Site Investigation Report

Residential Property

32 & 33 Exchange Street
East Greenwich, Rhode Island

Prepared For:
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3 Cole Circle
East Greenwich, Rhode Island

and

Rhode Island Department of Environmental Management
Office of Waste Management
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1.0 EXECUTIVE SUMMARY

Redwood Environmental Group, LLC (Redwood) has prepared this Site Investigation Report (SIR) for property located at 32 & 33 Exchange Street, East Greenwich, Rhode Island (the Site). This SIR was prepared in accordance with the Rhode Island Department of Environmental Management (RI DEM) Office of Waste Management (OWM) re-codified 250-RICR-140-30-1, the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations), consistent with the RI Administrative Procedures Act. The required Site Investigation Report Checklist is provided in Appendix A.

The objective of the Site Investigation (SI) was to identify potential oil and hazardous materials (OHM) contamination in the soils and ground water of the Site. Specifically, this investigation consisted of the collection and laboratory analysis of soil and ground water samples from around the Site. The SI activities were performed by Redwood in November 2019.

The SI included the performance of three (3) borings at the Site using a truck-mounted GeoProbe direct-push drilling unit to collect soil samples from the ground surface to the ground water interface. The three (3) borings were finished as ground water monitoring wells. The soil samples collected were delivered to a Rhode Island Certified laboratory for the following analysis:

- Volatile Organic Compounds (VOCs) by U.S. EPA Method 8260;
- Total Petroleum Hydrocarbons (TPH) by U.S. EPA Method 8100M;
- Semi-Volatile Organic Compounds (SVOC) by U.S. EPA Method 8270 and
- Polychlorinated biphenyl (PCB) by U.S. EPA Method 8270.

As stated above, the borings were finished as ground water monitoring wells. Redwood collected three ground water samples and delivered the samples to the same certified laboratory for VOCs by U.S. EPA Method 8260.

Table 1 attached shows the soil laboratory results for VOCs, TPH, SVOC and PCB. None of the constituents were identified above laboratory reporting limits. As such, when comparing to the RI DEM Method 1 Residential Direct Exposure Criteria (RDEC) and the GB Leachability Criteria (GBLC) applicable to the Site, none of the VOCs, TPH, SVOCs or PCBs were identified above RDEC or GBLC standards applicable to the Site.

Table 3 attached shows the ground water laboratory results for VOCs. None of the VOC constituents were identified above laboratory reporting limits. As such, when comparing to RI DEM GB Ground Water Criteria applicable to the Site, no VOCs were identified above ground water standards applicable to the Site.

In addition to the analysis and results presented above, RI DEM requested the following analysis for soil and ground water.

- Soil- MassDEP Extractible Petroleum Hydrocarbon (EPH)-8270 and MassDEP Volatile Petroleum Hydrocarbon (VPH)-2.1.

- Ground Water- MassDEP EPH-8270 and MassDEP VPH-2.1.

As shown on Tables 2 and 4, no EPH or VPH concentration were identified in the soil or ground water above laboratory reporting limits and therefore, when compared to MassDEP regulatory standards, no EPH or VPH was identified above standards.

In conclusion, only Lead was identified above regulatory standards applicable to the Site.

2.0 BACKGROUND

The Site is occupied by a house located along the Exchange Street roadway. Two small dilapidated sheds are located to the rear of the house. Undeveloped land is located to the east and northeast of the house. The Site owner plans to develop the Site with condominiums. As the history of the Site suggests automobile storage in the rear of the property for many years, the Site owner contracted with Redwood to perform surface soil sampling in June 2019. That sampling identified Lead above regulatory standards. Redwood made notification to RI DEM in July 2019 of the Lead exceedance of regulatory standards applicable to the Site. As such, RI DEM requested a full Site investigation. Hence, this SIR.

2.1 Site Description, History and Foreseeable Future Use

The Site is located at 32 & 33 Exchange Street in a dense residential area of East Greenwich Rhode Island west of Greenwich Cove. According to the East Greenwich Tax Assessor's field cards accessed through the East Greenwich Tax Assessor's website, the Site is comprised of two (2) tax assessor lots including Lot 87 (32 Exchange Street) and Lot 382 (33 Exchange Street) on the tax assessor's Plat Map 85-1. Together the lots are approximately 0.479 acres in size. The Site is currently owned by Grenier Properties, LLC of East Greenwich, Rhode Island as recorded in the East Greenwich Land Records Book 1393, Page 272 with a recording date of March 22, 2018.

The Site is occupied by an abandoned 2-story colonial house with basement and two small sheds. The Site is zoned as LHOD, Local Historic Overlay District.

No Fire Insurance Maps are available for this part of the State. The aerial photographs for years 1939, 1951, 1962, 1972, 1997, 2008, and 2019 were reviewed on the RI DEM website. All photographs show the colonial house located along the Exchange Street. Only the 2008 photograph shows the Site with cars and boats stored east and north of the house. However, the portion of the Site where the automobiles were stored is below trees and the canopy may have shielded the autos from view in several photographs. A copy of the aerial photographs reviewed is provided in Appendix A.

Future proposed development of the Site is condominiums.

2.2 Geographic and Physiographic Setting

The topography of the Site is flat with an incline at the eastern property boundary rising to the railroad tracks above. The undeveloped portion of the Site is covered with grass and scrub brush/wild vegetation. Based on ground water elevations and survey data, ground water flows in a northeasterly direction and towards Greenwich Cove located approximately 800 feet to the east (See Figure 1). The Site is approximately 14-15 feet above sea level.

Based on the FEMA Q3 Digital Data, Flood Zone Panel: 4403C0137H, Effective Date: 9/18/2013, the Site is located within Zone X-Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.

Surficial material at the Site was mapped as Merrimac-Urban (MU). Redwood found the Site soils to be a mixture of medium sand and gravel with some cobble to a fine sand at the water table interface. The USGS has mapped the Site glacial deposit as Outwash.

Bedrock beneath the Site was mapped as the Narragansett Bay Group-Rhode Island Formation defined as consisting of gray to black, fine to coarse grained quartz arenite, litharenite, shale and conglomerate, with minor beds of anthracite and meta-anthracite Site (RI DEM Environmental Resource Map, RI DEM website). Redwood did not encounter bedrock during the soil sampling which was completed to approximately 20 feet below ground surface (bgs).

2.3 Ground Water Classification

According to the RI DEM website, the ground water beneath the Site is classified as GB. GB ground water is designated as ground water not suitable for public or private drinking water use without treatment.

Ground water was encountered in each ground water monitoring well installed by Redwood during the investigation in November. During the well installation and sampling, ground water was identified at approximately 14 feet below the bgs.

According to the RI DEM Environmental Resource Map as shown of the RI DEM website, there are no Well Head Protection areas within a 1.0-mile radius of the Site.

2.4 Surface Water

According to the RI DEM Environmental Resource Map, the nearest surface body of water is the Greenwich Cove which is located approximately 800 feet to the east of the Site. This body of water is an estuary located south of Long Point in East Greenwich/Warwick. According to the RI DEM Environmental Resource webpage, the cove has impairments that include total nitrogen, dissolved oxygen and fecal coliform. The RI DEM Water Quality Standard is SB1.

2.5 Potential Receptors

The activities conducted by individuals working at, visiting or trespassing the Site should be evaluated under current and foreseeable Site uses to determine whether the Lead in the surface soils at the Site pose a risk to those individuals. As redevelopment of the Site is proposed, limiting human exposure to Site contamination will be paramount to the final development plans.

Greenwich Cove is located approximately 800 feet to the east of the Site and a potential receptor. As there is no current regulatory standard established for Lead in GB Ground Water, there is no data available. However, it is unlikely that the Site condition will adversely affect Greenwich Cove due to the distance from the Site.

According to the RI DEM website, there are no Environmentally Sensitive Areas within 500 feet of the Site. Potable water at the Site and surrounding properties is provided by the municipality. There are no public water supply wells within one mile of the Site.

2.6 Previous Environmental Investigations

A Phase I Environmental Site Assessment was performed on the Site by Redwood in May 2019 and identified one recognized environmental conditions (RECs). Based on historical information collected and provided to Redwood, automobiles and boats have been stored at the Site in the past. This past use of the property could have adversely impacted the soils and ground waters of the Site. As such, Redwood recommended a Limited Site Investigation be performed to verify the quality of Site soil and groundwater. The Phase I Environmental Site Assessment is provided in Appendix A as reference.

Soil Sampling Letter Report - Redwood selected four (4) points on the Site and hand dug holes to a depth between 12 and 18 inches below ground surface (bgs). Soil samples were collected from the hole sidewalls and delivered to a Rhode Island Certified laboratory for the following analysis:

- RCRA 8 Metals by US EPA Method 6010;
- Total Petroleum Hydrocarbons (TPH) by US EPA Method 8100M; and
- Volatile Organic Compounds (VOCs) by US EPA Method 5035/8260.

RCRA-8 metals include Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver. The report shows laboratory results compared to the RI DEM RDEC applicable to the Site. Of the metals analyzed, only Lead was identified above the RDEC of 150 milligrams per kilograms (mg/kg). Soil samples 201942-SS2-060419 and 201942-SS3-060419 were identified with lead at concentrations of 424 mg/kg and 197 mg/kg, respectively. All other metals listed above were either identified with low level concentrations or concentrations below the laboratory reporting limits for that metal.

No VOCs were identified above laboratory reporting limits and therefore, not detected. TPH was identified in three (3) of the four (4) samples with concentrations ranging from 111 mg/kg and 167 mg/kg. When comparing the TPH concentrations to the RDEC applicable to the Site, the TPH concentrations were identified below the RDEC of 500 mg/kg. In addition, the TPH was compared to GBLC of 2,500 mg/kg applicable to the Site. The TPH concentrations were not identified above the GBLC.

In conclusion, the June 2019 surface soil investigation identified Lead above regulatory standards applicable to the Site. VOCs and TPH were not identified above regulatory standards applicable to the Site. A copy of these reports is provided in Appendix A.

2.7 Past Incidences or Releases

Neither the Site owner nor Redwood are aware of past incidence or releases at the Site. However, abutting property owners suggest that since the property was used to store cars and boats in the past and this past use has contaminated the property.

2.8 RI DEM File Review

No RI DEM file reviews have been performed.

2.9 Current and Past Owners

The ownership information provided in this SIR was researched by Redwood at the East Greenwich Tax Assessor's Office (and website) and intended for informational purposes only. This information is not intended as a title search or for any legal purpose. Redwood makes no representation as to the completeness or accuracy of such ownership information.

Lots 85-1-87 and 85-1-382 are currently owned by Grenier Properties, LLC of East Greenwich, Rhode Island. Previously, the properties were owned by Elaine Currie who sold the lots by Warranty Deed to Grenier Properties, LLC on March 22, 2018 with a Land Records reference of Book 1393, Page 272. A copy of the Tax Assessor's Office Field Cards is provided in Appendix A.

2.10 Current Uses and Future Uses

The Site is currently occupied by an abandoned house and two small dilapidated sheds structures. The Site is zoned as LHOD-Local Historic Overlay District. Proposed future use is a condominium development.

3.0 SITE INVESTIGATION

3.1 Public Notice and Environmental Justice Activities

In accordance with the RI DEM Remediation Regulations, Redwood along with Grenier Properties, LLC conducted the required Public Notice by sending a Public Notice package to all abutting properties. As the Site is not located within an Environmental Justice Focus Area, the package was printed only in English. As required by RI DEM, a 4-foot by 6-foot sign was erected at the Site in English directing questions pertaining to the investigation to RI DEM.

Redwood will conduct Public Notice regarding the investigation findings summarized in this report. As part of the public notice activities, Redwood will mail a letter to the owners and tenants of abutting properties notifying them of the completed investigation and results. A copy of the letter and the abutters addresses will be submitted to RI DEM upon completion.

3.2 Objectives

The objective of this SI was to identify potential OHM contamination in the soils and ground water of the Site. Specifically, this investigation consisted of the collection and laboratory analysis of soil and ground water samples from around the Site. Initially, surface soil samples were collected by Redwood in June 2019 targeting metals, TPH and VOCs. Subsequent notification and discussion with RI DEM prompted additional investigation in the form of this SI including soil and/or ground water sampling for one or more of the following: SVOCs, PCBs, VOCs, TPH, EPH and VPH analysis. All waste derived from the investigation including soil from borings and purge water are to be left on Site.

A Location Map, Site Plan and Tax Assessor's Plat Map are provided as Figures 1, 2 and 3 respectively.

3.3 Notice of Release

A Hazardous Material Release Notification Form was submitted to RI DEM on July 15, 2019. The release was specific to Lead identified in surface soils above regulatory standards. Attached to the release form was the LSI report detailing the investigation which prompted the notification to RI DEM. A copy of the release form and LSI report are provided in Appendix A as reference.

3.4 Soil Boring and Soil Sampling Activities

On November 6, 2019, Redwood was on Site with New England Geotech of Jamestown, Rhode Island to perform three (3) soil borings, of which all were finished as ground water monitoring wells (designated as MW-1, MW-2 and MW-3). The installation performed used a truck-mounted Geoprobe direct-push machine. The object of this investigation was to collect soils samples from surface soils and soils at depth to confirm soil quality as it relates to, SVOCs, PCBs, TPH, VOCs, EPH and VPH. Soil samples were collected continuously from the surface to the water table utilizing 5-foot acetate Geoprobe samplers. Each soil sample was field screened for Total Organic Vapor (TOV) using the jar-headspace technique (plastic soil bags were used instead of jars) and a Photoionization Detector (PID) equipped with a 10.6eV lamp calibrated with isobutylene to a benzene standard. Soils were generally characterized using a Modified Burmiester Classification System and along with PID results, visual and olfactory observations were documented on Boring Logs. In general, SVOCs and PCBs were collected from surface soils and TPH, VOCs, EPH and VPH were collected from depth. A copy of the Boring Logs is provided in Appendix A.

Based on the observed water table depth (14-16 feet), three (3), 1-inch PVC monitoring wells were installed to a depth of approximately 20 feet bgs. The well screen was installed to straddle the water table/soil interface and riser pipe was installed to the ground surface. Filter sand was installed in the annular space to the top of the screen and bentonite seal material installed above the filter sand. A road box was installed at the surface grade. Boring Logs provided in Appendix A show each monitoring well construction.

3.5 Soil Sampling Analysis

On November 6, 2019 Redwood collected soil samples from the three borings. Each soil sample was field screened for TOV using the jar-headspace technique (plastic soil bags were used instead of jars) and a PID. PID results are measured in parts per million per volume (ppm/v). The samples were also visually observed, and any olfactory evidence was noted.

PID RESULTS

Boring/Monitoring Well Depth (Ft)	MW-1 ppm/v (Analysis)	MW-2 ppm/v (Analysis)	MW-3 ppm/v (Analysis)
0-5	0.0 (SVOC)	0.3 (PCB)	0.5 (SVOC)
5-10	0.0	0.4 (VOC, TPH, EPH, VPH)	0.7 (VOC, TPH, EPH, VPH)
10-15	0.0 (VOC, TPH, EPH, VPH)	0.0	0.0

15-20	N/A	0.0	N/A

Highlighted boxes indicate soil samples submitted for laboratory analysis

Based on the boring location, PID readings and visual observations, three (3) soils samples were collected for laboratory analysis.

MW-1. PID results did not identify TOV above 0.0 ppm/v. A surface soil sample as shown in the table above was collected from within the 0-5 foot interval and more specifically from between 0 and 2-feet below ground surface (bgs) as surface soil is defined as the first 2-feet of Site soils. Lacking and PID results, a second sample was collected from just above the water table for the analysis as shown in the table above.

MW-2. PID identified results of 0.3 and 0.4 ppm/v in the 0-5 feet sample and 5-10 feet sample, respectively. A surface soil sample was collected for the analysis shown in the table. Based on PID results, a soil sample from the 5-10 foot interval was collected as shown in the table above.

MW-3. PID identified results as 0.5 and 0.7 ppm/v in the 0-5 feet sample and 5-10 feet sample, respectively. A surface soil sample was collected for the analysis shown in the table. Based on PID results, a soil sample from the 5-10 foot interval was collected.

The soil samples were collected in laboratory supplied glassware and submitted to ESS Laboratory of Cranston, Rhode Island for one or more of the following analysis as shown in the table above:

- TPH by US EPA Method 8100M;
- VOCs by US EPA Method 5035/8260;
- SVOC by US EPA Method 8270;
- PCBs by US EPA Method 8082;
- EPH by MADEP method 8270; and
- VPH by MADEP method 2.1.

All samples were submitted to ESS Lab under proper chain of custody.

Boring logs showing the PID readings, sample recovery and soil characteristics for the Site Investigation activities are provided in Appendix A.

3.6 Sampling and Analysis-Quality Assurance and Control Procedures

Field sampling, soil screening and analytical analysis completed as part of environmental investigations at the Site were undertaken with the objective of maximizing the use of field screening data. Fixed based laboratory analysis results were used to confirm the presence and relative distribution of contaminants of concern at the Site.

Prior to scheduling subsurface activities, Redwood contacted DigSafe and the East Greenwich Department of Public Works in order to have all subsurface utilities at and near the Site properly marked. Roadway markings indicate that municipal water and sewer lines, gas and electric lines along Exchange Street.

Field screening of soil samples involved the collection of soil samples from targeted intervals and then immediately transferring the soils to zip-lock bags where they were allowed to equilibrate for approximately 15 minutes. Redwood recorded observations of subsurface conditions and soil type as the soil borings were advanced. Selected soil samples from varying depths were collected and screened for the presence of TOVs using a PID with a 10.6 eV lamp calibrated daily to 100 ppm/v as isobutylene.

Based on visual observations and/or field screening results, selected soil samples were placed into a 40-milliliter vial preserved with methanol for VOC laboratory analysis in accordance with EPA Preservation Method 5035 and placed into a cooler pending deliver to the laboratory under proper chain of custody. A 4-ounce amber jar was filled with soil from each soil sample location for TPH, laboratory analysis and for determining percent moisture content. A 4-ounce amber jar was filled with surface soil from boring locations for SVOCs and PCB laboratory analysis and for determining percent moisture content. EPH and VPH analysis followed similar procedures with separate laboratory glassware.

Laboratory analysis were completed by ESS Laboratory (ESS Lab) of Cranston, Rhode Island. ESS Lab is a Rhode Island certified lab permitted to perform all of the specified analysis in this report.

