,1,1-Trichloroethane	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,1,2,2-Tetrachloroethane	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,1,2-Trichloroethane	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,1-Dichloroethane	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,1-Dichloroethene	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,1-Dichloropropene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2,3-Trichlorobenzene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2,3-Trichloropropane	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2,4-Trichlorobenzene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2,4-Trimethylbenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2-Dibromo-3-Chloropropane	ND (0.806)	0.161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2-Dibromoethane	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2-Dichlorobenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2-Dichloroethane	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,2-Dichloropropane	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,3,5-Trimethylbenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,3-Dichlorobenzene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,3-Dichloropropane	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,4-Dichlorobenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
1,4-Dioxane - Screen	ND (32.3)	30.6	8260B		1	06/10/19 14:10	C9F0141	CF91031
1-Chlorohexane	ND (0.161)	0.0645	8260B		1	06/10/19 14:10	C9F0141	CF91031
2,2-Dichloropropane	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
2-Butanone	ND (0.806)	0.548	8260B		1	06/10/19 14:10	C9F0141	CF91031
2-Chlorotoluene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
2-Hexanone	ND (0.806)	0.242	8260B		1	06/10/19 14:10	C9F0141	CF91031
4-Chlorotoluene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
4-Isopropyltoluene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
4-Methyl-2-Pentanone	ND (0.806)	0.258	8260B		1	06/10/19 14:10	C9F0141	CF91031
Acetone	ND (0.806)	0.435	8260B		1	06/10/19 14:10	C9F0141	CF91031
Benzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Bromobenzene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS2-060419
Date Sampled: 06/04/19 14:45
Percent Solids: 94
Initial Volume: 21.3
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
Bromodichloromethane	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Bromoform	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Bromomethane	ND (0.161)	0.0645	8260B		1	06/10/19 14:10	C9F0141	CF91031
Carbon Disulfide	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Carbon Tetrachloride	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Chlorobenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Chloroethane	ND (0.161)	0.0645	8260B		1	06/10/19 14:10	C9F0141	CF91031
Chloroform	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Chloromethane	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
cis-1,2-Dichloroethene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
cis-1,3-Dichloropropene	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
Dibromochloromethane	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Dibromomethane	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
Dichlorodifluoromethane	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
Diethyl Ether	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
Di-isopropyl ether	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Ethyl tertiary-butyl ether	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Ethylbenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Hexachlorobutadiene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Isopropylbenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Methyl tert-Butyl Ether	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
Methylene Chloride	J 0.0758 (0.323)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Naphthalene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
n-Butylbenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
n-Propylbenzene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
sec-Butylbenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Styrene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
tert-Butylbenzene	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Tertiary-amyl methyl ether	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Tetrachloroethene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Tetrahydrofuran	ND (0.806)	0.258	8260B		1	06/10/19 14:10	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
 Client Project ID: Exchange Street
 Client Sample ID: 201942-SS2-060419
 Date Sampled: 06/04/19 14:45
 Percent Solids: 94
 Initial Volume: 21.3
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
 ESS Laboratory Sample ID: 19F0081-02
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	J 0.0258 (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
trans-1,2-Dichloroethene	ND (0.161)	0.0484	8260B		1	06/10/19 14:10	C9F0141	CF91031
trans-1,3-Dichloropropene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Trichloroethene	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Trichlorofluoromethane	ND (0.161)	0.0645	8260B		1	06/10/19 14:10	C9F0141	CF91031
Vinyl Acetate	ND (0.161)	0.0806	8260B		1	06/10/19 14:10	C9F0141	CF91031
Vinyl Chloride	ND (0.161)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Xylene O	ND (0.161)	0.0161	8260B		1	06/10/19 14:10	C9F0141	CF91031
Xylene P,M	ND (0.323)	0.0323	8260B		1	06/10/19 14:10	C9F0141	CF91031
Xylenes (Total)	ND (0.323)		8260B		1	06/10/19 14:10		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	88 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	89 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	88 %		70-130
<i>Surrogate: Toluene-d8</i>	89 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS2-060419
Date Sampled: 06/04/19 14:45
Percent Solids: 94
Initial Volume: 20.8
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 6/5/19 12:38

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons	142 (38.2)		8100M		1	06/07/19 17:37	C9F0107	CF90516
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		95 %		40-140				