3.7 Ground Water Sampling

On November 7, 2019, Redwood personnel were on Site to collect a ground water sample from monitoring well MW-1, MW-2 and MW-3. Prior to sampling, Redwood measured each well for depth to ground water, depth to well bottom and for the presence of separate phase product using an oil/water interface probe (IP). No separate phase product was identified. To sample the well, Redwood utilized low flow sampling equipment including a variable speed peristaltic pump, dedicated silicone tubing and disposable down well plastic tubing. Approximately three (3) well volumes of water were purged from each well before the ground water sample was collected. The ground water was clear to the naked eye in all well purging and sampling. Samples collected did not exhibited unusual odors. The ground water samples were submitted to ESS Lab for VOC analysis by US EPA Method 8260 in laboratory supplied glassware with proper preservation.

In addition to VOC analysis, RI DEM requested EPH and VPH analysis by MA DEP methods. Samples were collected and placed in appropriate laboratory supplied glassware for the aforementioned analysis.

The following table shows the ground water characteristics and ground water measurements.

Sample ID	Measured Depth to Water (Feet)	Measured Well Bottom (Feet)	Product (Feet)	Well Diameter (Inches)
MW-1	14.0	20.1	0.0	1
MW-2	13.8	19.9	0.0	1
MW-3	13.6	19.8	0.0	1

3.8 Ground Water Flow Direction

Redwood performed a ground water elevation survey as part of this investigation. The three Site monitoring wells were measured for elevation using GPS survey equipment. The survey was corrected in real-time and elevations are accurate to less than 1/10 inch. The following table represents the well elevations, depth to ground water of each well as measured during the November 2019 ground water sampling and the corrected elevation of the ground water across the Site.

Monitoring Well	PVC Elevation	Depth to Ground Water	Corrected Ground Water Elevation
MW-1	15.27	14.0	1.27
MW-2	15.50	13.8	1.70
MW-3	15.35	13.6	1.75

Ground water was determined to flow in a northeasterly direction across the Site. Figure 2 shows the ground water flow contours calculated as part of this SIR.

3.9 Laboratory Results

SOILS

As shown in the Table 1, VOCs were not identified above the laboratory reporting limits in the samples analyzed from MW-1, MW-2 and MW-3 and therefore, not detected.

As shown in Table 1, no SVOCs s were identified above the laboratory reporting limits in the samples analyzed from MW-1, MW-2 and MW-3 and therefore, not detected.

As shown in Table 1, no TPH was identified above the laboratory reporting limits in the samples analyzed from MW-1, MW-2 and MW-3 and therefore, not detected.

As shown in Table 1, no PCBs were identified above the laboratory reporting limits in the samples analyzed from MW-1, MW-2 and MW-3 and therefore, not detected.

As shown in Table 2, no VPH or EPH compounds were identified above laboratory reporting limits in the samples analyzed from MW-1, MW-2 and MW-3 and therefore, not detected.

GROUND WATER

As shown in Table 3, no VOCs were identified above the laboratory reporting limits in the ground water samples analyzed from MW-1, MW-2 and MW-3 and therefore, not detected.

As shown in Table 4, no VPH or EPH compounds were identified above the laboratory reporting limits in the ground water samples analyzed from MW-1, MW-2 and MW-3 and therefore, not detected.

Laboratory data sheets for the soil and ground water analyses are provided in Appendix B.

3.10 Regulatory Status

Redwood compared the soil laboratory results, as shown on Table 1 to criteria as set forth in the RI DEM Remediation Regulations to Method 1 Residential Direct Exposure Criteria (RDEC). As TPH was not identified above laboratory reporting limits, TPH was not identified above the RDEC of 500 mg/kg, applicable to the Site. As shown in Table 1, no VOCs were identified above the laboratory reporting limits. Therefore, VOCs were not identified above regulatory standards applicable to the Site. Redwood determined that the Site is located within the RI DEM GB Ground Water Classification area. As such, GB Leachability Criteria (GBLC) applies to the Site soils. As no TPH was identified above laboratory reporting limits, TPH is not above GBLC applicable to the Site. VOCs were either not identified above GB Leachability Criteria or did not have current RI DEM standards established for the compounds.

Redwood compared the soil laboratory results of the EPH and VPH analysis as shown on Table 2 to criteria as set forth in the MA DEP Method 1 Cleanup Standards for S-2/GW-2 soil classification. As EPH or VPH values were not identified above laboratory reporting limits, no EPH or VPH values were identified above S-2/GW-2 regulatory standards.

As the ground water at the Site is classified as GB, GB Ground Water Quality Criteria apply to Site ground water. As shown on Table 3, no VOCs were identified above laboratory reporting limits. Therefore, no VOCs were identified above the GB Ground Water Quality Criteria applicable to the Site.

Redwood compared the ground water laboratory results of the EPH and VPH analysis as shown on Table 4 to criteria as set forth in the MA DEP Method 1 Cleanup Standards for GW-2 ground water classification. As EPH or VPH values were not identified above laboratory reporting limits, no EPH or VPH values were identified above S-2/GW-2 regulatory standards.

3.11 Background Concentrations

No background concentration study has been performed at the Site.

3.12 Potential for Entrainment or Erosion

With the exception of the house and sheds, the Site is covered with grass, weeds/brush and some trees. Stormwater is expected to infiltrate the Site soils. As such, the expectation for erosion from wind or storm water is minimal.

3.13 Fate and Transport Models

No analytical or numerical modeling was performed as part of this SIR.

3.14 Site-Specific Factors

The Site is currently occupied by a 2-story colonial house and two small shed structures. The structures are located on the 32 Exchange Street (85-1-87) portion of the Site. The rear portion of 32 Exchange Street and the entire property with the address 33 Exchange Street (85-1-382) is undeveloped and covered with grass, weeds, brush and few trees. The northern abutters are residential and an asphalt parking lot. The southern and western abutters are residential. The eastern abutter is Amtrak Railroad.

3.15 Answers to SIR Check List Questions Not Otherwise Answered in This Report

Check List Section 7.03 H

- There are no activities at the Site.
- There are no drinking water wells at the Site or surrounding properties.
- There are no UICs, septic tanks, current known USTs, piping or other underground structures at the Site.
- There is no hazardous waste storage at the Site.
- There is not asphalt currently at the Site.
- There are no waste management or disposal areas at the Site.

Check List Section 7.03 I

- There are no surface water bodies within 500 feet of the Site.
- There are no Environmental Sensitive Areas within 500 feet of the Site.
- There are no public water supplies within one mile of the Site.
- No off-site determination of contamination was performed.

Check List Section 7.03 K

- No free liquids on the surface.
- No DNAPL or LNAPL identified.
- No Environmentally Sensitive Areas have been affected by this release.
- There are no man-made structures currently at the Site.
- Surface areas have not been identified with stained soils or odors.
- There is no stressed vegetation at the Site.
- There are no stockpiles of soil at the Site;
- There are no hazardous substances stored or used at the Site.
- The Site is not under EPA jurisdiction.
- The contamination reported in this report falls within the Remediation Regulations only.

Check List Section 7.03 N

- There were no natural or man-made barriers to and conduits for contamination migration observed at the Site.

4.0 FINDINGS AND CONCLUSIONS

Previous to this SI, surface soil sampling was performed at 32 & 33 Exchange Street on June 4, 2019. The objective of the sampling was to identify whether historical usage of the property had adversely impacted the surface soils at the Site. Sampling included RCRA 8 metals, TPH and VOCs. No TPH or VOCs were identified above regulatory standards applicable to the Site. Lead

was the only metal identified above regulatory standards and proper notification to RI DEM was made causing the expanded site investigation which is the subject of this report.

The SI activities were performed at the Site on November 6 and 7, 2019 to further characterize the Site soils and ground water. Three (3) borings, all of which were finished as ground water wells, were installed at the Site. Selected soil samples from the surface and at depth were collected for TPH, VOCs, SVOCs, PCBs, EPH and VPH laboratory analysis.

Laboratory analysis of soils did not identify TPH, VOCs, SVOCs or PCBs above RI DEM regulatory standards applicable to the Site. Laboratory analysis for EPH and VPH did not identify these compounds above applicable MA DEP standards suggested by RI DEM personnel.

Laboratory analysis of ground water from MW-1, MW-2 and MW-3 did not identify VOCs above RI DEM regulatory standards applicable to the Site ground water. Laboratory analysis of ground water from MW-1, MW-2 and MW-3 did not identify EPH or VPH compounds above MA DEP regulatory standards suggested by RI DEM personnel.

Redwood concludes that based the site investigation activities performed in June and November 2019, that only Lead was identified in surface soils above regulatory standards applicable to the Site and will have to be addressed going forward.

5.0 DEVELOPMENT OF REMEDIAL ALTERNATIVES

Lead has been identified in surface soils above Site regulatory standards. As required by the RI DEM Remediation Regulations, two remedial alternatives besides natural attenuation are required to satisfy this report section.

The Site is occupied by a house and two sheds on the southwestern portion of the Site. The rest of the Site is undeveloped, vacant land. The future Site use is the establishment of condominiums. Construction is set to begin in 2020.

With respect to the Lead contamination, direct exposure to the impacted soils is of concern. Eliminating the direct exposure to impacted soils is paramount. As the ground water beneath the Site is classified as GB, and the fact that GB ground water has no standard established for Lead, the leachability of the Lead is not of concern.

During the aforementioned construction, the surface soils (0-2 feet) across the Site will be disturbed in one way or another. Certainly, these soils will need to be stockpiled for possible off-Site disposal or incorporation into the final Site design at depth using engineered and institutional controls as final remedies preventing direction exposure in the future.

5.1 Monitored Natural Attenuation

Monitored natural attenuation (MNA) is not a viable remedial alternative at sites with Lead impacted soils. The utilization of MNA at this Site as a remedial alternative would not comply with the Risk Management section of the Remediation Regulations because metals do not dissipate or volatilize (not naturally attenuate) and soil concentrations of Lead at the Site would continue to exceed the applicable RI DEM regulatory standards. Therefore, this alternative will not be a remedial alternative to bring the Site into compliance with RI DEM standards.

The Remediation Regulations further require that a minimum of two remedial alternatives be evaluated for this Site besides Monitored Natural Attenuation. Redwood proposes two remedial alternatives for the Site. (1) implementation of an excavation and off-Site disposal program for Lead impacted soils, and (2) use of engineered and institutional controls to manage potential exposure to impacted soil that would remain on Site under Department approved barriers.

5.2 Remedial Alternative No.1—Excavation and Off-Site Disposal of Lead Impacted Soils

Excavation and off-site disposal of Lead impacted soils is an effective way to reduce the contamination thus reducing the potential for direct exposure. This alternative is a cost-effective alternative at this time. The area represents approximately 1,500 cubic yards (CY) of soil to be disposed. This alternative is both technically and financially feasible.

A. Risk Management

By removing the contaminated soil from the Site, the long-term risks to human health and the environmental at the Site would be mitigated. However, during excavation and transportation of soil there would be potential short-term high-intensity direct exposure risks to human health. Upon completion of the remedial activity, the regulated material would no longer pose a risk to Site users.

B. Technical Feasibility

Implementation of the excavation and off-Site disposal of Lead impacted soil as a remedial alternative is technically feasible with normal excavation equipment and trucking.

C. Compliance with State and Local Laws or Other Public Concerns

Implementation of excavation and off-Site disposal of contaminated soil as a remedial alternative would comply with the Remediation Regulations, as well as other applicable state and local laws.

D. Financial Feasibility

The property will be developed as condominiums in 2020. As part of the construction process the soil removal activity and disposal off-Site will be performed. The equipment and disposal costs along with confirmation soil sampling costs are reasonable and this approach is financially feasible to complete.

5.3 Remedial Alternative No.2--Engineered and Institutional Controls

Lead contamination has been identified across the Site in surface soils. Capping of these soils with a combination of geotextile fabric and 1-foot of clean soil, 2-feet of clean fill and/or 1-foot of clean fill with an asphalt cover would mitigate direct exposure to Site soils by creating a physical barrier to the soil. The cap would also mitigate risks posed by entrainment of dust and soil erosion by securing regulated soil beneath the cap. The cap would be an effective way to prevent human contact with the impacted soils. This alternative is both technically and financially feasible. In addition to an engineered cap, an Environmental Land Use Restriction (ELUR) would be recorded in the East Greenwich Land Evidence Records describing the extent of the cap and would include a site-specific Soil management Plan (SMP). The SMP would provide instructions for

future cap inspections and the proper measures to take in the event of any construction or cap disturbances, including RI DEM notification (if necessary) and proper soil handling procedures.

A. Risk Management

This remedial alternative utilizing an engineered cap would prevent the potential for Site users to be exposed to the soils containing SVOCs, PAHs and metals above regulatory standards.

An ELUR mandates that future users of the Site maintain the engineered cap and further require that future soil disturbances be conducted in accordance with a Soil Management Plan should soils be disturbed at the impacted level. The ELUR would require annual inspections and certifications that the cap continues to be maintained adequately.

B. Technical Feasibility

The Site is proposed for redevelopment as condominiums. Surface soils will be stockpiled for later use below the capping. Should excess impacted soils be determined, these soils will be disposed of off-site at a regulated disposal facility.

C. Compliance with State and Local Laws or Other Public Concerns

Implementation of capping in conjunction with the filing of an ELUR would comply with the Remediation Regulations as well as other applicable state and local laws.

D. Financial Feasibility

This remedial alternative is considered a cost-effective remedial alternative as the engineered control can be implemented during the redevelopment of the Site. Careful planning prior to construction will keep the overall cost of this capping alternative to a minimum. The ELUR and SMP will be prepared and should not add significant cost to the project.

6.0 CERTIFICATIONS

In accordance with the Remediation Regulations, the certifications expressed shall apply to the SIR compiled and submitted to RI DEM by Redwood.

The Certifications can be found in Appendix C.

7.0 REFERENCES

FEMA- Flood Insurance Rate Map, City of East Greenwich, Rhode Island, East Greenwich County, Panel 44003C0137H, Effective Date 9/18/2013

Rhode Island Department of Environmental Management, Rules and Regulations for Ground Water Quality, Division of Water Resources

Rhode Island Department of Environmental Management, Ground Water Classification & Wellhead Protection Area Maps via the RI DEM website

Rhode Island Department of Environmental Management Office of Waste Management re-codified 250-RICR-140-30-1, the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations)

US Department of Agriculture Soil Conservation Service, Rhode Island Agricultural Experiment, 1981, Soil Survey of Rhode Island

East Greenwich Tax Assessor's Website

8.0 LIMITATIONS AND USER RELIANCE

This document was prepared for the sole use of Grenier Properties, LLC and the Rhode Island Department of Environmental Management, the only intended beneficiaries of Redwood's work. Those who may use the report and the services (hereafter "work product") performed by Redwood Environmental Group, LLC and/or sub-consultants and subcontractors (collectively the "Consultant") expressly accept the work product upon the following specific conditions:

1. Consultant represents that it prepared the work product in accordance with the professional and industry standards prevailing at the time such services were rendered.

2. The work product may contain information that is time sensitive. The work product was prepared by Consultant subject to the particular scope limitations, budgetary and time constraints and business objectives of the Client which are detailed therein or in the contract between Consultant and the Client. Changes in use, purpose, tenants, work practices, storage, Federal, state or local laws, rules or regulations may affect the work product.

3. Observations described and upon which the work product was based were made under the conditions stated in this Report. Any conclusions presented in the work product were based solely upon the services described therein, and not on scientific or engineering tasks or procedures beyond the scope of described services.

4. In preparing the work product, Consultant may have relied on certain information provided by state and local officials and information and representations made by other parties referenced therein, and on information contained in the files of the state and/or local agencies made available at the time of the investigation. To the extent that such files, information and representations are missing, incomplete, inaccurate or not provided, the conclusions of the work product may be affected, and Consultant is not responsible for same. Although there may have been some degree of overlap in the information provided by these various sources, Consultant did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this investigation. Consultant assumes no responsibility or liability to discover or determine any defects or inaccuracies in such information which could result in failure to identify contamination or other defect in, at or near the Site.

5. If the purpose of this investigation was to assess the physical characteristics of the subject Site with respect to the presence in the environment of hazardous substances,

waste or petroleum and chemical products and wastes as defined in the work product, unless otherwise noted, no specific attempt was made to check the compliance of present or past owners or operators of the subject Site with Federal, state or local laws and regulations, environmental or otherwise.

6. If water level readings have been made, these observations were made at the times and under the conditions stated in the report. However, it must be noted that fluctuations in water levels may occur due to variations in rainfall, passage of time and other factors and such fluctuations may affect the conclusions and recommendations presented herein.

7. Except as noted in the work product, no quantitative laboratory testing was performed as part of the investigation. Where such analyses have been conducted by an outside laboratory, Consultant has relied upon the data provided, and unless otherwise described in the work product, has not constructed any independent evaluation of the reliability of these tests.

8. If the conclusions and recommendations contained in the work product are based in part upon various types of chemical data, then the conclusions and recommendations are contingent upon the validity of such data. This data (if obtained) has been reviewed and interpretations made by Consultant. If indicated in the work product, some of this data may be preliminary or screening-level data and should be confirmed with quantitative analyses if more specific information is necessary. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time and other factors, and Consultant's review and interpretation is conditioned upon such variations.

9. Chemical analysis may have been performed for specific parameters during the course of this investigation as described in the work product. However, it should be noted that additional chemical constituents not included in the analyses conducted for the investigation may be present in soil, ground water, surface water, sediments or building materials at the Site and Consultant made no review or interpretations regarding the same.

10. Ownership and property interests of all documents, including reports, electronic media drawings and specifications prepared or furnished by Consultant pursuant to this investigation are subject to the terms and conditions specified in the contract between the Consultant and Client whether or not the project is completed.

11. Unless otherwise specifically noted in the work product or a requirement of the contract between the Consultant and Client, any reuse, modification or disbursement of documents to third parties will be at the sole risk of the third party and without liability, damages or legal exposure to Consultant whatsoever.

12. In the event that any questions arise with respect to the scope or meaning of Consultant's work product, immediately contact the Consultant for clarifications, explanation or to update the work product. In addition, Consultant has the right to verify, at the requesting party's expense, the accuracy of the information contained in the work product, as deemed necessary by Consultant, based upon the passage of time or other material changes in conditions or circumstances since conducting the work.

13. Any use or reliance on the work product shall constitute acceptance of the all of terms, conditions and reservations contained herein. Consultant makes no warranty, expressed or implied, to third parties whatsoever.

9.0 QUALIFICATIONS AND SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

The qualifications of the environmental professional(s) and personnel conducting this SIR are provided in Appendix D.

REDWOOD
ENVIRONMENTAL GROUP, LLC

FIGURES

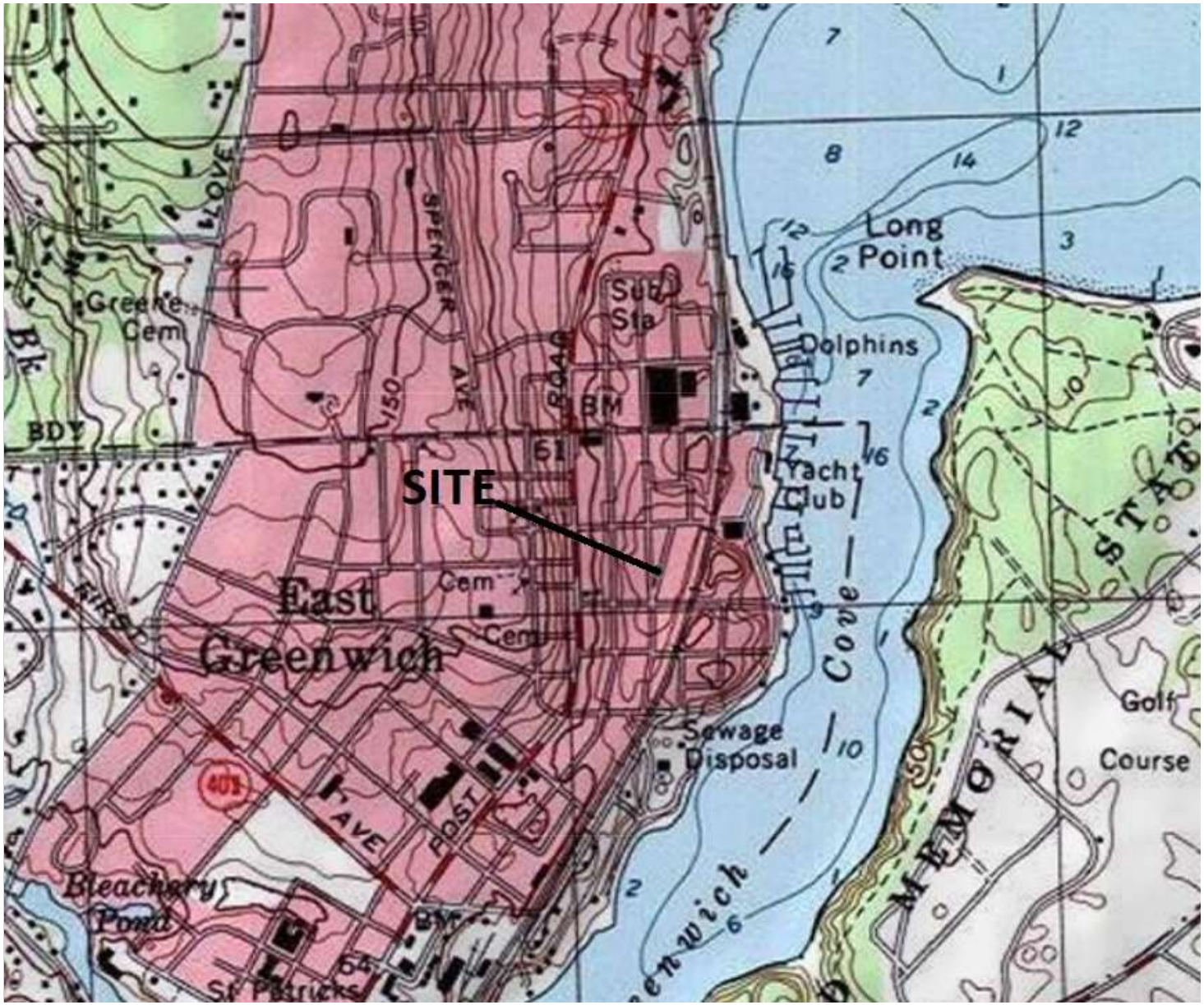

FIGURE 1

LOCATION PLAN

REDWOOD ENVIRONMENTAL GROUP, LLC

SITE INVESTIGATION REPORT
RESIDENTIAL PROPERTY
32 & 33 EXCHANGE STREET
EAST GREENWICH, RHODE ISLAND

NORTH

PROJECT NO. 201942

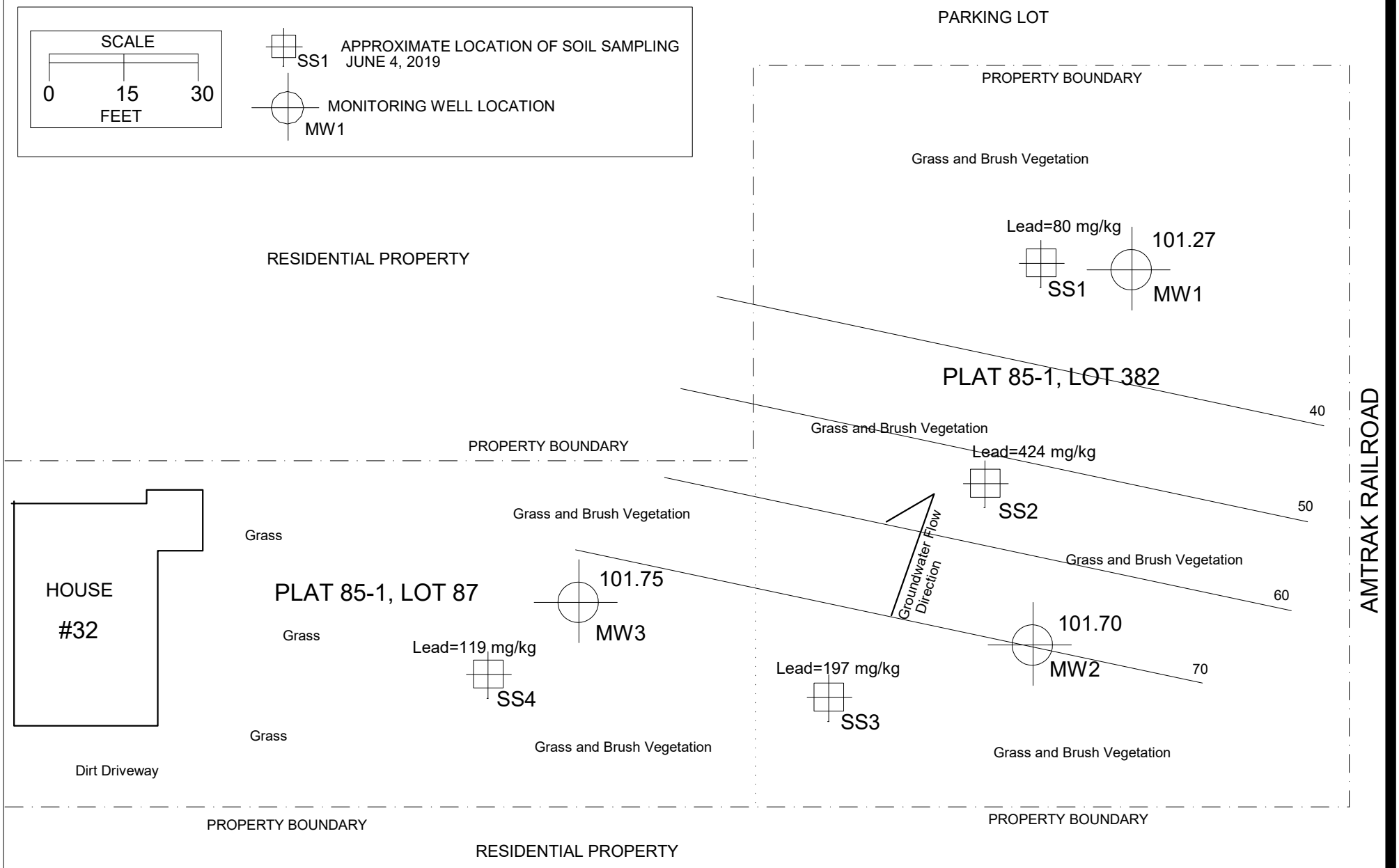

FIGURE 2

SITE PLAN

SITE INVESTIGATION REPORT
RESIDENTIAL PROPERTY
32 & 33 EXCHANGE STREET
EAST GREENWICH, RHODE ISLAND

NORTH

PROJECT NO. 201942

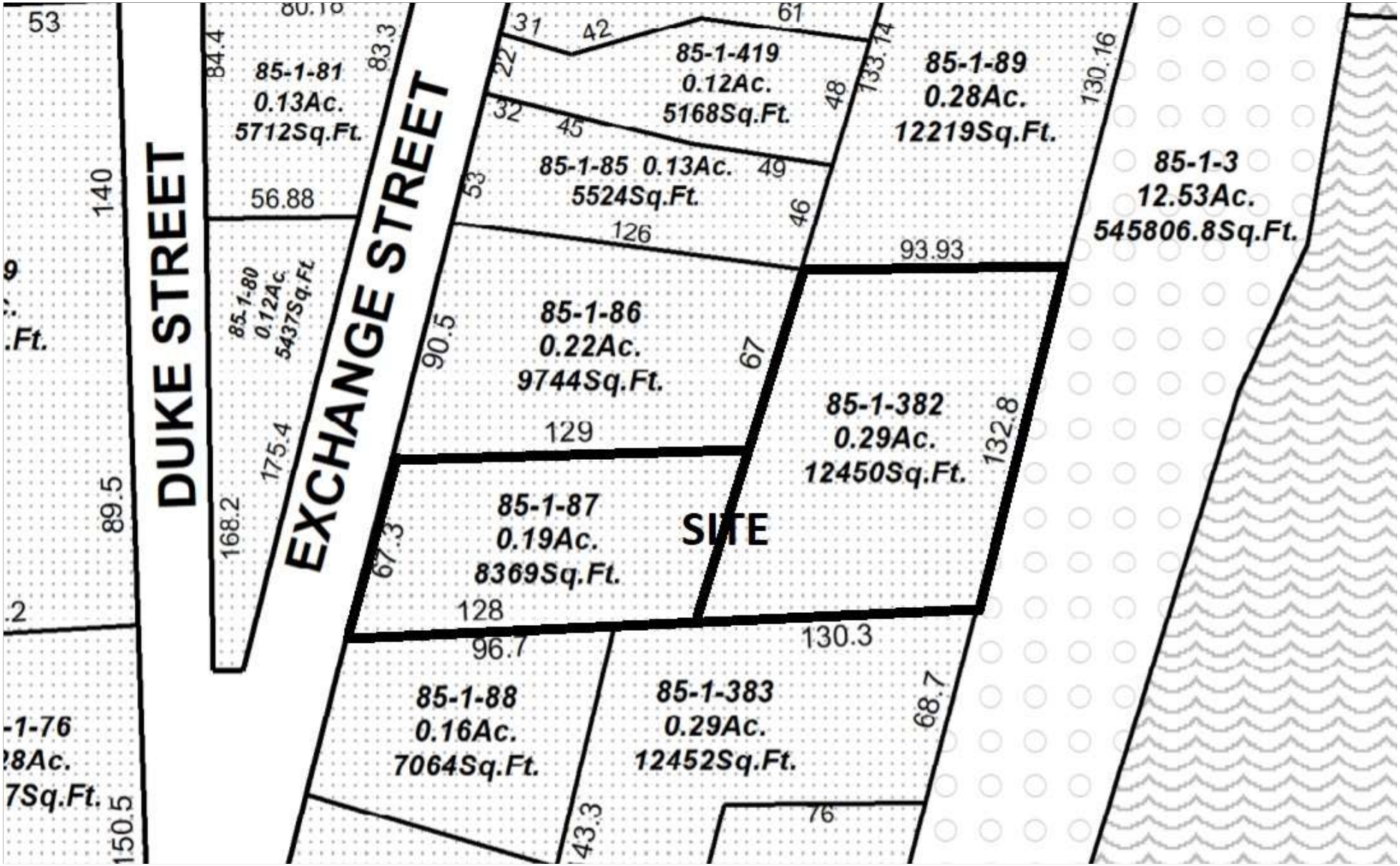

FIGURE 3

PLAT MAP

REDWOOD ENVIRONMENTAL GROUP, LLC

SITE INVESTIGATION REPORT
RESIDENTIAL PROPERTY
32 & 33 EXCHANGE STREET
EAST GREENWICH, RHODE ISLAND

NORTH

PROJECT NO. 201942

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TABLES

Sample Results For Comparison to Direct Exposure Criteria

Sample Designation				201942-MW1-110619		201942-MW2-110619		201942-MW3-110619	
Sample Date				11/06/2019		11/06/2019		11/06/2019	
	Unit	RDEC	C/IDEC						
VOCs									
1,1,1,2-Tetrachloroethane	mg/kg	2.2	220	0.129	U	0.162	U	0.112	U
1,1,1-Trichloroethane	mg/kg	540	10000	0.129	U	0.162	U	0.112	U
1,1,2,2-Tetrachloroethane	mg/kg	1.3	29	0.129	U	0.162	U	0.112	U
1,1,2-Trichloroethane	mg/kg	3.6	100	0.129	U	0.162	U	0.112	U
1,1-Dichloroethane	mg/kg	920	10000	0.129	U	0.162	U	0.112	U
1,1-Dichloroethene	mg/kg	0.2	9.5	0.129	U	0.162	U	0.112	U
1,1-Dichloropropene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
1,2,3-Trichlorobenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
1,2,3-Trichloropropane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
1,2,4-Trichlorobenzene	mg/kg	96	10000	0.129	U	0.162	U	0.112	U
1,2,4-Trimethylbenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
1,2-Dibromo-3-Chloropropane	mg/kg	*0.5*	4.1	*0.644*	U	*0.809*	U	*0.561*	U
1,2-Dibromoethane	mg/kg	*0.01*	*0.07*	*0.129*	U	*0.162*	U	*0.112*	U
1,2-Dichlorobenzene	mg/kg	510	10000	0.129	U	0.162	U	0.112	U
1,2-Dichloroethane	mg/kg	0.9	63	0.129	U	0.162	U	0.112	U
1,2-Dichloropropane	mg/kg	1.9	84	0.129	U	0.162	U	0.112	U
1,3,5-Trimethylbenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
1,3-Dichlorobenzene	mg/kg	430	10000	0.129	U	0.162	U	0.112	U
1,3-Dichloropropane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
1,4-Dichlorobenzene	mg/kg	27	240	0.129	U	0.162	U	0.112	U
1,4-Dioxane - Screen	mg/kg	NE	NE	25.8	U	32.3	U	22.4	U
1-Chlorohexane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
2,2-Dichloropropane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
2-Butanone	mg/kg	10000	10000	0.644	U	0.809	U	0.561	U
2-Chlorotoluene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
2-Hexanone	mg/kg	NE	NE	0.644	U	0.809	U	0.561	U
4-Chlorotoluene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U

4-Isopropyltoluene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
4-Methyl-2-Pentanone	mg/kg	1200	10000	0.644	U	0.809	U	0.561	U
Acetone	mg/kg	7800	10000	0.644	U	0.809	U	0.561	U
Benzene	mg/kg	2.5	200	0.129	U	0.162	U	0.112	U
Bromobenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Bromochloromethane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Bromodichloromethane	mg/kg	10	92	0.129	U	0.162	U	0.112	U
Bromoform	mg/kg	81	720	0.129	U	0.162	U	0.112	U
Bromomethane	mg/kg	0.8	2900	0.129	U	0.162	U	0.112	U
Carbon Disulfide	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Carbon Tetrachloride	mg/kg	1.5	44	0.129	U	0.162	U	0.112	U
Chlorobenzene	mg/kg	210	10000	0.129	U	0.162	U	0.112	U
Chloroethane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Chloroform	mg/kg	1.2	940	0.129	U	0.162	U	0.112	U
Chloromethane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
cis-1,2-Dichloroethene	mg/kg	630	10000	0.129	U	0.162	U	0.112	U
cis-1,3-Dichloropropene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Dibromochloromethane	mg/kg	7.6	68	0.129	U	0.162	U	0.112	U
Dibromomethane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Dichlorodifluoromethane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Diethyl Ether	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Di-isopropyl ether	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Ethyl tertiary-butyl ether	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Ethylbenzene	mg/kg	71	10000	0.129	U	0.162	U	0.112	U
Hexachlorobutadiene	mg/kg	8.2	73	0.129	U	0.162	U	0.112	U
Isopropylbenzene	mg/kg	27	10000	0.129	U	0.162	U	0.112	U
Methyl tert-Butyl Ether	mg/kg	390	10000	0.129	U	0.162	U	0.112	U
Methylene Chloride	mg/kg	45	760	0.258	U	0.323	U	0.224	U
Naphthalene	mg/kg	54	10000	0.129	U	0.162	U	0.112	U
n-Butylbenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
n-Propylbenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
sec-Butylbenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Styrene	mg/kg	13	190	0.129	U	0.162	U	0.112	U

tert-Butylbenzene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Tertiary-amyl methyl ether	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Tetrachloroethene	mg/kg	12	110	0.129	U	0.162	U	0.112	U
Tetrahydrofuran	mg/kg	NE	NE	0.644	U	0.809	U	0.561	U
Toluene	mg/kg	190	10000	0.129	U	0.162	U	0.112	U
trans-1,2-Dichloroethene	mg/kg	1100	10000	0.129	U	0.162	U	0.112	U
trans-1,3-Dichloropropene	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Trichloroethene	mg/kg	13	520	0.129	U	0.162	U	0.112	U
Trichlorofluoromethane	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Vinyl Acetate	mg/kg	NE	NE	0.129	U	0.162	U	0.112	U
Vinyl Chloride	mg/kg	*0.02*	3	*0.129*	U	*0.162*	U	*0.112*	U
Xylene O	mg/kg	110	10000	0.129	U	0.162	U	0.112	U
Xylene P,M	mg/kg	110	10000	0.258	U	0.323	U	0.224	U
Xylenes (Total)	mg/kg	110	10000	0.258	U, D	0.323	U, D	0.224	U, D
SVOCs									
1,1-Biphenyl	mg/kg	0.8	10000	0.364	U	---	---	0.329	U
1,2,4-Trichlorobenzene	mg/kg	96	10000	0.364	U	---	---	0.329	U
1,2-Dichlorobenzene	mg/kg	510	10000	0.364	U	---	---	0.329	U
1,3-Dichlorobenzene	mg/kg	430	10000	0.364	U	---	---	0.329	U
1,4-Dichlorobenzene	mg/kg	27	240	0.364	U	---	---	0.329	U
2,3,4,6-Tetrachlorophenol	mg/kg	NE	NE	1.83	U	---	---	1.65	U
2,4,5-Trichlorophenol	mg/kg	330	10000	0.364	U	---	---	0.329	U
2,4,6-Trichlorophenol	mg/kg	58	520	0.364	U	---	---	0.329	U
2,4-Dichlorophenol	mg/kg	30	6100	0.364	U	---	---	0.329	U
2,4-Dimethylphenol	mg/kg	1400	10000	0.364	U	---	---	0.329	U
2,4-Dinitrophenol	mg/kg	160	4100	1.83	U	---	---	1.65	U
2,4-Dinitrotoluene	mg/kg	0.9	8.4	0.364	U	---	---	0.329	U
2,6-Dinitrotoluene	mg/kg	NE	NE	0.364	U	---	---	0.329	U
2-Chloronaphthalene	mg/kg	NE	NE	0.364	U	---	---	0.329	U
2-Chlorophenol	mg/kg	50	10000	0.364	U	---	---	0.329	U
2-Methylnaphthalene	mg/kg	123	10000	0.364	U	---	---	0.329	U
2-Methylphenol	mg/kg	NE	NE	0.364	U	---	---	0.329	U