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS3-060419
Date Sampled: 06/04/19 15:00
Percent Solids: 93
Initial Volume: 23.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,1,1-Trichloroethane	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,1,2,2-Tetrachloroethane	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,1,2-Trichloroethane	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,1-Dichloroethane	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,1-Dichloroethene	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,1-Dichloropropene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2,3-Trichlorobenzene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2,3-Trichloropropane	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2,4-Trichlorobenzene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2,4-Trimethylbenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2-Dibromo-3-Chloropropane	ND (0.770)	0.154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2-Dibromoethane	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2-Dichlorobenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2-Dichloroethane	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,2-Dichloropropane	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,3,5-Trimethylbenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,3-Dichlorobenzene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,3-Dichloropropane	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,4-Dichlorobenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
1,4-Dioxane - Screen	ND (30.8)	29.3	8260B		1	06/10/19 14:37	C9F0141	CF91031
1-Chlorohexane	ND (0.154)	0.0616	8260B		1	06/10/19 14:37	C9F0141	CF91031
2,2-Dichloropropane	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
2-Butanone	ND (0.770)	0.524	8260B		1	06/10/19 14:37	C9F0141	CF91031
2-Chlorotoluene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
2-Hexanone	ND (0.770)	0.231	8260B		1	06/10/19 14:37	C9F0141	CF91031
4-Chlorotoluene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
4-Isopropyltoluene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
4-Methyl-2-Pentanone	ND (0.770)	0.246	8260B		1	06/10/19 14:37	C9F0141	CF91031
Acetone	ND (0.770)	0.416	8260B		1	06/10/19 14:37	C9F0141	CF91031
Benzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Bromobenzene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS3-060419
Date Sampled: 06/04/19 15:00
Percent Solids: 93
Initial Volume: 23.2
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
Bromodichloromethane	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Bromoform	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Bromomethane	ND (0.154)	0.0616	8260B		1	06/10/19 14:37	C9F0141	CF91031
Carbon Disulfide	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Carbon Tetrachloride	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Chlorobenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Chloroethane	ND (0.154)	0.0616	8260B		1	06/10/19 14:37	C9F0141	CF91031
Chloroform	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Chloromethane	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
cis-1,2-Dichloroethene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
cis-1,3-Dichloropropene	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
Dibromochloromethane	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Dibromomethane	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
Dichlorodifluoromethane	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
Diethyl Ether	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
Di-isopropyl ether	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Ethyl tertiary-butyl ether	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Ethylbenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Hexachlorobutadiene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Isopropylbenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Methyl tert-Butyl Ether	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
Methylene Chloride	J 0.0447 (0.308)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Naphthalene	J 0.0416 (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
n-Butylbenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
n-Propylbenzene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
sec-Butylbenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Styrene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
tert-Butylbenzene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Tertiary-amyl methyl ether	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Tetrachloroethene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Tetrahydrofuran	ND (0.770)	0.246	8260B		1	06/10/19 14:37	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
 Client Project ID: Exchange Street
 Client Sample ID: 201942-SS3-060419
 Date Sampled: 06/04/19 15:00
 Percent Solids: 93
 Initial Volume: 23.2
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
 ESS Laboratory Sample ID: 19F0081-03
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
trans-1,2-Dichloroethene	ND (0.154)	0.0462	8260B		1	06/10/19 14:37	C9F0141	CF91031
trans-1,3-Dichloropropene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Trichloroethene	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Trichlorofluoromethane	ND (0.154)	0.0616	8260B		1	06/10/19 14:37	C9F0141	CF91031
Vinyl Acetate	ND (0.154)	0.0770	8260B		1	06/10/19 14:37	C9F0141	CF91031
Vinyl Chloride	ND (0.154)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Xylene O	ND (0.154)	0.0154	8260B		1	06/10/19 14:37	C9F0141	CF91031
Xylene P,M	ND (0.308)	0.0308	8260B		1	06/10/19 14:37	C9F0141	CF91031
Xylenes (Total)	ND (0.308)		8260B		1	06/10/19 14:37		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>85 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>89 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>89 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>90 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS3-060419
Date Sampled: 06/04/19 15:00
Percent Solids: 93
Initial Volume: 20.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 6/6/19 12:15

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons	111 (39.3)		8100M		1	06/07/19 18:10	C9F0107	CF90610
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		80 %		40-140				



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS4-060419
Date Sampled: 06/04/19 15:15
Percent Solids: 94
Initial Volume: 25.6
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,1,1-Trichloroethane	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,1,2,2-Tetrachloroethane	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,1,2-Trichloroethane	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,1-Dichloroethane	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,1-Dichloroethene	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,1-Dichloropropene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2,3-Trichlorobenzene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2,3-Trichloropropane	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2,4-Trichlorobenzene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2,4-Trimethylbenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2-Dibromo-3-Chloropropane	ND (0.683)	0.137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2-Dibromoethane	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2-Dichlorobenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2-Dichloroethane	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,2-Dichloropropane	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,3,5-Trimethylbenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,3-Dichlorobenzene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,3-Dichloropropane	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,4-Dichlorobenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
1,4-Dioxane - Screen	ND (27.3)	26.0	8260B		1	06/10/19 15:03	C9F0141	CF91031
1-Chlorohexane	ND (0.137)	0.0546	8260B		1	06/10/19 15:03	C9F0141	CF91031
2,2-Dichloropropane	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
2-Butanone	ND (0.683)	0.464	8260B		1	06/10/19 15:03	C9F0141	CF91031
2-Chlorotoluene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
2-Hexanone	ND (0.683)	0.205	8260B		1	06/10/19 15:03	C9F0141	CF91031
4-Chlorotoluene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
4-Isopropyltoluene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
4-Methyl-2-Pentanone	ND (0.683)	0.219	8260B		1	06/10/19 15:03	C9F0141	CF91031
Acetone	ND (0.683)	0.369	8260B		1	06/10/19 15:03	C9F0141	CF91031
Benzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Bromobenzene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS4-060419
Date Sampled: 06/04/19 15:15
Percent Solids: 94
Initial Volume: 25.6
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
Bromodichloromethane	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Bromoform	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Bromomethane	ND (0.137)	0.0546	8260B		1	06/10/19 15:03	C9F0141	CF91031
Carbon Disulfide	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Carbon Tetrachloride	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Chlorobenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Chloroethane	ND (0.137)	0.0546	8260B		1	06/10/19 15:03	C9F0141	CF91031
Chloroform	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Chloromethane	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
cis-1,2-Dichloroethene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
cis-1,3-Dichloropropene	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
Dibromochloromethane	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Dibromomethane	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
Dichlorodifluoromethane	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
Diethyl Ether	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
Di-isopropyl ether	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Ethyl tertiary-butyl ether	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Ethylbenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Hexachlorobutadiene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Isopropylbenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Methyl tert-Butyl Ether	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
Methylene Chloride	J 0.0656 (0.273)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Naphthalene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
n-Butylbenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
n-Propylbenzene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
sec-Butylbenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Styrene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
tert-Butylbenzene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Tertiary-amyl methyl ether	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Tetrachloroethene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Tetrahydrofuran	ND (0.683)	0.219	8260B		1	06/10/19 15:03	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
 Client Project ID: Exchange Street
 Client Sample ID: 201942-SS4-060419
 Date Sampled: 06/04/19 15:15
 Percent Solids: 94
 Initial Volume: 25.6
 Final Volume: 15
 Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
 ESS Laboratory Sample ID: 19F0081-04
 Sample Matrix: Soil
 Units: mg/kg dry
 Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
trans-1,2-Dichloroethene	ND (0.137)	0.0410	8260B		1	06/10/19 15:03	C9F0141	CF91031
trans-1,3-Dichloropropene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Trichloroethene	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Trichlorofluoromethane	ND (0.137)	0.0546	8260B		1	06/10/19 15:03	C9F0141	CF91031
Vinyl Acetate	ND (0.137)	0.0683	8260B		1	06/10/19 15:03	C9F0141	CF91031
Vinyl Chloride	ND (0.137)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Xylene O	ND (0.137)	0.0137	8260B		1	06/10/19 15:03	C9F0141	CF91031
Xylene P,M	ND (0.273)	0.0273	8260B		1	06/10/19 15:03	C9F0141	CF91031
Xylenes (Total)	ND (0.273)		8260B		1	06/10/19 15:03		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	81 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	85 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	83 %		70-130
<i>Surrogate: Toluene-d8</i>	86 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: 201942-SS4-060419
Date Sampled: 06/04/19 15:15
Percent Solids: 94
Initial Volume: 19.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 6/6/19 12:15