2-Nitroaniline	mg/kg	NE	NE	0.364	U	---	---	0.329	U
2-Nitrophenol	mg/kg	NE	NE	0.364	U	---	---	0.329	U
3,3´-Dichlorobenzidine	mg/kg	1.4	13	0.73	U	---	---	0.659	U
3+4-Methylphenol	mg/kg	NE	NE	0.73	U	---	---	0.659	U
3-Nitroaniline	mg/kg	NE	NE	0.364	U	---	---	0.329	U
4,6-Dinitro-2-Methylphenol	mg/kg	NE	NE	1.83	U	---	---	1.65	U
4-Bromophenyl-phenylether	mg/kg	NE	NE	0.364	U	---	---	0.329	U
4-Chloro-3-Methylphenol	mg/kg	NE	NE	0.364	U	---	---	0.329	U
4-Chloroaniline	mg/kg	310	8200	0.73	U	---	---	0.659	U
4-Chloro-phenyl-phenyl ether	mg/kg	NE	NE	0.364	U	---	---	0.329	U
4-Nitroaniline	mg/kg	NE	NE	0.364	U	---	---	0.329	U
4-Nitrophenol	mg/kg	NE	NE	1.83	U	---	---	1.65	U
Acenaphthene	mg/kg	43	10000	0.364	U	---	---	0.329	U
Acenaphthylene	mg/kg	23	10000	0.364	U	---	---	0.329	U
Acetophenone	mg/kg	NE	NE	0.73	U	---	---	0.659	U
Aniline	mg/kg	NE	NE	0.73	U	---	---	0.659	U
Anthracene	mg/kg	35	10000	0.364	U	---	---	0.329	U
Azobenzene	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Benzo(a)anthracene	mg/kg	0.9	7.8	0.364	U	---	---	0.329	U
Benzo(a)pyrene	mg/kg	0.4	0.8	0.183	U	---	---	0.165	U
Benzo(b)fluoranthene	mg/kg	0.9	7.8	0.364	U	---	---	0.329	U
Benzo(g,h,i)perylene	mg/kg	0.8	10000	0.364	U	---	---	0.329	U
Benzo(k)fluoranthene	mg/kg	0.9	78	0.364	U	---	---	0.329	U
Benzoic Acid	mg/kg	NE	NE	1.83	U	---	---	1.65	U
Benzyl Alcohol	mg/kg	NE	NE	0.364	U	---	---	0.329	U
bis(2-Chloroethoxy)methane	mg/kg	NE	NE	0.364	U	---	---	0.329	U
bis(2-Chloroethyl)ether	mg/kg	0.6	5.2	0.364	U	---	---	0.329	U
bis(2-chloroisopropyl)Ether	mg/kg	9.1	82	0.364	U	---	---	0.329	U
bis(2-Ethylhexyl)phthalate	mg/kg	46	410	0.364	U	---	---	0.329	U
Butylbenzylphthalate	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Carbazole	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Chrysene	mg/kg	0.4	780	0.183	U	---	---	0.165	U
Dibenzo(a,h)Anthracene	mg/kg	0.4	0.8	0.183	U	---	---	0.165	U

Dibenzofuran	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Diethylphthalate	mg/kg	340	10000	0.364	U	---	---	0.329	U
Dimethylphthalate	mg/kg	1900	10000	0.364	U	---	---	0.329	U
Di-n-butylphthalate	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Di-n-octylphthalate	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Fluoranthene	mg/kg	20	10000	0.364	U	---	---	0.329	U
Fluorene	mg/kg	28	10000	0.364	U	---	---	0.329	U
Hexachlorobenzene	mg/kg	0.4	3.6	0.183	U	---	---	0.165	U
Hexachlorobutadiene	mg/kg	8.2	73	0.364	U	---	---	0.329	U
Hexachlorocyclopentadiene	mg/kg	NE	NE	1.83	U	---	---	1.65	U
Hexachloroethane	mg/kg	46	410	0.364	U	---	---	0.329	U
Indeno(1,2,3-cd)Pyrene	mg/kg	0.9	7.8	0.364	U	---	---	0.329	U
Isophorone	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Naphthalene	mg/kg	54	10000	0.364	U	---	---	0.329	U
Nitrobenzene	mg/kg	NE	NE	0.364	U	---	---	0.329	U
N-Nitrosodimethylamine	mg/kg	NE	NE	0.364	U	---	---	0.329	U
N-Nitroso-Di-n-Propylamine	mg/kg	NE	NE	0.364	U	---	---	0.329	U
N-nitrosodiphenylamine	mg/kg	NE	NE	0.364	U	---	---	0.329	U
Pentachlorophenol	mg/kg	5.3	48	1.83	U	---	---	1.65	U
Phenanthrene	mg/kg	40	10000	0.364	U	---	---	0.329	U
Phenol	mg/kg	6000	10000	0.364	U	---	---	0.329	U
Pyrene	mg/kg	13	10000	0.364	U	---	---	0.329	U
Pyridine	mg/kg	NE	NE	1.83	U	---	---	1.65	U
TPH - ETPH									
Total Petroleum Hydrocarbons	mg/kg	500	2500	41.2	U	43.4	U	40.1	U
PCBs									
Aroclor 1016	mg/kg	10	10	---	---	0.05	U	---	---
Aroclor 1221	mg/kg	10	10	---	---	0.05	U	---	---
Aroclor 1232	mg/kg	10	10	---	---	0.05	U	---	---
Aroclor 1242	mg/kg	10	10	---	---	0.05	U	---	---
Aroclor 1248	mg/kg	10	10	---	---	0.05	U	---	---

Aroclor 1254	mg/kg	10	10	---	---	0.05	U	---	---
Aroclor 1260	mg/kg	10	10	---	---	0.05	U	---	---
Aroclor 1262	mg/kg	10	10	---	---	0.05	U	---	---
Aroclor 1268	mg/kg	10	10	---	---	0.05	U	---	---

Highlight Exceedances

Bold - Result for this analyte exceeds the State limit.
Italics - The method requested for this analysis does not meet criteria for all compounds. The compound is undetected, however, the Method Reporting Limit is greater than the State limit.

Qualifiers

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U = Not Detected
V = Quality Control outside of acceptance limits; Estimated value.
NS-Not Sampled
NE-Not Established

Sample Designation			201942-MW1-110619		201942-MW2-110619		201942-MW3-110619	
Sample Date			11/06/2019		11/06/2019		11/06/2019	
		MADEP S-2/GW-2						
EPH								
C9-C18 Aliphatics1	mg/kg	3,000	16	U	15.7	U	15.3	U
C19-C36 Aliphatics1	mg/kg	5,000	16	U	15.7	U	15.3	U
C11-C22 Aromatics1,2	mg/kg	3,000	16	U	15.7	U	15.3	U
EPH Analytes								
2-Methylnaphthalene	mg/kg	3,000	0.21	U	0.21	U	0.2	U
Acenaphthene	mg/kg	3,000	0.43	U	0.42	U	0.41	U
Naphthalene	mg/kg	20	0.43	U	0.42	U	0.41	U
Phenanthrene	mg/kg	1,000	0.43	U	0.42	U	0.41	U
Acenaphthylene	mg/kg	600	0.21	U	0.21	U	0.2	U
Anthracene	mg/kg	3,000	0.43	U	0.42	U	0.41	U
Benzo(a)anthracene	mg/kg	40	0.43	U	0.42	U	0.41	U
Benzo(a)pyrene	mg/kg	7	0.43	U	0.42	U	0.41	U
Benzo(b)fluoranthene	mg/kg	40	0.43	U	0.42	U	0.41	U
Benzo(g,h,i)perylene	mg/kg	3,000	0.43	U	0.42	U	0.41	U
Benzo(k)fluoranthene	mg/kg	400	0.43	U	0.42	U	0.41	U
Chrysene	mg/kg	400	0.43	U	0.42	U	0.41	U
Dibenzo(a,h)Anthracene	mg/kg	4	0.21	U	0.21	U	0.2	U
Fluoranthene	mg/kg	3,000	0.43	U	0.42	U	0.41	U
Fluorene	mg/kg	3,000	0.43	U	0.42	U	0.41	U
Indeno(1,2,3-cd)Pyrene	mg/kg	40	0.43	U	0.42	U	0.41	U
Pyrene	mg/kg	3,000	0.43	U	0.42	U	0.41	U
VPH								
C5-C8 Aliphatics1,2	mg/kg	500	6.4	U, D	6.38	U, D	6.06	U, D
C9-C12 Aliphatics2,3	mg/kg	3,000	12.7	U, D	12.7	U, D	12.1	U, D
C9-C10 Aromatics	mg/kg	500	6.13	U	6.11	U	5.8	U

VPH Analytes								
Benzene	mg/kg	200	0.12	U	0.12	U	0.12	U
Ethylbenzene	mg/kg	1,000	0.12	U	0.12	U	0.12	U
Methyl tert-Butyl Ether	mg/kg	100	0.03	U	0.03	U	0.03	U
Naphthalene	mg/kg	20	0.12	U	0.12	U	0.12	U
Toluene	mg/kg	1,000	0.12	U	0.12	U	0.12	U
Xylene O	mg/kg	100	0.12	U	0.12	U	0.12	U
Xylene P,M	mg/kg	100	0.25	U	0.24	U	0.23	U

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Sample Designation			201942-MW1-110719		201942-MW2-110719		201942-MW3-110719	
Sample Date			11/07/2019		11/07/2019		11/07/2019	
VOCs	Units	GB Standard						
1,1,1,2-Tetrachloroethane	mg/L	NE	0.001	U	0.001	U	0.001	U
1,1,1-Trichloroethane	mg/L	3.1	0.001	U	0.001	U	0.001	U
1,1,2,2-Tetrachloroethane	mg/L	NE	0.0005	U	0.0005	U	0.0005	U
1,1,2-Trichloroethane	mg/L	NE	0.001	U	0.001	U	0.001	U
1,1-Dichloroethane	mg/L	NE	0.001	U	0.001	U	0.001	U
1,1-Dichloroethene	mg/L	0.007	0.001	U	0.001	U	0.001	U
1,1-Dichloropropene	mg/L	NE	0.002	U	0.002	U	0.002	U
1,2,3-Trichlorobenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
1,2,3-Trichloropropane	mg/L	NE	0.001	U	0.001	U	0.001	U
1,2,4-Trichlorobenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
1,2,4-Trimethylbenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
1,2-Dibromo-3-Chloropropane	mg/L	0.002	*0.005*	*U*	*0.005*	*U*	*0.005*	*U*
1,2-Dibromoethane	mg/L	*NE*	*0.001*	*U*	*0.001*	*U*	*0.001*	*U*
1,2-Dichlorobenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
1,2-Dichloroethane	mg/L	0.11	0.001	U	0.001	U	0.001	U
1,2-Dichloropropane	mg/L	3	0.001	U	0.001	U	0.001	U
1,3,5-Trimethylbenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
1,3-Dichlorobenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
1,3-Dichloropropane	mg/L	NE	0.001	U	0.001	U	0.001	U
1,4-Dichlorobenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
1,4-Dioxane - Screen	mg/L	NE	0.5	U	0.5	U	0.5	U
1-Chlorohexane	mg/L	NE	0.001	U	0.001	U	0.001	U
2,2-Dichloropropane	mg/L	NE	0.001	U	0.001	U	0.001	U
2-Butanone	mg/L	NE	0.01	U	0.01	U	0.01	U
2-Chlorotoluene	mg/L	NE	0.001	U	0.001	U	0.001	U
2-Hexanone	mg/L	NE	0.01	U	0.01	U	0.01	U
4-Chlorotoluene	mg/L	NE	0.001	U	0.001	U	0.001	U
4-Isopropyltoluene	mg/L	NE	0.001	U	0.001	U	0.001	U
4-Methyl-2-Pentanone	mg/L	NE	0.025	U	0.025	U	0.025	U
Acetone	mg/L	NE	0.01	U	0.01	U	0.01	U

Benzene	mg/L	0.14	0.001	U	0.001	U	0.001	U
Bromobenzene	mg/L	NE	0.002	U	0.002	U	0.002	U
Bromochloromethane	mg/L	NE	0.001	U	0.001	U	0.001	U
Bromodichloromethane	mg/L	NE	0.0006	U	0.0006	U	0.0006	U
Bromoform	mg/L	NE	0.001	U	0.001	U	0.001	U
Bromomethane	mg/L	NE	0.002	U	0.002	U	0.002	U
Carbon Disulfide	mg/L	NE	0.001	U	0.001	U	0.001	U
Carbon Tetrachloride	mg/L	0.07	0.001	U	0.001	U	0.001	U
Chlorobenzene	mg/L	3.2	0.001	U	0.001	U	0.001	U
Chloroethane	mg/L	NE	0.002	U	0.002	U	0.002	U
Chloroform	mg/L	NE	0.001	U	0.001	U	0.001	U
Chloromethane	mg/L	NE	0.002	U	0.002	U	0.002	U
cis-1,2-Dichloroethene	mg/L	2.4	0.001	U	0.001	U	0.001	U
cis-1,3-Dichloropropene	mg/L	NE	0.0004	U	0.0004	U	0.0004	U
Dibromochloromethane	mg/L	NE	0.001	U	0.001	U	0.001	U
Dibromomethane	mg/L	NE	0.001	U	0.001	U	0.001	U
Dichlorodifluoromethane	mg/L	NE	0.002	U	0.002	U	0.002	U
Diethyl Ether	mg/L	NE	0.001	U	0.001	U	0.001	U
Di-isopropyl ether	mg/L	NE	0.001	U	0.001	U	0.001	U
Ethyl tertiary-butyl ether	mg/L	NE	0.001	U	0.001	U	0.001	U
Ethylbenzene	mg/L	1.6	0.001	U	0.001	U	0.001	U
Hexachlorobutadiene	mg/L	NE	0.0006	U	0.0006	U	0.0006	U
Hexachloroethane	mg/L	NE	0.001	U	0.001	U	0.001	U
Isopropylbenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
Methyl tert-Butyl Ether	mg/L	5	0.001	U	0.001	U	0.001	U
Methylene Chloride	mg/L	NE	0.002	U	0.002	U	0.002	U
Naphthalene	mg/L	NE	0.001	U	0.001	U	0.001	U
n-Butylbenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
n-Propylbenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
sec-Butylbenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
Styrene	mg/L	2.2	0.001	U	0.001	U	0.001	U
tert-Butylbenzene	mg/L	NE	0.001	U	0.001	U	0.001	U
Tertiary-amyl methyl ether	mg/L	NE	0.001	U	0.001	U	0.001	U
Tetrachloroethene	mg/L	0.15	0.001	U	0.001	U	0.001	U
Tetrahydrofuran	mg/L	NE	0.005	U	0.005	U	0.005	U

Toluene	mg/L	1.7	0.001	U	0.001	U	0.001	U
trans-1,2-Dichloroethene	mg/L	2.8	0.001	U	0.001	U	0.001	U
trans-1,3-Dichloropropene	mg/L	NE	0.0004	U	0.0004	U	0.0004	U
Trichloroethene	mg/L	0.54	0.001	U	0.001	U	0.001	U
Trichlorofluoromethane	mg/L	NE	0.001	U	0.001	U	0.001	U
Vinyl Acetate	mg/L	NE	0.005	U	0.005	U	0.005	U
Vinyl Chloride	mg/L	0.002	0.001	U	0.001	U	0.001	U
Xylene O	mg/L	NE	0.001	U	0.001	U	0.001	U
Xylene P,M	mg/L	NE	0.002	U	0.002	U	0.002	U
Xylenes (Total)	mg/L	NE	0.002	U	0.002	U	0.002	U