8100M Total Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Total Petroleum Hydrocarbons	ND (41.0)		8100M		1	06/07/19 18:42	C9F0107	CF90610
		<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				
<i>Surrogate: O-Terphenyl</i>		79 %		40-140				



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: Trip Blank
Date Sampled: 06/04/19 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-05
Sample Matrix: Soil
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,1,1-Trichloroethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,1,2,2-Tetrachloroethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,1,2-Trichloroethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,1-Dichloroethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,1-Dichloroethene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,1-Dichloropropene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2,3-Trichlorobenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2,3-Trichloropropane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2,4-Trichlorobenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2,4-Trimethylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2-Dibromo-3-Chloropropane	ND (1.00)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2-Dibromoethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2-Dichlorobenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2-Dichloroethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,2-Dichloropropane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,3,5-Trimethylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,3-Dichlorobenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,3-Dichloropropane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,4-Dichlorobenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1,4-Dioxane - Screen	ND (40.0)		8260B		1	06/10/19 12:23	C9F0141	CF91031
1-Chlorohexane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
2,2-Dichloropropane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
2-Butanone	ND (1.00)		8260B		1	06/10/19 12:23	C9F0141	CF91031
2-Chlorotoluene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
2-Hexanone	ND (1.00)		8260B		1	06/10/19 12:23	C9F0141	CF91031
4-Chlorotoluene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
4-Isopropyltoluene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
4-Methyl-2-Pentanone	ND (1.00)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Acetone	ND (1.00)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Benzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Bromobenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: Trip Blank
Date Sampled: 06/04/19 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-05
Sample Matrix: Soil
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromochloromethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Bromodichloromethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Bromoform	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Bromomethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Carbon Disulfide	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Carbon Tetrachloride	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Chlorobenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Chloroethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Chloroform	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Chloromethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
cis-1,2-Dichloroethene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
cis-1,3-Dichloropropene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Dibromochloromethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Dibromomethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Dichlorodifluoromethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Diethyl Ether	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Di-isopropyl ether	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Ethyl tertiary-butyl ether	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Ethylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Hexachlorobutadiene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Isopropylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Methyl tert-Butyl Ether	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Methylene Chloride	ND (0.400)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Naphthalene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
n-Butylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
n-Propylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
sec-Butylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Styrene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
tert-Butylbenzene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Tertiary-amyl methyl ether	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Tetrachloroethene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Tetrahydrofuran	ND (1.00)		8260B		1	06/10/19 12:23	C9F0141	CF91031



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street
Client Sample ID: Trip Blank
Date Sampled: 06/04/19 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19F0081
ESS Laboratory Sample ID: 19F0081-05
Sample Matrix: Soil
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Toluene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
trans-1,2-Dichloroethene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
trans-1,3-Dichloropropene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Trichloroethene	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Trichlorofluoromethane	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Vinyl Acetate	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Vinyl Chloride	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Xylene O	ND (0.200)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Xylene P,M	ND (0.400)		8260B		1	06/10/19 12:23	C9F0141	CF91031
Xylenes (Total)	ND (0.600)		8260B		0	06/10/19 12:23	C9F0141	CF91031

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>79 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>86 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>86 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>83 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CF91031 - 5035

Blank

1,1,1,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,1-Trichloroethane	ND	0.200	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.200	mg/kg wet							
1,1,2-Trichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethane	ND	0.200	mg/kg wet							
1,1-Dichloroethene	ND	0.200	mg/kg wet							
1,1-Dichloropropene	ND	0.200	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,3-Trichloropropane	ND	0.200	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.200	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.200	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	1.00	mg/kg wet							
1,2-Dibromoethane	ND	0.200	mg/kg wet							
1,2-Dichlorobenzene	ND	0.200	mg/kg wet							
1,2-Dichloroethane	ND	0.200	mg/kg wet							
1,2-Dichloropropane	ND	0.200	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.200	mg/kg wet							
1,3-Dichlorobenzene	ND	0.200	mg/kg wet							
1,3-Dichloropropane	ND	0.200	mg/kg wet							
1,4-Dichlorobenzene	ND	0.200	mg/kg wet							
1,4-Dioxane - Screen	ND	40.0	mg/kg wet							
1-Chlorohexane	ND	0.200	mg/kg wet							
2,2-Dichloropropane	ND	0.200	mg/kg wet							
2-Butanone	ND	1.00	mg/kg wet							
2-Chlorotoluene	ND	0.200	mg/kg wet							
2-Hexanone	ND	1.00	mg/kg wet							
4-Chlorotoluene	ND	0.200	mg/kg wet							
4-Isopropyltoluene	ND	0.200	mg/kg wet							
4-Methyl-2-Pentanone	ND	1.00	mg/kg wet							
Acetone	ND	1.00	mg/kg wet							
Benzene	ND	0.200	mg/kg wet							
Bromobenzene	ND	0.200	mg/kg wet							
Bromochloromethane	ND	0.200	mg/kg wet							
Bromodichloromethane	ND	0.200	mg/kg wet							
Bromoform	ND	0.200	mg/kg wet							
Bromomethane	ND	0.200	mg/kg wet							
Carbon Disulfide	ND	0.200	mg/kg wet							
Carbon Tetrachloride	ND	0.200	mg/kg wet							
Chlorobenzene	ND	0.200	mg/kg wet							
Chloroethane	ND	0.200	mg/kg wet							
Chloroform	ND	0.200	mg/kg wet							
Chloromethane	ND	0.200	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.200	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.200	mg/kg wet							



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CF91031 - 5035

Dibromochloromethane	ND	0.200	mg/kg wet							
Dibromomethane	ND	0.200	mg/kg wet							
Dichlorodifluoromethane	ND	0.200	mg/kg wet							
Diethyl Ether	ND	0.200	mg/kg wet							
Di-isopropyl ether	ND	0.200	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.200	mg/kg wet							
Ethylbenzene	ND	0.200	mg/kg wet							
Hexachlorobutadiene	ND	0.200	mg/kg wet							
Isopropylbenzene	ND	0.200	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.200	mg/kg wet							
Methylene Chloride	ND	0.400	mg/kg wet							
Naphthalene	ND	0.200	mg/kg wet							
n-Butylbenzene	ND	0.200	mg/kg wet							
n-Propylbenzene	ND	0.200	mg/kg wet							
sec-Butylbenzene	ND	0.200	mg/kg wet							
Styrene	ND	0.200	mg/kg wet							
tert-Butylbenzene	ND	0.200	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.200	mg/kg wet							
Tetrachloroethene	ND	0.200	mg/kg wet							
Tetrahydrofuran	ND	1.00	mg/kg wet							
Toluene	0.0220	0.200	mg/kg wet							J
trans-1,2-Dichloroethene	ND	0.200	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.200	mg/kg wet							
Trichloroethene	ND	0.200	mg/kg wet							
Trichlorofluoromethane	ND	0.200	mg/kg wet							
Vinyl Acetate	ND	0.200	mg/kg wet							
Vinyl Chloride	ND	0.200	mg/kg wet							
Xylene O	ND	0.200	mg/kg wet							
Xylene P,M	ND	0.400	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	4.14		mg/kg wet	5.000		83	70-130			
Surrogate: 4-Bromofluorobenzene	4.28		mg/kg wet	5.000		86	70-130			
Surrogate: Dibromofluoromethane	4.14		mg/kg wet	5.000		83	70-130			
Surrogate: Toluene-d8	4.28		mg/kg wet	5.000		86	70-130			

LCS

1,1,1,2-Tetrachloroethane	1.92	0.200	mg/kg wet	2.000		96	70-130			
1,1,1-Trichloroethane	2.19	0.200	mg/kg wet	2.000		109	70-130			
1,1,2,2-Tetrachloroethane	1.83	0.200	mg/kg wet	2.000		92	70-130			
1,1,2-Trichloroethane	1.91	0.200	mg/kg wet	2.000		96	70-130			
1,1-Dichloroethane	2.15	0.200	mg/kg wet	2.000		108	70-130			
1,1-Dichloroethene	2.19	0.200	mg/kg wet	2.000		109	70-130			
1,1-Dichloropropene	2.05	0.200	mg/kg wet	2.000		102	70-130			
1,2,3-Trichlorobenzene	2.18	0.200	mg/kg wet	2.000		109	70-130			
1,2,3-Trichloropropane	1.94	0.200	mg/kg wet	2.000		97	70-130			
1,2,4-Trichlorobenzene	2.25	0.200	mg/kg wet	2.000		112	70-130			
1,2,4-Trimethylbenzene	2.16	0.200	mg/kg wet	2.000		108	70-130			