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Sample Designation			201942-MW1-110719		201942-MW2-110719		201942-MW3-110719	
Sample Date			11/07/2019		11/07/2019		11/07/2019	
		MADEP GW-2						
EPH								
C9-C18 Aliphatics1	ug/L	5,000	93	U	93	U	93	U
C19-C36 Aliphatics1	ug/L	NE	93	U	93	U	93	U
C11-C22 Aromatics1,2	ug/L	50,000	93.5	U	93.5	U	93.5	U
EPH Analytes								
2-Methylnaphthalene	ug/L	2,000	4.7	U	4.7	U	4.7	U
Acenaphthene	ug/L	NE	4.7	U	4.7	U	4.7	U
Naphthalene	ug/L	700	9.3	U	9.3	U	9.3	U
Phenanthrene	ug/L	NE	4.7	U	4.7	U	4.7	U
Acenaphthylene	ug/L	10,000	4.7	U	4.7	U	4.7	U
Anthracene	ug/L	NE	4.7	U	4.7	U	4.7	U
Benzo(a)anthracene	ug/L	NE	4.7	U	4.7	U	4.7	U
Benzo(a)pyrene	ug/L	NE	9.3	U	9.3	U	9.3	U
Benzo(b)fluoranthene	ug/L	NE	4.7	U	4.7	U	4.7	U
Benzo(g,h,i)perylene	ug/L	NE	9.3	U	9.3	U	9.3	U
Benzo(k)fluoranthene	ug/L	NE	9.3	U	9.3	U	9.3	U
Chrysene	ug/L	NE	9.3	U	9.3	U	9.3	U
Dibenzo(a,h)Anthracene	ug/L	NE	4.7	U	4.7	U	4.7	U
Fluoranthene	ug/L	NE	9.3	U	9.3	U	9.3	U
Fluorene	ug/L	NE	4.7	U	4.7	U	4.7	U
Indeno(1,2,3-cd)Pyrene	ug/L	NE	4.7	U	4.7	U	4.7	U
Pyrene	ug/L	NE	4.7	U	4.7	U	4.7	U
VPH								
C5-C8 Aliphatics1,2	ug/L	3,000	158	U	158	U	158	U
C9-C12 Aliphatics2,3	ug/L	5,000	270	U	270	U	270	U
C9-C10 Aromatics	ug/L	4,000	100	U	100	U	100	U

VPH Analytes								
Benzene	ug/L	1,000	1.5	U	1.5	U	1.5	U
Ethylbenzene	ug/L	20,000	5	U	5	U	5	U
Methyl tert-Butyl Ether	ug/L	50,000	1.5	U	1.5	U	1.5	U
Naphthalene	ug/L	700	5	U	5	U	5	U
Toluene	ug/L	50,000	5	U	5	U	5	U
Xylene O	ug/L	3,000	5	U	5	U	5	U
Xylene P,M	ug/L	3,000	10	U	10	U	10	U

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REDWOOD
ENVIRONMENTAL GROUP, LLC

APPENDIX

REDWOOD
ENVIRONMENTAL GROUP, LLC

APPENDIX A
SUPPORTING DOCUMENTS

250-140-30 R.I. Code R. § 1.20

Section 250-RICR-140-30-1.20 - Site Investigation Report (SIR) Checklist

A. The following information shall be completed and submitted with the SIR

1. Contact Name Gary Kaufman, Principal, Redwood Environmental Group, LLC

2. Contact Address 10 Elmgrove Avenue, Providence, RI 02906

3. Contact Telephone 401-270-7000

4. Site Name Grenier Properties, LLC (SR-09-1958)

5. Site Address 32 & 33 Exchange Street, East Greenwich, RI

B. Office Use Only

1. Site Investigation Report (SIR) Site

2. Project Code

3. SIR Submittal Date

4. Checklist Submittal Date

C. Directions: The box to the left of each item listed below is for the administrative review of the SIR submission and is for RIDEM Use Only. Under each item listed below, cross-reference the specific sections and pages in the SIR that provide detailed information that addresses each stated requirement. Failure to include cross-references shall delay review and approval. If an item is not applicable, simply state that it is not applicable and provide an explanation in the SIR.

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1. § 1.8.3(A)(1) of this Part - List specific objectives of the SIR related to characterization of the Release, impacts of the Release and remedy. Section 3.2, Page 5

2. § 1.8.3(A)(2) of this Part - Include information reported in the Notification of Release. A copy of the Release notification form should be included in the SIR. Include information relating to short-term response, if applicable. Section 3.3, Page 6

3. § 1.8.3(A)(3) of this Part - Include documentation of any past incidents or Releases. Section 2.7, Page 4

4. § 1.8.3(A)(4) of this Part - Include list of prior property Owners and Operators, as well as sequencing of property transfers and time periods of occupancy. Section 2.9, Page 5

5. § 1.8.3(A)(5) of this Part - Include previously existing environmental information which characterizes the Contaminated-Site and all information that led to the discovery of the Contaminated-Site. Section 2.6, Page 4

6. § 1.8.3(A)(6) of this Part - Include current uses and zoning of the Contaminated-Site, including brief statements of operations, processes employed, waste generated, Hazardous Materials handled, and any residential activities on the site, if applicable. (This section should be linked to the specific objectives section demonstrating how the compounds of concern in the investigation are those that are used or may have been used on the site or are those that may have impacted the site from an off-site source.) Section 2.1, Page 2

7. § 1.8.3(A)(7) of this Part - Include a locus map showing the location of the site using US Geological Survey 7.5-min quadrangle map or a copy of a section of that USGS map. Figure 1

8. § 1.8.3(A)(8) of this Part - Include a site plan, to scale, showing:

a. Buildings Figure 2

b. Activities Section 3.15

c. Structures Figure 2

d. North Arrow Figure 2

e. Wells Figure 2, and Section 3.15 e.

f. UIC Systems, septic tanks, UST, piping and other underground structures
Section 3.15 f. Page 11

g. Outdoor Hazardous Materials storage and handling areas
Section 3.15 g. Page 11

h. Extent of paved areas
Section 3.15 h. Page 11

i. Location of environmental samples previously taken with analytical results
Figure 2

j. Waste management and disposal areas
Section 3.15 j. Page 11

k. Property Lines Figure 2

9. § 1.8.3(A)(9) of this Part - Include a general characterization of the property surrounding the area including, but not limited to:

Section 2.1, Page 2

a. Location and distance to any surface water bodies within 500 ft of the site.

Section 2.4, Page 3

b. Location and distance to any Environmentally Sensitive Areas within 500 ft. of the site.

Section 2.5, Page 3

c. Actual sources of potable water for all properties immediately abutting the site.

Section 2.5, Page 3

d. Location and distance to all public water supplies, which have been active within the previous 2 years and within one mile of the site. Section 2.5, Page 3

e. Determination as to whether the Release impacts any off-site area utilized for residential or industrial/commercial property or both. Section 3.15 e.

f. Determination of the underlying groundwater classification and if the classification is GB, the distance to the nearest GA area. Section 2.3, Page 3

10. § 1.8.3(A)(10) of this Part - Include classifications of surface and ground water at and surrounding the site that could be impacted by a Release. Sections 2.4 & 2.5, Page 3

11. § 1.8.3(A)(11) of this Part - Include a description of the contamination from the Release, including: Section 1.0, Page 1

a. Free liquids on the surface Section 3.15 a. Page 11

b. LNAPL and DNAPL Section 3.15 b. Page 11

c. Concentrations of Hazardous Substances which can be shown to present an actual or potential threat to human health and any concentrations in excess of any of the remedial objectives; (reference §1.13 of this Part). Tables 1,2,3 & 4

d. Impact to Environmentally Sensitive Areas Section 3.15 d. Page 11

e. Contamination of man-made structures Section 3.15 e. Page 11

f. Odors or stained soil Section 3.15 f. Page 11

g. Stressed vegetation Section 3.15 g. Page 11

h. Presence of excavated or stockpiled material and an estimate of its total volume Section 3.15 h. Page 11

i. Environmental sampling locations, procedures and copies of the results of any analytical testing at the site Section 3.6 Figure 2 Appendix B

j. List of Hazardous Substances at the site Section 3.15 j. Page 11

k. Discuss if the contamination falls outside of the jurisdiction of the Remediation Regulations, including but not limited to USTs, UICs, and wetlands. Section 3.15 k., Page 11

12. § 1.8.3(A)(12) of this Part - Include the concentration gradients of Hazardous Substances throughout the site for each media impacted by the Release. Figure 2 and Table 1-4

13. § 1.8.3(A)(13) of this Part - Include the methodology and results of any investigation conducted to determine background concentrations of Hazardous Substances identified at the Contaminated-Site (see §1.13 of this Part). Section 311, Page 10

14. § 1.8.3(A)(14) of this Part. Include a listing and evaluation of the site specific hydrogeological properties which could influence the migration of Hazardous Substances throughout and away from the site, including but not limited to, where appropriate:

a. Depth to GW Section 3.7, Page 8

b. Presence and effects of both the natural and man-made barriers to and conduits for contaminant migration. Section 3.15 b, Page 11

c. Characterization of bedrock Section 2.2, Page 3

d. Groundwater contours, flow rates and gradients throughout the site. Figure 2

e. § 1.8.3(A)(15) of this Part - Include a characterization of the topography, surface water and run-off flow patterns, including the flooding potential, of the site. Section 2.2, Page 2

16. § 1.8.3(A)(16) of this Part - Include the potential for Hazardous Substances from the site to volatilize and any and all potential impacts of the volatilization to structures within the site. Section 5.1, Page 12

17. § 1.8.3(A)(17) of this Part - Include the potential for entrainment of Hazardous Substances from the site by wind or erosion actions. Section 3.12, Page 10

18. § 1.8.3(A)(18) of this Part - Include detailed protocols for all fate and transport models used in the Site Investigation. Section 3.13, Page 10

19. § 1.8.3(A)(19) of this Part - Include a complete list of all samples taken, the location of all samples, parameters tested for and analytical methods used during the Site Investigation. (Be sure to include the samples locations and analytical results on a site figure). Section 3.5, Page 7 & Section 3.7, Page 8

20. § 1.8.3(A)(20) of this Part - Include construction plans and development procedures for all monitoring wells. Well construction shall be consistent with the requirements of the Groundwater Quality Rules. Section 3.4, Page 6

21. § 1.8.3(A)(21) of this Part - Include procedures for the handling, storage and disposal of wastes derived from and during the investigation. Section 3.2, Page 5

22. § 1.8.3(A)(22) of this Part - Include a quality assurance and quality control evaluation summary report for sample handling and analytical procedures, including, but not limited to, chain-of-custody procedures and sample preservation techniques.

23. § 1.8.3(A)(23) of this Part - Include any other site-specific factor, that the Director believes, is necessary to make an accurate decision as to the appropriate Remedial Action to be taken at the site. Section 3.6, Page 7

24. §1.8.4 of this Part - Include Remedial Alternatives. The Site Investigation Report shall contain a minimum of 2 remedial alternatives other than no action/natural attenuation alternative, unless this requirement is waived by the Department. It should be clear which of these alternatives is most preferable. All alternatives shall be supported by relevant data contained in the Site Investigation Report and consistent with the current and reasonably foreseeable land usage, and documentation of the following:

a. Compliance with §1.9 of this Part; Section 5.0, Page 12

b. Technical feasibility of the preferred remedial alternative;

Section 5.0, Page 12

c. Compliance with federal, state and local laws or other public concerns; and

Section 5.0, Page 12

d. The ability of the Performing Party to perform the preferred remedial alternative.

Section 5.0, Page 12

25. §1.8.5 of this Part - The Site Investigation Report and all associated progress reports shall include the following statements signed by an authorized representative of the party specified:

a. A statement signed by an authorized representative of the Person who prepared the Site Investigation Report certifying the completeness and accuracy of the information contained in that report to the best of their knowledge; and

b. A statement signed by the Performing Party responsible for the submittal of the Site Investigation Report certifying that the report is a complete and accurate representation of the site and the Release and contains all known facts surrounding the Release to the best of their knowledge. Appendix C

26. §1.8.6 of this Part - If the Site Investigation is not complete, include a schedule for the submission of periodic progress reports on the status of the investigation and interim reports on any milestones achieved in the project. Appendix C

27. §1.8.7 of this Part - Be prepared to implement public notice requirements per §§1.8.7 and 1.8.9 of this Part when the Department deems the Site Investigation Report to be complete. Redwood is prepared to proceed with public notice of SI Completion

250 R.I. Code R. § 250-RICR-140-30-1.20


SITE
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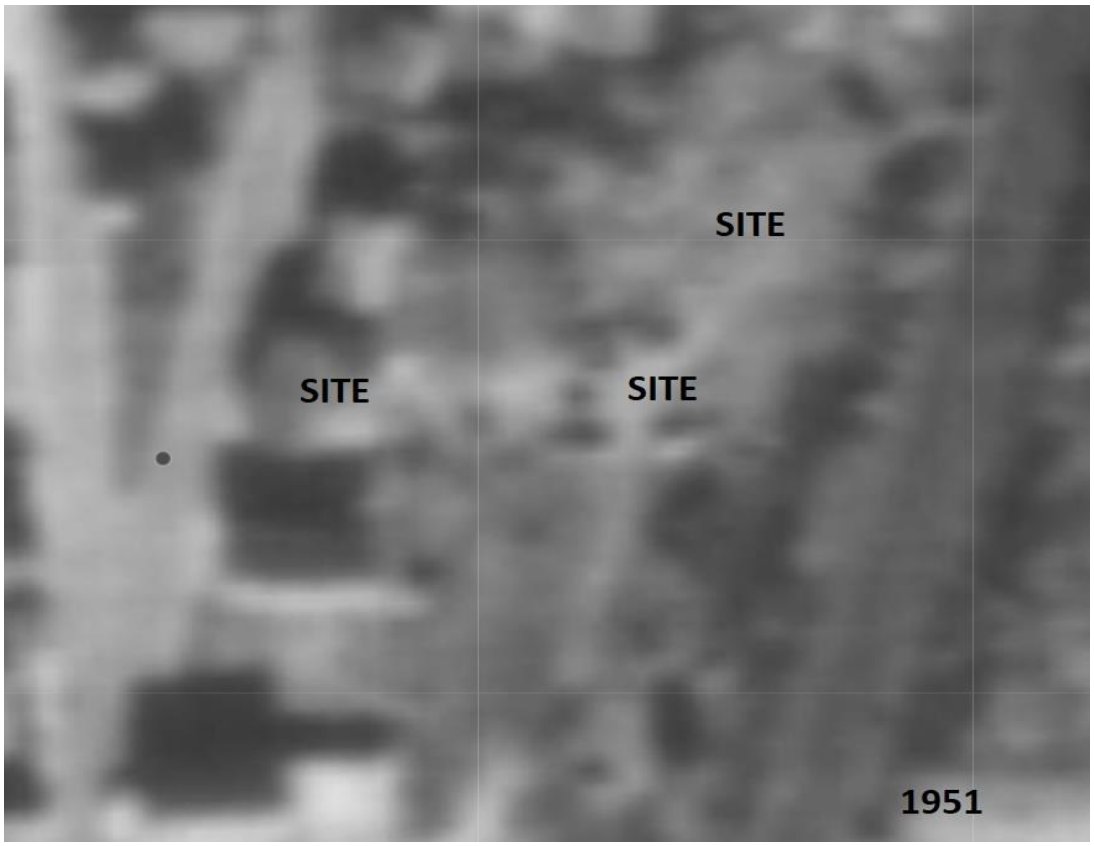
SITE
1939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1951


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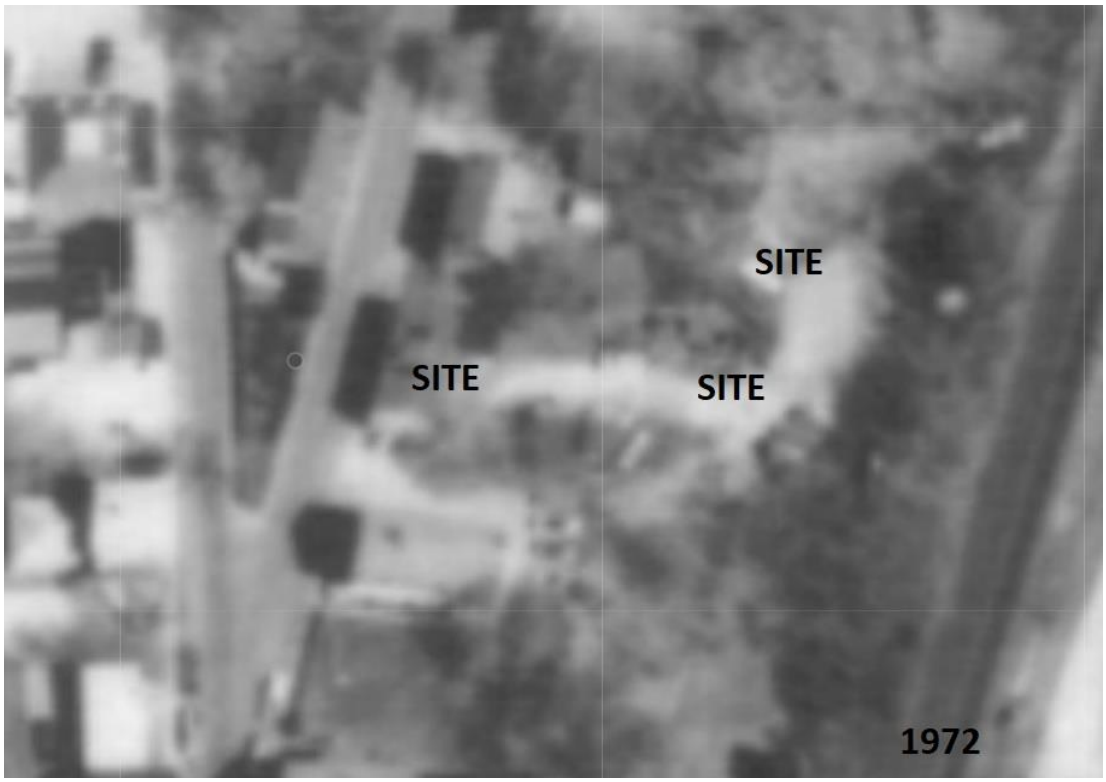
1962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2008


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SITE
2018

AAI/ASTM Phase I Environmental Site Assessment

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

Prepared For:
The Grenier Group, Inc.
Timothy Grenier
3 Cole Circle
East Greenwich, RI 02818

Prepared By:

REDWOOD
ENVIRONMENTAL GROUP, LLC
10 Elmgrove Avenue
Providence, Rhode Island 02906

Project No. 201907

May 2019

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Redwood Environmental Group, LLC (Redwood) has prepared this Phase I Environmental Site Assessment (ESA) for properties located at 32 & 33 Exchange Street in East Greenwich, Rhode Island, the Site. This ESA was prepared in general accordance with the American Society for Testing and Materials (ASTM) *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, ASTM E1527-13 and prepared exclusively for Grenier Property Management (Grenier) in East Greenwich, Rhode Island.