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CF91031 - 5035

1,2-Dibromo-3-Chloropropane	1.88	1.00	mg/kg wet	2.000		94	70-130			
1,2-Dibromoethane	2.14	0.200	mg/kg wet	2.000		107	70-130			
1,2-Dichlorobenzene	2.13	0.200	mg/kg wet	2.000		106	70-130			
1,2-Dichloroethane	2.27	0.200	mg/kg wet	2.000		114	70-130			
1,2-Dichloropropane	1.92	0.200	mg/kg wet	2.000		96	70-130			
1,3,5-Trimethylbenzene	2.16	0.200	mg/kg wet	2.000		108	70-130			
1,3-Dichlorobenzene	2.16	0.200	mg/kg wet	2.000		108	70-130			
1,3-Dichloropropane	2.12	0.200	mg/kg wet	2.000		106	70-130			
1,4-Dichlorobenzene	2.09	0.200	mg/kg wet	2.000		104	70-130			
1,4-Dioxane - Screen	69.6	40.0	mg/kg wet	40.00		174	44-241			
1-Chlorohexane	2.01	0.200	mg/kg wet	2.000		101	70-130			
2,2-Dichloropropane	2.17	0.200	mg/kg wet	2.000		109	70-130			
2-Butanone	9.65	1.00	mg/kg wet	10.00		96	70-130			
2-Chlorotoluene	1.98	0.200	mg/kg wet	2.000		99	70-130			
2-Hexanone	9.41	1.00	mg/kg wet	10.00		94	70-130			
4-Chlorotoluene	2.15	0.200	mg/kg wet	2.000		107	70-130			
4-Isopropyltoluene	2.16	0.200	mg/kg wet	2.000		108	70-130			
4-Methyl-2-Pentanone	10.1	1.00	mg/kg wet	10.00		101	70-130			
Acetone	9.15	1.00	mg/kg wet	10.00		92	70-130			
Benzene	2.20	0.200	mg/kg wet	2.000		110	70-130			
Bromobenzene	2.25	0.200	mg/kg wet	2.000		112	70-130			
Bromochloromethane	2.36	0.200	mg/kg wet	2.000		118	70-130			
Bromodichloromethane	2.01	0.200	mg/kg wet	2.000		100	70-130			
Bromoform	1.98	0.200	mg/kg wet	2.000		99	70-130			
Bromomethane	2.03	0.200	mg/kg wet	2.000		102	70-130			
Carbon Disulfide	2.14	0.200	mg/kg wet	2.000		107	70-130			
Carbon Tetrachloride	2.28	0.200	mg/kg wet	2.000		114	70-130			
Chlorobenzene	2.21	0.200	mg/kg wet	2.000		110	70-130			
Chloroethane	1.93	0.200	mg/kg wet	2.000		96	70-130			
Chloroform	2.20	0.200	mg/kg wet	2.000		110	70-130			
Chloromethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
cis-1,2-Dichloroethene	2.22	0.200	mg/kg wet	2.000		111	70-130			
cis-1,3-Dichloropropene	2.18	0.200	mg/kg wet	2.000		109	70-130			
Dibromochloromethane	1.71	0.200	mg/kg wet	2.000		85	70-130			
Dibromomethane	2.13	0.200	mg/kg wet	2.000		107	70-130			
Dichlorodifluoromethane	2.16	0.200	mg/kg wet	2.000		108	70-130			
Diethyl Ether	1.98	0.200	mg/kg wet	2.000		99	70-130			
Di-isopropyl ether	2.15	0.200	mg/kg wet	2.000		107	70-130			
Ethyl tertiary-butyl ether	2.01	0.200	mg/kg wet	2.000		101	70-130			
Ethylbenzene	2.16	0.200	mg/kg wet	2.000		108	70-130			
Hexachlorobutadiene	2.25	0.200	mg/kg wet	2.000		112	70-130			
Isopropylbenzene	2.21	0.200	mg/kg wet	2.000		110	70-130			
Methyl tert-Butyl Ether	2.21	0.200	mg/kg wet	2.000		111	70-130			
Methylene Chloride	2.00	0.400	mg/kg wet	2.000		100	70-130			
Naphthalene	2.35	0.200	mg/kg wet	2.000		117	70-130			



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CF91031 - 5035

n-Butylbenzene	2.19	0.200	mg/kg wet	2.000		109	70-130			
n-Propylbenzene	2.15	0.200	mg/kg wet	2.000		108	70-130			
sec-Butylbenzene	2.24	0.200	mg/kg wet	2.000		112	70-130			
Styrene	2.14	0.200	mg/kg wet	2.000		107	70-130			
tert-Butylbenzene	2.17	0.200	mg/kg wet	2.000		108	70-130			
Tertiary-amyl methyl ether	2.17	0.200	mg/kg wet	2.000		109	70-130			
Tetrachloroethene	1.77	0.200	mg/kg wet	2.000		89	70-130			
Tetrahydrofuran	1.93	1.00	mg/kg wet	2.000		97	70-130			
Toluene	2.25	0.200	mg/kg wet	2.000		112	70-130			
trans-1,2-Dichloroethene	2.15	0.200	mg/kg wet	2.000		107	70-130			
trans-1,3-Dichloropropene	2.09	0.200	mg/kg wet	2.000		104	70-130			
Trichloroethene	2.13	0.200	mg/kg wet	2.000		107	70-130			
Trichlorofluoromethane	2.36	0.200	mg/kg wet	2.000		118	70-130			
Vinyl Acetate	1.95	0.200	mg/kg wet	2.000		98	70-130			
Vinyl Chloride	1.99	0.200	mg/kg wet	2.000		99	70-130			
Xylene O	2.06	0.200	mg/kg wet	2.000		103	70-130			
Xylene P,M	4.55	0.400	mg/kg wet	4.000		114	70-130			
Surrogate: 1,2-Dichloroethane-d4	4.65		mg/kg wet	5.000		93	70-130			
Surrogate: 4-Bromofluorobenzene	5.25		mg/kg wet	5.000		105	70-130			
Surrogate: Dibromofluoromethane	4.73		mg/kg wet	5.000		95	70-130			
Surrogate: Toluene-d8	4.54		mg/kg wet	5.000		91	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	1.89	0.200	mg/kg wet	2.000		95	70-130	1	25	
1,1,1-Trichloroethane	2.27	0.200	mg/kg wet	2.000		113	70-130	4	25	
1,1,2,2-Tetrachloroethane	1.83	0.200	mg/kg wet	2.000		91	70-130	0.4	25	
1,1,2-Trichloroethane	2.10	0.200	mg/kg wet	2.000		105	70-130	10	25	
1,1-Dichloroethane	2.28	0.200	mg/kg wet	2.000		114	70-130	6	25	
1,1-Dichloroethene	2.42	0.200	mg/kg wet	2.000		121	70-130	10	25	
1,1-Dichloropropene	2.30	0.200	mg/kg wet	2.000		115	70-130	12	25	
1,2,3-Trichlorobenzene	1.91	0.200	mg/kg wet	2.000		96	70-130	13	25	
1,2,3-Trichloropropane	1.89	0.200	mg/kg wet	2.000		94	70-130	3	25	
1,2,4-Trichlorobenzene	2.23	0.200	mg/kg wet	2.000		111	70-130	1	25	
1,2,4-Trimethylbenzene	2.17	0.200	mg/kg wet	2.000		109	70-130	0.4	25	
1,2-Dibromo-3-Chloropropane	1.97	1.00	mg/kg wet	2.000		99	70-130	5	25	
1,2-Dibromoethane	2.16	0.200	mg/kg wet	2.000		108	70-130	1	25	
1,2-Dichlorobenzene	2.09	0.200	mg/kg wet	2.000		104	70-130	2	25	
1,2-Dichloroethane	2.30	0.200	mg/kg wet	2.000		115	70-130	1	25	
1,2-Dichloropropane	2.27	0.200	mg/kg wet	2.000		114	70-130	17	25	
1,3,5-Trimethylbenzene	2.07	0.200	mg/kg wet	2.000		103	70-130	4	25	
1,3-Dichlorobenzene	2.07	0.200	mg/kg wet	2.000		104	70-130	4	25	
1,3-Dichloropropane	2.31	0.200	mg/kg wet	2.000		115	70-130	8	25	
1,4-Dichlorobenzene	2.03	0.200	mg/kg wet	2.000		101	70-130	3	25	
1,4-Dioxane - Screen	56.6	40.0	mg/kg wet	40.00		142	44-241	21	200	
1-Chlorohexane	2.18	0.200	mg/kg wet	2.000		109	70-130	8	25	
2,2-Dichloropropane	2.47	0.200	mg/kg wet	2.000		124	70-130	13	25	