The Site, which consists of two lots on Exchange Street. The lots are designated by the East Greenwich Tax Assessor's Office as Plat 85-1, Lots 87 and 302 corresponding to 32 & 33 Exchange Street, respectively. The Site is located on Exchange Street just north of the Duke Street intersection and is developed with a 2-story wood framed house with a basement. The house is boarded up with plywood and unoccupied. Redwood did not have access to the house or basement due to its poor condition. The rear of the property is undeveloped with the exception of two sheds.

The Site is currently owned by Grenier Properties, LLC of East Greenwich, Rhode Island which purchased the property on March 22, 2018. The house was constructed in the mid-1800s. The house is serviced by municipal water and sewer.

Redwood performed a Site visit on February 6, 2019. Redwood did not have access to the house or basement and makes no representation as to the environmental status within. An aboveground storage tank (AST) was formerly located on the north side of the house. Piping associated with the former AST location leads into the house in two locations - one on the first floor and one on the second floor. Redwood did not observe staining of the ground in the area of the former AST. Redwood did not observe staining, evidence of underground storage tanks (USTs) or oil and/or hazardous materials (OHM) exterior to the house.

Redwood traversed the undeveloped portion of the property to the east of the house. Two vacant sheds were observed as well as gravel/grassy areas. One area of the Site was observed to be lacking in vegetation or at least different vegetation from the rest of the Site. Redwood inquired with the owner and neighbors and discovered that this undeveloped portion of the Site was used for the storage of vehicles and boats for many years. It is possible that an event happened at this portion of the Site causing the lack of or different vegetation.

Environmental Records Search (ERS) of Laguna Hills, California conducted an environmental database search as part of this ESA. The search included reviews of available federal and state environmental database records. The Site was not identified in the databases searched.

The ERS report indicates two Resource Conservation and Recovery Act (RCRA) Generators, 12 RCRA No Longer Regulated facilities (NLR), four State Hazardous Waste Site (SHWS) facilities, one Solid Waste Landfill (SWL) facility, nine leaking underground storage tank (LUST) facilities and 18 underground storage tank (UST) facilities in the databases search radii. Based on the distance and location of the facilities identified in the ERS Report, the status of the facility as provided in the ERS Report and the anticipated

ground water flow direction in an easterly direction, Redwood does not anticipate that the facilities identified by ERS will adversely impact the environmental conditions at the Site.

Redwood has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of 40 CFR Part 312, "Standards and Practices for All Appropriate Inquires" and ASTM E1527-13 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". Any limiting conditions, exception to, or deletions from, this practice are described in Section 2.0 of this Report.

Redwood did not have access to the house interior and therefore, cannot provide an opinion as to the presence of environmental issues within.

This assessment has revealed one Recognized Environmental Conditions (RECs) at the Site. Vehicles and boats were stored on the undeveloped portion of the Site for a number of years. This past use could have adversely impacted the soil and or ground water of the Site.

This assessment has not revealed Historical RECs (HRECs) or Controlled RECs (CRECs) associated with the Site.

Based on the findings and conclusions as identified in this assessment, Redwood does recommend additional investigation at this time. Redwood recommends a Limited Site Investigation (LSI) including soil and ground water sampling of the undeveloped portion of the Site, especially in areas found to be stained or where the vegetation is stressed or not uniform with the rest of the Site.

2.0 INTRODUCTION

Redwood has prepared this Phase I Environmental Site Assessment (ESA) for properties at 32 & 33 Exchange Street in East Greenwich, Rhode Island, (the Site). This assessment has been prepared exclusively for Grenier Properties, LLC (Grenier) of East Greenwich, Rhode Island. A U.S. Geographical Survey (USGS) Topographic Map and Site Plan are included as Figures 1 and 2, respectively.

2.1 Purpose

The purpose of this ESA is to document the environmental history of the Site, to evaluate the likelihood that a release of oil or hazardous material (OHM) has occurred or has the potential to impact the Site, and to provide our professional opinion regarding the current environmental condition of the Site.

2.2 Scope of Services

This ESA was performed in general accordance with the ASTM Standard E 1527-13. Redwood performed a visual reconnaissance of the Site, attempted to interview persons believed to be knowledgeable about the Site, and reviewed readily available documents and records pertaining to the environmental history of the Site at federal, state, and local agencies as referenced in this report.

2.3 Significant Assumptions

This report provides an overview of potential environmental concerns, both past and present. No subsurface testing, evaluation or confirmation of soil or ground water quality was performed. No indoor air quality testing was performed. *No assessment of the interior of the house or basement was performed.* This ESA is limited by the availability of information and assessability of the Site at the time of the assessment. It is possible that unreported disposal of OHM or improper or illegal activities impairing or impacting the environmental status of the property may have occurred which could not be identified due to the superficial nature of this report. The conclusions and recommendations regarding environmental conditions that are presented in this report are based on a Scope of Work authorized by *Grenier* dated *January 24, 2019*. However, no Scope of Work can identify all contaminants or all conditions above and below the ground.

2.4 Limitations and Exceptions

The services performed and outlined in this ESA were based, in part, upon visual observations of the Site and attendant structures (if any), ***on the day*** of the Site reconnaissance; Redwood's opinion cannot be extended to portions of the Site that were unavailable (if any) for direct observation, which were beyond the control of Redwood or for unreported disposals or improper or illegal activities. In addition, Redwood ***may*** have reviewed environmental reports prepared by others documenting historical investigations performed at the Site. Redwood assumes the reports to be accurate and complete with respect to the facts and circumstances presented; however, Redwood has not conducted any validation of the facts and circumstances presented in any such report.

The findings in this report are based solely on the information contained herein. Should additional information relative to the Site become available in the future, this information should be reviewed by Redwood and the findings presented herein may be modified, accordingly. The database search was restricted to the information provided in the *ERS* Report. This work has been undertaken in accordance with generally accepted consulting engineering practices. No air, soil or ground water testing was performed as part of this ESA; as a result, Redwood expresses no opinion regarding the same. No other warranty, express or implied, is made.

This report was prepared and rendered for the exclusive use and benefit of *Grenier* in accordance with the Scope of Work referenced above and may not be relied upon for any other purpose whatsoever. This report may not be used, copied, quoted or referred to without Redwood's prior written consent in each instance. This report is rendered as of the date hereof, and Redwood expresses no opinion as to circumstances or events which may occur subsequent to the date hereof or the date of the Site reconnaissance.

2.5 Special Terms and Conditions

There were no special terms or contractual conditions requested by *Grenier* for this ESA.

2.6 User Reliance

This report is rendered solely for the benefit of *Grenier* in accordance with the Scope of Work referenced above and may not be relied upon for any other purpose whatsoever. This report may not be used, copied, quoted or referred to without Redwood's prior written consent in each instance.

3.0 SITE DESCRIPTION

3.1 Location and Legal Description

The Site is a combination of two tax assessor lots on Exchange Street in East Greenwich as shown in the table below.

Plat/Lot	Address	Size (Acres)	Status	Owner	Zoning*
85-1-87	32 Exchange St	0.192	Vacant house	Grenier Properties, LLC	LHOD
85-1-382	33 Exchange St	0.287	Vacant Land	Grenier Properties, LLC	LHOD

*Zoning- LHOD= Local Historical Overlay District

3.2 Site and Vicinity General Characteristics

The Site is located in a dense residential area of East Greenwich just west of Greenwich Cove. This area is also designated as a local historical overlay district. A 2-story colonial house is located along the western property line and Exchange Street. The balance of the property is gravel and weeds. Residential properties abut the Site to the north, south and west. The eastern abutter is Amtrak Railroad tracks. The Site is relatively flat and ground water is expected to flow in an easterly direction and Greenwich Cove approximately 725 feet east of the Site.

The Site is located on the East Greenwich, Rhode Island U.S. Geological Survey (USGS) 7.5 x 15-minute series Quadrangle at an approximate latitude and longitude of 41º 39' 41" north and 71º 26' 52" west, respectively. The elevation of the Site is approximately 14 feet above mean sea level. Refer to Figure 1.

3.3 Current Use(s) of the Property

The house is unoccupied, and the balance of the property is undeveloped.

3.4 Structures, Roads, and Site Improvements

The Site is improved with a 2-story, wood framed house approximately 2,704 square feet in size. The house is currently boarded up as the interior is dangerous to walk through. The balance of the Site is undeveloped gravel and weeds. Access to the Site is from Exchange Street.

3.5 Adjoining Properties

Address	North	South	East	West
32 Exchange St	Residential	Residential	33 Exchange St.	Residential
33 Exchange St	Parking Lot	Residential	Amtrak RR	16, 24 & 32 Exchange St.

4.0 USER PROVIDED INFORMATION

4.1 Title Records

Redwood was not provided with title records pertaining to the Site. The ownership information provided in this ESA was researched by Redwood at the East Greenwich Tax Assessor's Office (and website) and intended for informational purposes only. This information is not intended as a title search or for any legal purpose. Redwood makes no representation as to the completeness or accuracy of such ownership information.

Both lots are currently owned by Grenier Properties, LLC of East Greenwich, Rhode Island. Previously the property was owned by Elaine Currie who sold the lots by Warranty Deed to Grenier Properties, LLC on March 22, 2018 with a Land Records reference of Book 1393, Page 272. A copy of the Tax Assessor's Office Field Cards is provided in Appendix A.

4.2 Environmental Liens or Environmental Land Use Restrictions (ELURs)

Redwood was not provided with information regarding Environmental Liens or ELURs pertaining to the Site. Redwood reviewed the land records in the East Greenwich Clerk's Office website and did not identify environmental liens or ELURs pertaining to the Site.

4.3 Specialized Knowledge

There was no specialized knowledge provided to Redwood.

4.4 Commonly Known or Reasonably Ascertainable Information

The following questions were answered by Mr. Tim Grenier of Grenier Properties, LLC:

1. Environmental cleanup liens that are filed or recorded against the Site:
Are you aware of any environmental cleanup liens against the property filed or recorded under federal, state or local law? **NO.**

2. AUL/ELUR that are in place on the site or that have been filed or recorded in a registry:
Are you aware of any AULs/ELURs such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, state or local law? **NO.**

3. Specialized Knowledge or experience of the person seeking to qualify for the Landowner Liability Protection (LLP):
As the user of this ESA, do you have any specialized knowledge or experience related to the property or nearby properties? **NO.**

4. Relationship of the purchase price to the fair market value of the property if it were not contaminated:
Does the purchase price being paid for this property reasonably reflect the fair market value of the property? Is the difference in price due to environmental issues at the site? **Not Applicable**

5. Commonly known or reasonably ascertainable information about the Site:

Are you aware of commonly known or reasonably ascertainable information about the property that would help Redwood identify conditions of a release or threat of release-

- *Past uses of the Site:* **Residential and vehicle storage**
- *Specific chemicals used at the Site-Past/Present:* **Petroleum products**
- *Do you have knowledge of historical or resent chemical spills?* **NO.**
- *Do you have knowledge of environmental cleanups at the Site?* **NO.**

6. The degree of obviousness of the presence or likely presence of contamination at the property and the ability to detect the contamination by appropriate investigation:

As the user of the ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property? **Unknown.**

4.5 Valuation Reduction for Environmental Issues

Grenier is unaware of any environmental issues related to the Site which would affect the value of the Site.

4.6 Owner, Property Manager and Occupant Information

Mr. Grenier told Redwood that the previous owner of the Site stored many vehicles in the undeveloped portion of the Site. Additionally, Mr. Grenier stated that he is unaware of any environmental issues at the Site.

4.7 Reason for Performing Phase I ESA

Grenier commissioned this ESA as a due diligence measure regarding a financial arrangement.

4.8 Previous Environmental Reports

Redwood was not provided with previous environmental reports pertaining to the Site.

5.0 RECORDS REVIEW

The purpose of the records review was to obtain and review documents that will help identify RECs in connection with the Site. Some records reviewed pertained not only to the Site, but also to properties within an additional approximate minimum search distance in order to help assess the likelihood of Site impacts from migrating hazardous substances or petroleum products. Unless stated otherwise the approximate minimum search distances used below are specified in the ASTM E 1527-13 Standard.

5.1 Standard Environmental Records

As part of Redwood's assessment of the Site, Environmental Record Search (ERS) of Laguna Hills, California conducted an environmental database search. The search included reviews of federal and state database records and was conducted in accordance with the specific requirements of the ASTM Standard E 1527-13. A listing of the search radii for each environmental database search is included in the ERS Report.

The Site was not identified in the databases searched.

A copy of the ERS Report is provided in Appendix B.

5.1.1 Federal Environmental Records

Record Source	At Site	Within Search Radii
National Priority List (NPL)	None	None
DeListed NPL	None	None
Superfund Enterprise Management System (SEMS)	None	None
SEMS Archive	None	None
CERCLIS Facilities	None	None
CERCLIS No Further Action Planned (NFRAP) Facilities	None	None
RCRA (Corrective Action) CORRACTS Facilities	None	None
RCRA Treatment, Storage and/or Disposal (TSD) Facilities	None	None
RCRA Generators	None	2
RCRA No Longer Regulated (NLR)	None	12

5.1.2 State Environmental Records

Record Source	At Site	Within Search Radii
State Hazardous Waste Site (SHWS)	None	4
Landfill/Solid Waste Disposal Facility	None	1
Leaking Underground Storage Tanks Sites (LUST)	None	9

Underground Storage Tanks (USTs)	None	18
Institutional/Engineering Controls (IEC)	None	None
State Brownfield Sites	None	None

As shown in the tables above and based on the distance and location of the facilities identified in the ERS Report, the status of the facility as provided in the ERS Report and the anticipated ground water flow direction in an easterly direction, Redwood does not anticipate that the facilities identified by ERS will adversely impact the environmental conditions at the Site.

5.1.3 Vapor Encroachment Condition (VEC)

As part of the ASTM Method 1527-13, environmental professionals are required to assess vapor encroachment conditions regarding the Site. The definition of vapor encroachment is "the likelihood of migrating vapors volatilized from a contaminated source to encroach upon the subsurface of a property and create a vapor encroachment condition (VEC)". Redwood assessed the local ground water flow direction as it is shown on the *USGS Topographic Map of East Greenwich, Rhode Island* and predicts that the ground water flow at the Site is generally to the east. As such, areas to the west of the Site are considered to be upgradient, areas to the north and south are considered cross-gradient and areas east of the Site are considered downgradient of the Site.

Redwood opines that there are no facilities located within 1,000 feet and upgradient of the Site that would adversely affect the ground water of the Site based on the current status as listed in the above table. Redwood does not believe a vapor encroachment condition exists at the Site.

5.2 Additional Environmental Record Sources

5.2.1 Local Records

Redwood obtained tax assessor property field cards from the Town of East Greenwich. According to the field cards, the properties have a designation of Plat 85-1, Lots 87 and 382 which corresponds to addresses 32 & 33 Exchange Street, respectively. A copy of the Tax Assessor's Property Record Cards and Plat Map are provided in Appendix A.

5.2.2 Fire Department Records

As the property is residential in use, the East Greenwich Fire Department does not normally keep OHM or tank records on residential properties unless the department has responded to the address for a fire.

5.3 Physical Setting Source(s)

The Site is located in a dense residential area of East Greenwich just west of Greenwich Cove. This area is also designated as a local historical overlay district. A 2-

story colonial house is located along the western property line and Exchange Street. The balance of the property is gravel and weeds. Residential properties abut the Site to the north, south and west. The eastern abutter is Amtrak Railroad tracks. The Site is relatively flat and ground water is expected to flow in an easterly direction and Greenwich Cove approximately 725 feet east of the Site.

The Site is located on the East Greenwich, Rhode Island U.S. Geological Survey (USGS) 7.5 x 15-minute series Quadrangle at an approximate latitude and longitude of 41º 39' 41" north and 71º 26' 52" west, respectively. The elevation of the Site is approximately 14 feet above mean sea level. Refer to Figure 1.

5.3.1 Regional Geology

Surficial soils at the Site are mapped as MU for Merrimac-Urban complex.

Surficial geology of the Site is mapped by the USGS as outwash.

Bedrock beneath the Site is mapped as Narragansett Bay Group-Rhode Island Formation defined as the Pennsylvanian geologic age, sedimentary, coal and anthracite constituents and part of the Esmond-Dedham Subterrane.

5.3.2 Hydrogeology

Based on a review of the Rhode Island Department of Environmental Management (RI DEM) Environmental Resource website, the Site ground water is classified as GB, water that is not suitable for drinking without treatment. There are no public water supplies within 1 mile of the Site.

5.3.3 Hydrology

Based on a review of the aforementioned topographic map of East Greenwich, ground water is expected to flow in an easterly direction and towards the Greenwich Cove located approximately 725 feet from the Site.

Based on the FEMA Q3 Digital Data, Flood Zone Panel: 44003C0137H, Effective Date: 9/18/2013, the Site is located within Zone X - Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.

5.4 Historical Use Information Site and Adjoining Properties

The objective of reviewing historical sources is to develop a history of the previous uses of the Site and vicinity in order to help identify the likelihood of past uses having led to RECs in connection with the Site.

5.4.1 Aerial Photographs

Redwood performed an aerial photograph review on the RI DEM Website for years 1939, 1951, 1962, 1972, 1981, 1997, 2011 and 2018 as shown in the table below. Copies of the aerial photographs reviewed are provided in Appendix C.

Historical	Year	Description
Aerial	1939	A house structure is located on the western side of the Site. The balance of the Site is undeveloped.
Aerial	1951	Same as Above
Aerial	1962	Same as above with some vehicles visible on the undeveloped portion of the Site.
Aerial	1972	Same as Above
Aerial	1997	Same as Above
Aerial	2008	The house is located along the western border of the property and the several vehicles and a boat are visible on the balance of the property.
Aerial	2019	Same as above except there are no vehicles or boats on the undeveloped portion of the Site.

5.4.2 Fire Insurance Maps

Fire insurance maps are not available from the Rhode Island Historical Society for this part of the State.

5.4.3 City Directory

City Directory information for 32 and 33 Exchange Street was ordered from ERS. Various years from 1980 through 2018 were reviewed. 32 Exchange Street was listed as vacant in 1980. Between 1983 and 2013, the listing showed Chas Fishell. There was no listing for 2018. 33 Exchange Street was not listed in any years reviewed. A copy of the ERS City Directory Report is provided in Appendix B.

6.0 SITE RECONNAISSANCE

The purpose of the Site reconnaissance is to obtain information indicating the likelihood of identifying RECs in connection with the Site.

6.1 Methodology and Limiting Conditions

Redwood visited both locations on February 6, 2019 to perform a general site reconnaissance which included a visual reconnaissance of the Site for the identification, use, storage and/or evidence of disposal of OHM at the Site. Properties surrounding the Site were also visually observed for obvious RECs. A Photograph Log is included in Appendix D.

6.2 General Site Setting

The Site is comprised of two contiguous lots on Exchange Street. 32 Exchange Street abuts the street and is occupied by a dwelling. 33 Exchange Street is located east of the 32 Exchange Street property and runs to the north along the Amtrak Railroad tracks. This portion of the Site is undeveloped.

6.2.1 Current and Past Use(s) of the Site

Currently, the Site is occupied by a boarded up, vacant, dwelling structure with an address of 32 Exchange Street. The dwelling has been at the Site since the mid-1800's. The eastern portion of the Site has been and continues to be undeveloped. Redwood has been told by neighbors that the undeveloped portion of the Site had been used to store vehicles and boats for many years in the past.

6.2.2 Current and Past Use(s) of Adjoining Property

The railroad has been and continues to be located east of the Site. Residential property has been and continues to be located to the south and west. The northern abutter is residential and a parking lot. Previous to the parking lot was a residential structure.

6.2.3 General Description of Structures

A 2-story, wood framed building constructed in the 1800's occupies the Site. The house is boarded up and vacant. Redwood did not have access to the building. Two sheds are located at the Site and were observed to be vacant at the time of the Site assessment.

6.2.4 Roads

The Site is accessible from Exchange Street.

6.2.5 Potable Water

The Site is serviced by municipal water.

6.2.6 Sewage Disposal System

The Site is serviced by municipal sewers.

6.3 Interior Observations

Redwood did not have access to the house or basement, which according to Mr. Grenier, is vacant. The two sheds on the property were observed to be vacant.

6.3.1 Hazardous Substances and Petroleum Products

Redwood did not observe OHM in the limited areas assessed, namely the sheds.

6.3.2 Drums and Containers

Redwood did not observe drums or containers in the limited areas assessed, namely the sheds.

6.3.3 Storage Tanks

Redwood did not observe storage tanks in the limited areas assessed, namely the sheds.

6.3.4 Polychlorinated Biphenyls (PCBs)

Redwood did not observe PCB equipment in the limited areas assessed, namely the sheds.

6.3.5 Waste Water Discharge

The Site does not discharge waste water.

6.3.6 Staining, Corrosion and or Odors

Staining of the soil was evident in one of the sheds.

6.3.7 Heating and Cooling

The house was heated by home heating oil based on piping attached to the exterior of the house on the north side. Redwood did not observe a tank at the Site.

6.3.8 Drain and Sumps

Redwood did not observe drains or sumps in the limited areas assessed, namely the sheds.

6.4 Exterior Observations

The house is located on the western property line along Exchange Street. The balance of the Site is undeveloped land. Two empty sheds are located east of the house.

6.4.1 Hazardous Substances and Petroleum Products

Redwood did not observe OHM exterior to the house or in the undeveloped portion of the Site.

6.4.2 Drums and Containers

Redwood did not observe drums or containers exterior to the house or in the undeveloped portion of the Site.

6.4.3 Storage Tanks

No evidence of underground storage tanks was observed around the house. However, piping attached to the house indicates that an above ground storage tank (AST) was located at the northeast corner of the house. The AST is no longer at the Site. Redwood did not observe staining on the ground surface in the area of the former AST.

6.4.4 Pits, Ponds or Lagoons

Redwood did not observe pits, ponds or lagoons associated with OHM at the Site.

6.4.5 Underground Structures

Redwood did not observe evidence of underground structures at the Site.

6.4.6 Polychlorinated Biphenyls (PCBs)

Redwood did not observe PCB equipment associated with the Site.

6.4.7 Stained Soil or Pavement

Redwood did observe minor staining of soil in various locations in the undeveloped portion of the Site and within one of the sheds.

6.4.8 Stress Vegetation

Although the assessment was performed in the winter when vegetation is dormant, Redwood observed a large circular area on the undeveloped portion of the Site lacking

vegetation as observed on the rest of the Site. Redwood inquired to Mr. Grenier what this area may represent, but he did not know. However, after inquiry with the neighbors, Redwood was told that the undeveloped portion of the Site had been used to store vehicles and boats for many years in the past.

6.4.9 Solid Waste

Redwood did observe some solid waste dumping at the Site along the border with the railroad tracks.

7.0 INTERVIEWS

7.1 Past and Present Property Owners

Redwood obtained Site ownership information from the East Greenwich Tax Assessor's Office. Redwood interviewed Mr. Grenier for Site specific data.

7.2 State and Local Government Officials

Local municipal personnel were interviewed as described in the Section 5.2 above.

8.0 FINDINGS AND CONCLUSION

Redwood has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of 40 CFR Part 312, "Standards and Practices for All Appropriate Inquires" and ASTM E1527-13 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". Any limiting conditions, exception to, or deletions from, this practice are described in Section 2.0 of this Report.

Redwood did not have access to the house interior and therefore, cannot provide an opinion as to the presence of environmental issues within.

This assessment has revealed one Recognized Environmental Conditions (RECs) at the Site. Vehicles and boats were stored on the undeveloped portion of the Site for a number of years. This past use could have adversely impacted the soil and or ground water of the Site.

This assessment has not revealed Historical RECs (HRECs) or Controlled RECs (CRECs) associated with the Site.

9.0 DEVIATIONS AND ADDITIONAL SERVICES

9.1 Deviations

This ESA was performed in general accordance with the scope and limitations of ASTM Standard E 1527-13. Limitations regarding this assessment are provided in Section 2.4 above.

9.2 Additional Services

No additional services beyond the scope of the ASTM Standard E 1527-13 were conducted as part of this assessment.

10.0 RECOMMENDATIONS

Based on the findings and conclusions as stated in Section 8.0 above, Redwood does recommend additional investigation at this time. Redwood recommends a Limited Site Investigation (LSI) including soil and ground water sampling of the undeveloped portion of the Site, especially in areas found to be stained or where the vegetation is stressed or not uniform with the rest of the Site.

11.0 REFERENCES

- Redwood Site Reconnaissance- February 6, 2019
- American Society for Testing and Materials Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527-13).
- ERS Database Report
- ERS City Directory Report
- Fire Insurance Maps-RI Historical Society
- Town of East Greenwich Municipal Departments- February 6, 2019
- Rhode Island Department of Environmental Management (RI DEM) Internet Resource Map

12.0 QUALIFICATIONS AND SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

The qualifications of the environmental professional(s) and personnel conducting the Site reconnaissance and interviews are provided in Appendix E.

REDWOOD
ENVIRONMENTAL GROUP, LLC

June 16, 2019 Project 201942

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

Re: Letter Report
Soil Sampling Results-RCRA 8 Metals
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 RCRA-8 Metal analysis by U.S. EPA Method 6010. An orange flag was placed in each sample location. Figure 1 provides an approximate location of the sample points.

RCRA-8 metals include Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver. Table 1 attached shows the results as compared to the Rhode Island Department of Environment Management (RI DEM) Residential Direct Exposure Criteria (RDEC) applicable to the Site. Only lead was identified above the RDEC of 150 milligrams per kilograms (mg/kg). Soil samples 201942-SS2-060419 and 201942-SS3-060419 were identified with lead at concentrations of 424 mg/kg and 197 mg/kg, respectively. All other metals listed above were either identified with low level concentrations or concentrations below the laboratory reporting limits for that metal.

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

Gary S. Kaufman
Principal/Senior Project Manager

Attachments
Figure 1
Table 1

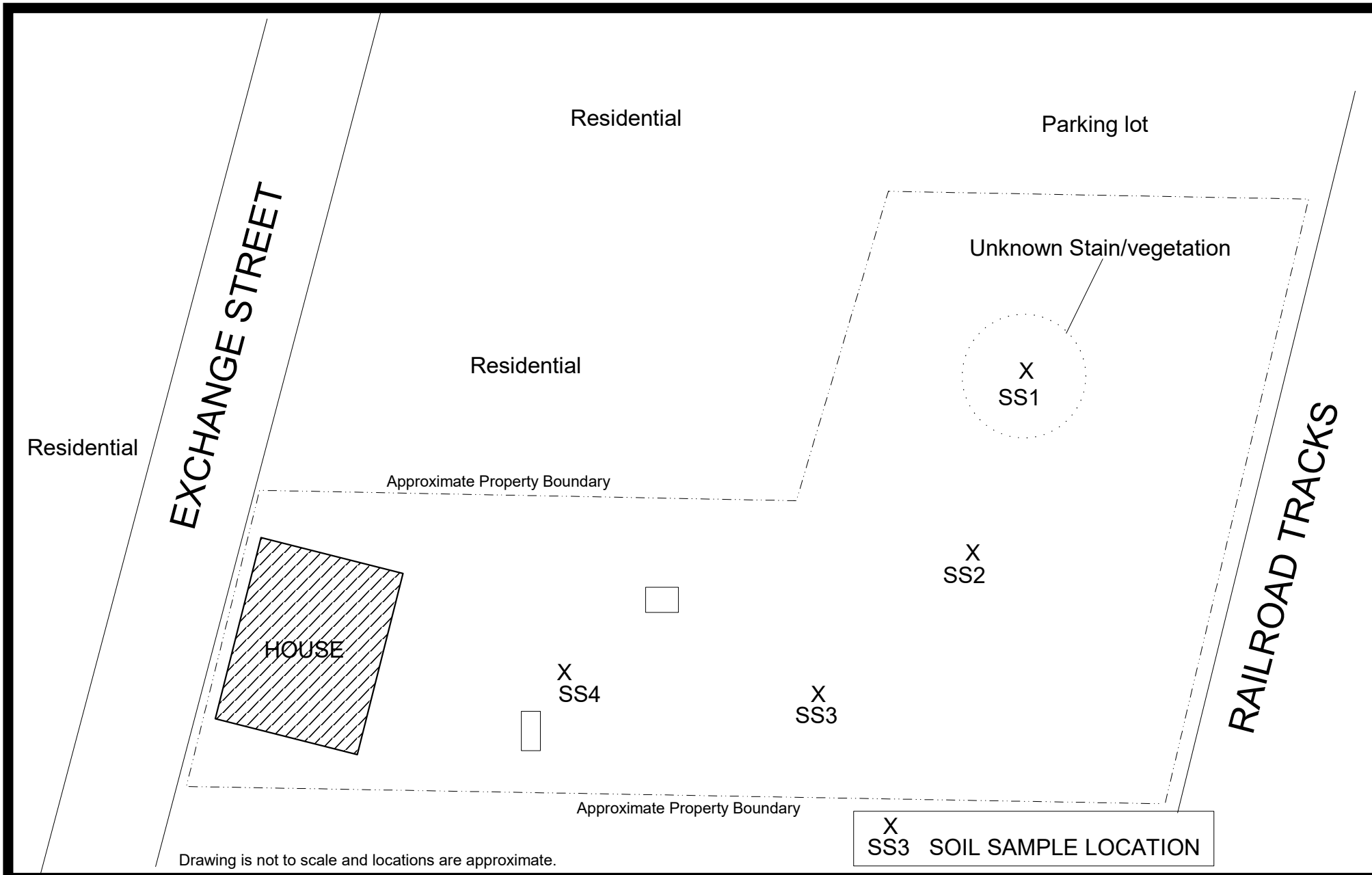

FIGURE 1

SAMPLING PLAN

REDWOOD ENVIRONMENTAL GROUP, LLC

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

NORTH

PROJECT NO. 201942

TABLE 1-METALS

Laboratory Sample Designation		RES DEC	19F0164-01		19F0164-02		19F0164-03		19F0164-04	
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	
Total Metals										
Arsenic	mg/kg	7	2.46	U	2.89	-	2.50	-	2.35	-
Barium	mg/kg	5500	38.9	-	74.8	-	61.8	-	35.5	-
Cadmium	mg/kg	39	1.31	-	1.99	-	1.27	-	0.85	-
Chromium	mg/kg	1400	7.99	-	12.3	-	8.42	-	8.29	-
Lead	mg/kg	**150**	80.0	-	**424**	-	**197**	-	119	-
Mercury	mg/kg	23	0.064	-	0.102	-	0.071	-	0.068	-
Selenium	mg/kg	390	4.93	U	3.93	U	4.36	U	4.55	U
Silver	mg/kg	200	0.49	U	0.39	U	0.44	U	0.46	U

Qualifier	**Description**
U	Undetected
Bold	Constituent identified above RI DEM Residential Direct Exposure Criteria

CERTIFICATE OF ANALYSIS

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

RE: Exchange Street (201942)
ESS Laboratory Work Order Number: 19F0164

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 7:03 pm, Jun 14, 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: 19F0164

SAMPLE RECEIPT

The following samples were received on June 06, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
19F0164-01	201942-SS1-060419	Soil	6010C, 7471B
19F0164-02	201942-SS2-060419	Soil	6010C, 7471B
19F0164-03	201942-SS3-060419	Soil	6010C, 7471B
19F0164-04	201942-SS4-060419	Soil	6010C, 7471B

CERTIFICATE OF ANALYSIS

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

ESS Laboratory Work Order: 19F0164

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

[redacted]

[redacted]

CERTIFICATE OF ANALYSIS

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

ESS Laboratory Work Order: 19F0164

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

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	ND (2.46)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Barium	**38.9** (2.46)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Cadmium	**1.31** (0.49)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Chromium	**7.99** (0.99)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Lead	**80.0** (4.93)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Mercury	**0.064** (0.026)		7471B		1	MKS	06/11/19 9:39	0.8	40	CF90742
Selenium	ND (4.93)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Silver	ND (0.49)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741

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

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**2.89** (1.97)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Barium	**74.8** (1.97)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Cadmium	**1.99** (0.39)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Chromium	**12.3** (0.79)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Lead	**424** (3.93)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Mercury	**0.102** (0.029)		7471B		1	MKS	06/11/19 9:53	0.72	40	CF90742
Selenium	ND (3.93)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Silver	ND (0.39)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741

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: 94

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**2.50** (2.18)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Barium	**61.8** (2.18)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Cadmium	**1.27** (0.44)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Chromium	**8.42** (0.87)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Lead	**197** (4.36)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Mercury	**0.071** (0.031)		7471B		1	MKS	06/11/19 10:03	0.67	40	CF90742
Selenium	ND (4.36)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Silver	ND (0.44)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741

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

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**2.35** (2.28)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Barium	**35.5** (2.28)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Cadmium	**0.85** (0.46)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Chromium	**8.29** (0.91)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Lead	**119** (4.55)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Mercury	**0.068** (0.025)		7471B		1	MKS	06/11/19 10:05	0.83	40	CF90742
Selenium	ND (4.55)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Silver	ND (0.46)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741

CERTIFICATE OF ANALYSIS

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

ESS Laboratory Work Order: 19F0164

Quality Control Data

Total Metals

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch CF90741 - 3050B										
Blank										
Arsenic	ND	2.50	mg/kg wet							
Barium	ND	2.50	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
Selenium	ND	5.00	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
LCS										
Arsenic	132	9.26	mg/kg wet	128.0		104	80-120			
Barium	509	9.26	mg/kg wet	536.0		95	80-120			
Cadmium	89.2	1.85	mg/kg wet	99.00		90	80-120			
Chromium	116	3.70	mg/kg wet	116.0		100	80-120			
Lead	273	18.5	mg/kg wet	277.0		99	80-120			
Selenium	237	18.5	mg/kg wet	242.0		98	80-120			
Silver	61.8	1.85	mg/kg wet	64.30		96	80-120			
LCS Dup										
Arsenic	138	9.80	mg/kg wet	128.0		108	80-120	4	20	
Barium	556	9.80	mg/kg wet	536.0		104	80-120	9	20	
Cadmium	92.2	1.96	mg/kg wet	99.00		93	80-120	3	20	
Chromium	115	3.92	mg/kg wet	116.0		99	80-120	0.4	20	
Lead	279	19.6	mg/kg wet	277.0		101	80-120	2	20	
Selenium	244	19.6	mg/kg wet	242.0		101	80-120	3	20	
Silver	61.5	1.96	mg/kg wet	64.30		96	80-120	0.5	20	
Reference										
Barium	509	8.77	mg/kg wet	500.0		102	70-130			
Cadmium	516	1.75	mg/kg wet	500.0		103	70-130			
Chromium	541	3.51	mg/kg wet	500.0		108	70-130			
Lead	540	17.5	mg/kg wet	500.0		108	70-130			
Silver	140	1.75	mg/kg wet	500.0		28	70-130			
Batch CF90742 - 7471B										
Blank										
Mercury	ND	0.033	mg/kg wet							
LCS										
Mercury	12.5	0.868	mg/kg wet	16.80		75	51-105			
LCS Dup										
Mercury	11.0	0.900	mg/kg wet	16.80		66	51-105	13	20	
Reference										
Mercury	0.981	0.168	mg/kg wet	1000		0.1	0-200			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street ESS Laboratory Work Order: 19F0164

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Diluted.
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: 19F0164

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 - KPB/EO

Shipped/Delivered Via: ESS Courier

ESS Project ID: 19F0164
Date Received: 6/6/2019
Project Due Date: 6/13/2019
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: 5.7 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	353158	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
02	353157	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
03	353156	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
04	353155	Yes	NA	Yes	4 oz. Jar - Unpres	NP	

2nd Review
Were all containers scanned into storage/lab? Initials
Are barcode labels on correct containers? Yes / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: Date & Time: 6/6/19 1109
Reviewed By: Date & Time: 6/6/19 1328
Delivered By: 6/6/19 1328

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time ✓ Standard Other _____
If faster than 5 days, prior approval by laboratory is required # _____

State where samples were collected from:
MA (RI) CT NH NJ NY ME Other _____

Is this project for any of the following:
MA-MCP Navy USACE Other _____

Reporting Limits: Reg.