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CF91031 - 5035

2-Butanone	10.2	1.00	mg/kg wet	10.00		102	70-130	6	25	
2-Chlorotoluene	1.94	0.200	mg/kg wet	2.000		97	70-130	2	25	
2-Hexanone	9.34	1.00	mg/kg wet	10.00		93	70-130	0.8	25	
4-Chlorotoluene	2.06	0.200	mg/kg wet	2.000		103	70-130	4	25	
4-Isopropyltoluene	2.20	0.200	mg/kg wet	2.000		110	70-130	2	25	
4-Methyl-2-Pentanone	10.2	1.00	mg/kg wet	10.00		102	70-130	1	25	
Acetone	9.84	1.00	mg/kg wet	10.00		98	70-130	7	25	
Benzene	2.46	0.200	mg/kg wet	2.000		123	70-130	11	25	
Bromobenzene	2.29	0.200	mg/kg wet	2.000		114	70-130	2	25	
Bromochloromethane	2.46	0.200	mg/kg wet	2.000		123	70-130	4	25	
Bromodichloromethane	2.09	0.200	mg/kg wet	2.000		105	70-130	4	25	
Bromoform	2.00	0.200	mg/kg wet	2.000		100	70-130	1	25	
Bromomethane	2.27	0.200	mg/kg wet	2.000		113	70-130	11	25	
Carbon Disulfide	2.35	0.200	mg/kg wet	2.000		117	70-130	9	25	
Carbon Tetrachloride	2.42	0.200	mg/kg wet	2.000		121	70-130	6	25	
Chlorobenzene	2.30	0.200	mg/kg wet	2.000		115	70-130	4	25	
Chloroethane	2.31	0.200	mg/kg wet	2.000		116	70-130	18	25	
Chloroform	2.42	0.200	mg/kg wet	2.000		121	70-130	9	25	
Chloromethane	2.05	0.200	mg/kg wet	2.000		103	70-130	9	25	
cis-1,2-Dichloroethene	2.32	0.200	mg/kg wet	2.000		116	70-130	4	25	
cis-1,3-Dichloropropene	2.36	0.200	mg/kg wet	2.000		118	70-130	8	25	
Dibromochloromethane	1.78	0.200	mg/kg wet	2.000		89	70-130	4	25	
Dibromomethane	2.29	0.200	mg/kg wet	2.000		115	70-130	7	25	
Dichlorodifluoromethane	2.45	0.200	mg/kg wet	2.000		122	70-130	12	25	
Diethyl Ether	1.82	0.200	mg/kg wet	2.000		91	70-130	9	25	
Di-isopropyl ether	2.13	0.200	mg/kg wet	2.000		107	70-130	0.7	25	
Ethyl tertiary-butyl ether	2.17	0.200	mg/kg wet	2.000		108	70-130	7	25	
Ethylbenzene	2.25	0.200	mg/kg wet	2.000		113	70-130	4	25	
Hexachlorobutadiene	2.21	0.200	mg/kg wet	2.000		110	70-130	2	25	
Isopropylbenzene	2.11	0.200	mg/kg wet	2.000		106	70-130	4	25	
Methyl tert-Butyl Ether	2.38	0.200	mg/kg wet	2.000		119	70-130	7	25	
Methylene Chloride	2.24	0.400	mg/kg wet	2.000		112	70-130	11	25	
Naphthalene	2.13	0.200	mg/kg wet	2.000		107	70-130	10	25	
n-Butylbenzene	2.12	0.200	mg/kg wet	2.000		106	70-130	3	25	
n-Propylbenzene	2.10	0.200	mg/kg wet	2.000		105	70-130	2	25	
sec-Butylbenzene	2.12	0.200	mg/kg wet	2.000		106	70-130	6	25	
Styrene	2.15	0.200	mg/kg wet	2.000		107	70-130	0.2	25	
tert-Butylbenzene	2.26	0.200	mg/kg wet	2.000		113	70-130	4	25	
Tertiary-amyl methyl ether	2.36	0.200	mg/kg wet	2.000		118	70-130	8	25	
Tetrachloroethene	1.76	0.200	mg/kg wet	2.000		88	70-130	0.6	25	
Tetrahydrofuran	1.94	1.00	mg/kg wet	2.000		97	70-130	0.5	25	
Toluene	2.33	0.200	mg/kg wet	2.000		116	70-130	4	25	
trans-1,2-Dichloroethene	2.34	0.200	mg/kg wet	2.000		117	70-130	9	25	
trans-1,3-Dichloropropene	2.27	0.200	mg/kg wet	2.000		114	70-130	8	25	
Trichloroethene	2.27	0.200	mg/kg wet	2.000		114	70-130	6	25	



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Methanol

Batch CF91031 - 5035

Trichlorofluoromethane	2.43	0.200	mg/kg wet	2.000		121	70-130	3	25	
Vinyl Acetate	1.91	0.200	mg/kg wet	2.000		96	70-130	2	25	
Vinyl Chloride	2.14	0.200	mg/kg wet	2.000		107	70-130	7	25	
Xylene O	2.29	0.200	mg/kg wet	2.000		114	70-130	11	25	
Xylene P,M	4.65	0.400	mg/kg wet	4.000		116	70-130	2	25	
Surrogate: 1,2-Dichloroethane-d4	4.68		mg/kg wet	5.000		94	70-130			
Surrogate: 4-Bromofluorobenzene	4.98		mg/kg wet	5.000		100	70-130			
Surrogate: Dibromofluoromethane	4.85		mg/kg wet	5.000		97	70-130			
Surrogate: Toluene-d8	4.49		mg/kg wet	5.000		90	70-130			

8100M Total Petroleum Hydrocarbons

Batch CF90516 - 3546

Blank

Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons	ND	37.5	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							

Surrogate: O-Terphenyl	4.32		mg/kg wet	5.000		86	40-140			
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LCS

Decane (C10)	2.1	0.2	mg/kg wet	2.500		85	40-140			
Docosane (C22)	2.3	0.2	mg/kg wet	2.500		93	40-140			
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		87	40-140			
Eicosane (C20)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Hexacosane (C26)	2.2	0.2	mg/kg wet	2.500		90	40-140			
Hexadecane (C16)	2.2	0.2	mg/kg wet	2.500		88	40-140			
Nonadecane (C19)	2.3	0.2	mg/kg wet	2.500		93	40-140			
Nonane (C9)	1.9	0.2	mg/kg wet	2.500		76	30-140			
Octacosane (C28)	2.2	0.2	mg/kg wet	2.500		89	40-140			
Octadecane (C18)	2.3	0.2	mg/kg wet	2.500		91	40-140			
Tetracosane (C24)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Tetradecane (C14)	2.2	0.2	mg/kg wet	2.500		88	40-140			
Total Petroleum Hydrocarbons	30.9	37.5	mg/kg wet	35.00		88	40-140			
Triacontane (C30)	2.2	0.2	mg/kg wet	2.500		88	40-140			



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8100M Total Petroleum Hydrocarbons

Batch CF90516 - 3546

<i>Surrogate: O-Terphenyl</i>	4.52		mg/kg wet	5.000		90	40-140			
LCS Dup										
Decane (C10)	2.2	0.2	mg/kg wet	2.500		87	40-140	2	25	
Docosane (C22)	2.4	0.2	mg/kg wet	2.500		95	40-140	2	25	
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		88	40-140	1	25	
Eicosane (C20)	2.4	0.2	mg/kg wet	2.500		94	40-140	2	25	
Hexacosane (C26)	2.3	0.2	mg/kg wet	2.500		92	40-140	3	25	
Hexadecane (C16)	2.2	0.2	mg/kg wet	2.500		89	40-140	0.9	25	
Nonadecane (C19)	2.4	0.2	mg/kg wet	2.500		94	40-140	2	25	
Nonane (C9)	1.9	0.2	mg/kg wet	2.500		78	30-140	2	25	
Octacosane (C28)	2.3	0.2	mg/kg wet	2.500		92	40-140	3	25	
Octadecane (C18)	2.3	0.2	mg/kg wet	2.500		92	40-140	1	25	
Tetracosane (C24)	2.4	0.2	mg/kg wet	2.500		94	40-140	3	25	
Tetradecane (C14)	2.2	0.2	mg/kg wet	2.500		88	40-140	0.8	25	
Total Petroleum Hydrocarbons	31.6	37.5	mg/kg wet	35.00		90	40-140	2	25	
Triacotane (C30)	2.3	0.2	mg/kg wet	2.500		91	40-140	3	25	

<i>Surrogate: O-Terphenyl</i>	4.57		mg/kg wet	5.000		91	40-140			
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Batch CF90610 - 3546

Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons	ND	37.5	mg/kg wet							
Triacotane (C30)	ND	0.2	mg/kg wet							

<i>Surrogate: O-Terphenyl</i>	4.52		mg/kg wet	5.000		90	40-140			
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LCS										
Decane (C10)	2.1	0.2	mg/kg wet	2.500		85	40-140			
Docosane (C22)	2.3	0.2	mg/kg wet	2.500		93	40-140			
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		88	40-140			
Eicosane (C20)	2.3	0.2	mg/kg wet	2.500		93	40-140			
Hexacosane (C26)	2.3	0.2	mg/kg wet	2.500		90	40-140			
Hexadecane (C16)	2.2	0.2	mg/kg wet	2.500		89	40-140			
Nonadecane (C19)	2.3	0.2	mg/kg wet	2.500		93	40-140			



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
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ESS Laboratory Work Order: 19F0081

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8100M Total Petroleum Hydrocarbons

Batch CF90610 - 3546

Nonane (C9)	1.9	0.2	mg/kg wet	2.500		75	30-140			
Octacosane (C28)	2.2	0.2	mg/kg wet	2.500		90	40-140			
Octadecane (C18)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Tetracosane (C24)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Tetradecane (C14)	2.2	0.2	mg/kg wet	2.500		89	40-140			
Total Petroleum Hydrocarbons	31.1	37.5	mg/kg wet	35.00		89	40-140			
Triacontane (C30)	2.2	0.2	mg/kg wet	2.500		89	40-140			

Surrogate: O-Terphenyl

4.54 mg/kg wet 5.000 91 40-140

LCS Dup

Decane (C10)	2.1	0.2	mg/kg wet	2.500		85	40-140	0.1	25	
Docosane (C22)	2.3	0.2	mg/kg wet	2.500		92	40-140	1	25	
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		87	40-140	0.3	25	
Eicosane (C20)	2.3	0.2	mg/kg wet	2.500		92	40-140	0.8	25	
Hexacosane (C26)	2.2	0.2	mg/kg wet	2.500		88	40-140	2	25	
Hexadecane (C16)	2.3	0.2	mg/kg wet	2.500		90	40-140	1	25	
Nonadecane (C19)	2.3	0.2	mg/kg wet	2.500		93	40-140	0.4	25	
Nonane (C9)	1.9	0.2	mg/kg wet	2.500		75	30-140	0.3	25	
Octacosane (C28)	2.2	0.2	mg/kg wet	2.500		88	40-140	3	25	
Octadecane (C18)	2.3	0.2	mg/kg wet	2.500		92	40-140	0.3	25	
Tetracosane (C24)	2.3	0.2	mg/kg wet	2.500		91	40-140	2	25	
Tetradecane (C14)	2.2	0.2	mg/kg wet	2.500		89	40-140	0.1	25	
Total Petroleum Hydrocarbons	30.8	37.5	mg/kg wet	35.00		88	40-140	1	25	
Triacontane (C30)	2.2	0.2	mg/kg wet	2.500		86	40-140	3	25	

Surrogate: O-Terphenyl

4.50 mg/kg wet 5.000 90 40-140



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
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ESS Laboratory Work Order: 19F0081

Notes and Definitions

- U Analyte included in the analysis, but not detected
- J Reported between MDL and MRL
- D Diluted.
- CD+ Continuing Calibration %Diff/Drift is above control limit (CD+).
- ND Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- MDL Method Detection Limit
- MRL Method Reporting Limit
- LOD Limit of Detection
- LOQ Limit of Quantitation
- DL Detection Limit
- I/V Initial Volume
- F/V Final Volume
- § Subcontracted analysis; see attached report
- 1 Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
- 2 Range result excludes concentrations of target analytes eluting in that range.
- 3 Range result excludes the concentration of the C9-C10 aromatic range.
- Avg Results reported as a mathematical average.
- NR No Recovery
- [CALC] Calculated Analyte
- SUB Subcontracted analysis; see attached report
- RL Reporting Limit
- EDL Estimated Detection Limit
- MF Membrane Filtration
- MPN Most Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Redwood Environmental Group - KP8/HDM

ESS Project ID: 19F0081

Date Received: 6/4/2019

Shipped/Delivered Via: ESS Courier

Project Due Date: 6/11/2019

Days for Project: 5 Day

- 1. Air bill manifest present? No
Air No.: NA
- 2. Were custody seals present? No
- 3. Is radiation count <100 CPM? Yes
- 4. Is a Cooler Present? Yes
Temp: 3.1 Iced with: Ice
- 5. Was COC signed and dated by client? Yes

- 6. Does COC match bottles? Yes
- 7. Is COC complete and correct? Yes
- 8. Were samples received intact? Yes
- 9. Were labs informed about short holds & rushes? Yes / No / NA
- 10. Were any analyses received outside of hold time? Yes / No

- 11. Any Subcontracting needed? Yes No
ESS Sample IDs: _____
Analysis: _____
TAT: _____

- 12. Were VOAs received? Yes / No
a. Air bubbles in aqueous VOAs? Yes / No
b. Does methanol cover soil completely? Yes / No / NA

- 13. Are the samples properly preserved? Yes / No
a. If metals preserved upon receipt: Date: _____ Time: _____ By: _____
b. Low Level VOA vials frozen: Date: _____ Time: _____ By: _____

Sample Receiving Notes:

- 14. Was there a need to contact Project Manager? Yes No
a. Was there a need to contact the client? Yes No
Who was contacted? _____ Date: _____ Time: _____ By: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	352335	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
01	352339	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
02	352334	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
02	352338	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
03	352333	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
03	352337	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
04	352332	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
04	352336	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
05	352331	Yes	NA	Yes	VOA Vial - Methanol	MeOH	

2nd Review

- Were all containers scanned into storage/lab?
- Are barcode labels on correct containers?
- Are all Flashpoint stickers attached/container ID # circled?
- Are all Hex Chrome stickers attached?
- Are all QC stickers attached?
- Are VOA stickers attached if bubbles noted?

Initials: [Signature]
 Yes / No
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA
 Yes / No / NA


Completed By: [Signature] Date & Time: 6/4/19 1649
 Reviewed By: [Signature] Date & Time: 6/4/19 1742

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Redwood Environmental Group - KPB/HDM

ESS Project ID: 19F0081

Date Received: 6/4/2019

Delivered By:  6/4/19 1742