ESS LAB PROJECT ID: 19F0164

Electronic Deliverable Yes ____ No ____

Format: Excel __ Access __ PDF __ Other _____

Co. Name	Project #	Project Name (20 Char. or less)
Redwood Env Grp	201942	Exchange ST

Contact Person	Address
G Kaufman	

City	State	Zip	PO#

Telephone #	Fax #	Email Address

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: RCRA8 6010
1	6/4/19	2:30		X	S	201942-551-060419	1	1	G	X
2		2:45				201942-552-060419	1	1	G	X
3		3:00				201942-553-060419	1	1	G	X
4		3:15				201942-554-060419	1	1	G	X

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ✓ Yes ___ No Internal Use Only

Seals Intact ___ Yes ___ No NA: ✓ [ ] Pickup

Cooler Temp: 5.7 Hand Sen [ ] Technicians ____

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____

Sampled by: GSK

Comments: on ice Prior to Lab delivery

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
GKaufman	6/6/19 9:14	KoRL	6/6/19 9:14				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A

REDWOOD
ENVIRONMENTAL GROUP, LLC

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

Gary S. Kaufman
Principal/Senior Project Manager

Attachments
Figure 1
Table 1

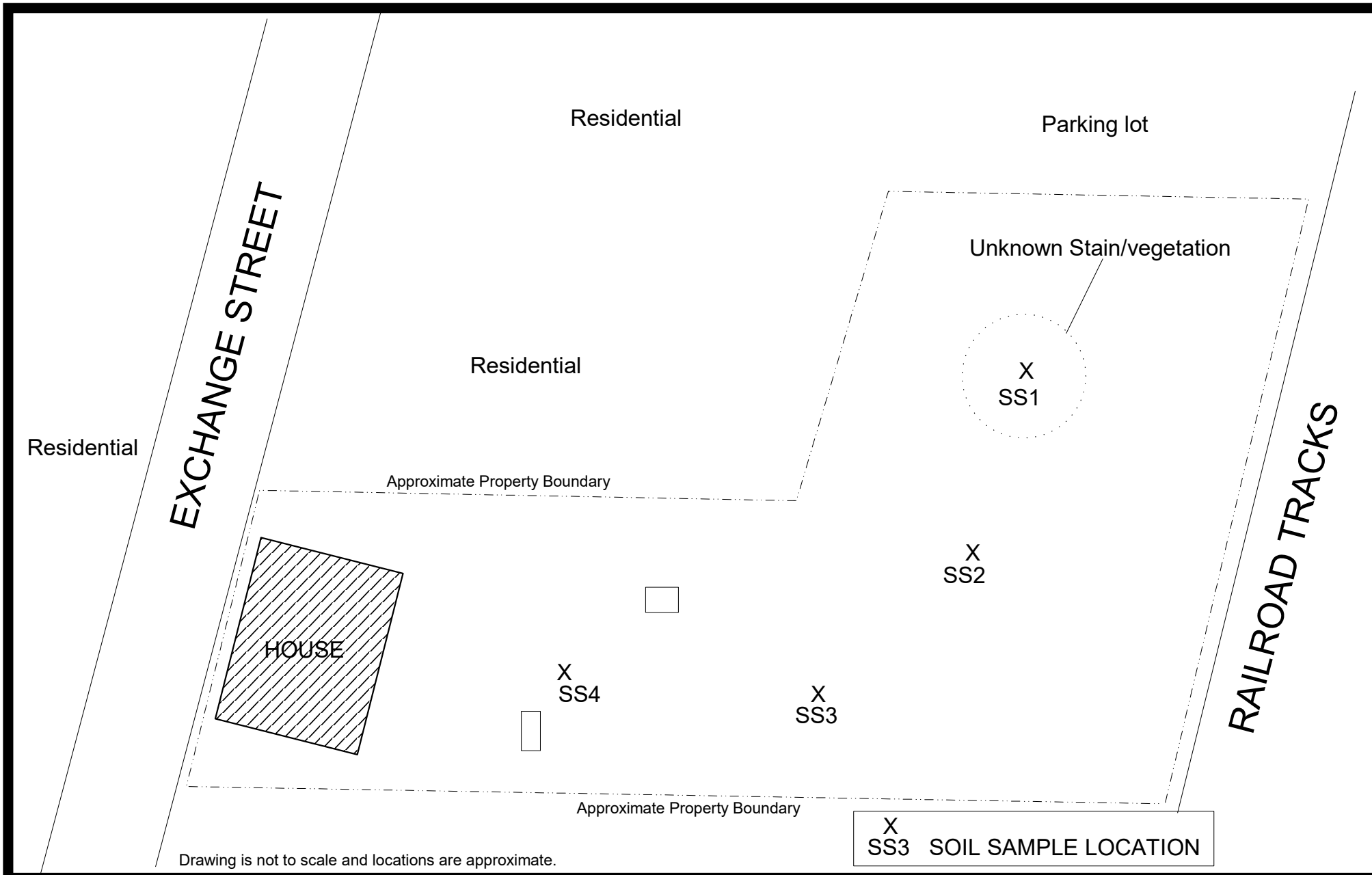

FIGURE 1

SAMPLING PLAN

REDWOOD ENVIRONMENTAL GROUP, LLC

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

NORTH

PROJECT NO. 201942

TABLE 1-VOCs, TPH

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

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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[redacted]

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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]

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

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**167** (38.1)		8100M		1	06/07/19 17:04	C9F0107	CF90516

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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]

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**142** (38.2)		8100M		1	06/07/19 17:37	C9F0107	CF90516

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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]

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

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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	**111** (39.3)		8100M		1	06/07/19 18:10	C9F0107	CF90610

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*81 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*85 %*		*70-130*
Surrogate: Dibromofluoromethane	*83 %*		*70-130*
Surrogate: Toluene-d8	*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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	ND (41.0)		8100M		1	06/07/19 18:42	C9F0107	CF90610

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
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

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*79 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*86 %*		*70-130*
Surrogate: Dibromofluoromethane	*86 %*		*70-130*
Surrogate: Toluene-d8	*83 %*		*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
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
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
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
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
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
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*			
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
8100M Total Petroleum Hydrocarbons										
Batch CF90516 - 3546										
Surrogate: O-Terphenyl	*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	
Triacontane (C30)	2.3	0.2	mg/kg wet	2.500		91	40-140	3	25	
Surrogate: O-Terphenyl	*4.57*		mg/kg wet	*5.000*		*91*	*40-140*			
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							
Triacontane (C30)	ND	0.2	mg/kg wet							
Surrogate: O-Terphenyl	*4.52*		mg/kg wet	*5.000*		*90*	*40-140*			
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
Client Project ID: Exchange Street

ESS Laboratory Work Order: 19F0081

Quality Control Data

8100M Total Petroleum Hydrocarbons

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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
Client Project ID: Exchange Street

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 - KPB/HDM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 19F0081
Date Received: 6/4/2019
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? Initials JT
Are barcode labels on correct containers? Yes / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

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

CHAIN OF CUSTODY

ESS Laboratory
Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

ESS Lab # 19F0081
Reporting Limits Residential
Electonic Deliverables [X] Data Checker [ ] Excel [ ] Other (Please Specify →)

Turn Time 5 Days 5
Regulatory State RI
Is this project for any of the following?: ○ CT RCP ○ MA MCP ○ RGP

Company Name: Redwood ENV Group
Contact Person: G Kaufman
Project # 201942
Project Name: Exchange ST
Address:
City: State: Zip Code: PO #:
Telephone Number: FAX Number: Email Address:

Analysis: TPH 8100M | VOC 8260 | PCBs 6010

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	TPH 8100M	VOC 8260	PCBs 6010
1	6/4/19	2:30		Soil	201942-SS1-060419	X	X	X
2		2:45		Soil	201942-SS2-060419	X	X	X
3		3:00		Soil	201942-SS3-060419	X	X	X
4	6/4/19	3:15		Soil	201942-SS4-060419	X	X	X
5					Trip Blank		X	

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*
Number of Containers per Sample:

Laboratory Use Only
Cooler Present: Y ○ Drop Off
Seals Intact: NA ○ Pickup
Cooler Temperature: 3.1 °C

Sampled by : CA

Comments: Please specify "Other" preservative and containers types in this space
On ice Prior to lab delivery Metals cancelled per client 6/6/19 - PRB

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
G Kaufman 6/4/19 3:45	6/4/19 1546		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

ESS Laboratory
Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
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www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 19F0081
Reporting Limits Residential
Electonic Deliverables ☒ Data Checker ☐ Excel ☐ Other (Please Specify →)

Turn Time 5 Days 5
Regulatory State RI
Is this project for any of the following?: ○ CT RCP ○ MA MCP ○ RGP

Company Name: Redwood ENV Group
Contact Person: G Kaufman
Project # 201942
Project Name: Exchange ST
Address:
City: State: Zip Code: PO #:
Telephone Number: FAX Number: Email Address:

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis: TPH 8100M	VOC 8260	PCB's 8082 6010
1	6/4/19	2:30		Soil	201942-SS1-060419	X	X	X
2		2:45		Soil	201942-SS2-060419	X	X	X
3		3:00		Soil	201942-SS3-060419	X	X	X
4	6/4/19	3:15		Soil	201942-SS4-060419	X	X	X
5					Trip Blank		X	

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*
Number of Containers per Sample:

Laboratory Use Only
Cooler Present: Y ○ Drop Off
Seals Intact: NA ○ Pickup
Cooler Temperature: 3.1 °C

Sampled by: GK
Comments: Please specify "Other" preservative and containers types in this space
On ice Prior to lab delivery

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
G Kaufman 6/4/19 3:45	6/4/19 1546		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

East Greenwich

(Summary Data - may not be Complete Representation of Property)

NORTHEAST REVALUATION GROUP LLC

Parcel: 085 001 087 0000	Location: 32 EXCHANGE STREET	Owner: GRENIER PROPERTIES LLC
Account: 107	User Acct: 100404674	LUC: 01

Parcel Values

Total: $197,900	Land: $181,600	Land Area: 0.192 AC	Building: $16,300	Assessed: $197,900

Sales Information

Book and Page	Instrument Type	Date	Price	Grantor
1393-272	Warranty	03/22/2018	$210,000	CURRIE ELAINE SO
715-002	Death Certificate	06/29/2013	$0	private owner

Building Type: Colonial	Year Built: 1860	Grade: Q4	Condition: DL
Heat Fuel:	Heat Type: BB Hot Wtr	% Air Conditioned: 0.00	Fireplaces: 0
Exterior Wall: Asbestos	Bsmnt Garage: 0	Roof Cover: Asphalt	# of Units: 1
# of Rooms: 14	# of Bedrooms: 10	Full Bath: 1	1/2 Baths: 0

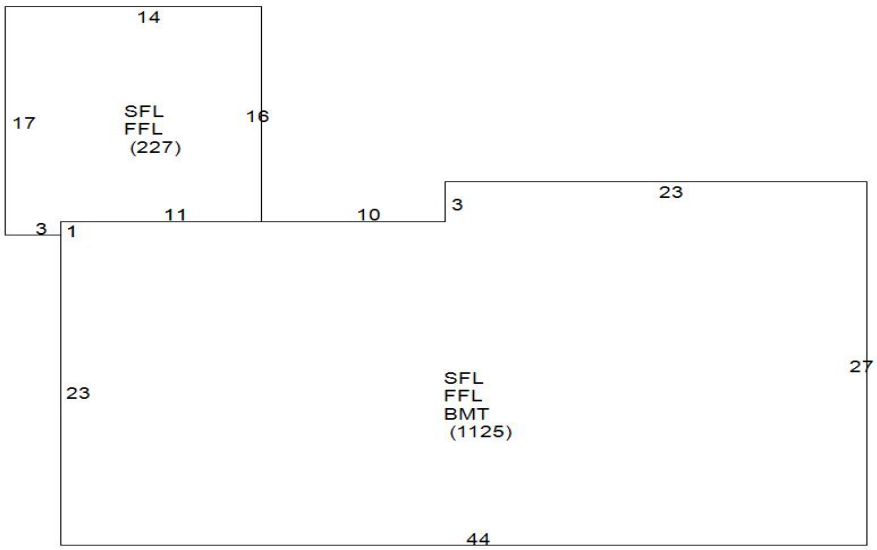
Yard Item(s)

Description	Quantity	Size	Year	Condition	Quality	Value
Shed	1	70.00000	1860	FR	Average	$300.00

Building Areas

Area	Net Area	Finished Area
1st FLOOR	1,352 SF	1,352 SF
2nd FLOOR	1,352 SF	1,352 SF
BASEMENT	1,125 SF	0 SF

Disclaimer: This information is for tax assessing purposes and is not warranted



East Greenwich

(Summary Data - may not be Complete Representation of Property)

NORTHEAST REVALUATION GROUP LLC

Parcel: 085 001 382 0000	Location: 33 EXCHANGE STREET	Owner: GRENIER PROPERTIES LLC
Account: 433	User Acct: 100404674	LUC: 13

Parcel Values

Total: $27,600	Land: $27,600	Land Area: 0.287 AC	Building: $0	Assessed: $27,600

Sales Information

Book and Page	Instrument Type	Date	Price	Grantor
1393-272	Warranty	03/22/2018	$210,000	CURRIE ELAINE SO
715-001	Death Certificate	06/29/2013	$0	private owner

Building Type:	Year Built:	Grade:	Condition: AV
Heat Fuel:	Heat Type:	% Air Conditioned: 0.00	Fireplaces: 0
Exterior Wall:	Bsmnt Garage: 0	Roof Cover:	# of Units: 0
# of Rooms: 0	# of Bedrooms: 0	Full Bath: 0	1/2 Baths: 0

Yard Item(s)

Description	Quantity	Size	Year	Condition	Quality	Value

Building Areas

Area	Net Area	Finished Area

Disclaimer: This information is for tax assessing purposes and is not warranted

REDWOOD
ENVIRONMENTAL GROUP, LLC

July 15, 2019 Project 201942

Ms. Kelley Owens
Rhode Island Department of Environmental Management
Office of Waste Management
235 Promenade Street
Providence, RI 02908

RE: Release Notification
Residential Property
32 & 33 Exchange Street
Plat 85/1, Lots 87 & 382
East Greenwich, Rhode Island 02818

Dear Ms. Owens:

Redwood Environmental Group, LLC (Redwood), on behalf of Grenier Properties, Inc., has completed the attached Rhode Island Department of Environmental Management (RI DEM) Office of Waste Management Hazardous Material Release Notification Form for the address listed above (the Site). This notification includes the following documents:

- RI DEM Hazardous Material Release Notification Form
- Letter Report with Laboratory Data Sheets (June 16, 2019)

As part of a redevelopment of the property as condominiums and the fact that vehicles had been parked on the Site from at least the 1960's through the early 2000's, the Site owner requested that Redwood perform a cursory soil sampling of surficial soils to verify the soil quality with respect to metals. Redwood collected four (4) soil samples approximately equal distance from each other (refer to Figure 1 attached). Lead was identified above RI DEM Method 1 Residential Direct Exposure Criteria of 150 milligrams per kilograms (mg/kg) in two locations. Soil sample SS2 and SS3 were identified with concentrations of 424 mg/kg and 197 mg/kg, respectively. The two other samples analyzed, SS1 and SS4, had concentrations of 80 mg/kg and 119 mg/kg, respectively. No other RCRA-8 metals were identified with concentrations exceeding regulatory standards applicable to the Site.

With the submittal of the above documents, Grenier Properties, LLC is making formal notification to RI DEM. Redwood proposes to perform additional investigation to determine the vertical and lateral extent of the lead confirmation. As the future use of the Site will be residential condominiums, it is expected that much of the contamination will be removed from the Site and properly disposed at the Rhode Island Resource Recovery Corporation landfill in Johnston.

If you have any questions regarding this submittal, please call me at (401) 270-7000.

Sincerely,

REDWOOD ENVIRONMENTAL GROUP, LLC

Gary S. Kaufman

Gary S. Kaufman
Principal

Appendix C

OFFICE OF WASTE MANAGEMENT – SITE REMEDIATION SECTION HAZARDOUS MATERIAL RELEASE NOTIFICATION FORM

THIS FORM IS NOT TO BE USED TO REPORT AN IMMINENT HAZARD

1. Notifier Information

Name: GARY KAUFMAN, Redwood Environmental Group, LLC
Address: 10 ELMGROVE Ave, Providence, RI 02906
Phone: 401-270-7000
Email: gKaufman@RedwoodEnv.com
Status: X Environmental Professional ___ Owner ___ Operator ___ Secured Creditor ___ Voluntary

If Environmental Professional is selected, please supply the follow information for your client below:

Name: Tim Grenier, Granier Properties, LLC
Address: 3 Cole Circle, EAST Greenwich, RI 02818
Phone: 401-527-0524
Email: grenierqroup@cox.net
Status: X Owner ___ Operator ___ Secured Creditor ___ Voluntary

2. Property Information Residential Property
Name of Site: 33 Exchange St, EAST Greenwich, RI 02818
Site Address:

Plat/Lot Numbers: Plat 85/1, LOT 382

Approximate Acreage of Property: 0.287

Latitude/Longitude: 41° 39' 41" N 71° 26' 52" W

Site Land Usage Type: X Residential ___ Industrial/Commercial

Location of Release: middle of Site, See Attached Sampling Plan.
(Attach site sketch as necessary)

3. Release Information

Date of Discovery: 6/14/2019
Source: LAB Analysis
Release Media: Soil

Hazardous Materials and Concentrations: Lead 197mg/Kg & 424mg/Kg
(Attach certificates of analysis as necessary)

Extent of Contamination: 12-18" deep.

Approximate acreage of Contaminated Area: UNK

4. Resource Information

Site Land Usage:	___ Industrial/Commercial	X Residential
Adjacent Land Usage:	___ Industrial/Commercial	X Residential
Site Groundwater Class:	___ GA/GAA	X GB
Adjacent Groundwater Class: (if different than site groundwater classification within 500 feet)	___ GA/GAA	X GB

Nearest Surface Water or Wetland: Greenwich Cove

___ Less Than 500 Feet X Greater Than 500 Feet

Potential for adverse impact ___ Yes (No)

5. Potentially Responsible Parties

Name: Grenier Properties, LLC
Address: 3 Cole Circle, East Greenwich, RI 02818

Status: X Owner ___ Operator ___ Other:

Name: _____
Address:

Status: ___ Owner ___ Operator ___ Other:

6. Measures Taken or Proposed to be Taken in Response to Release

1. Determine Extent of contamination
2. Remove impacted Soil.

Check all that apply: ___Site Investigation ___Short-Term/Emergency ___EXPRESS ___ Dig & Haul

7. Other Significant Remarks about Release (Will a background determination be made?)

Suspected to be release from storing & repairing vehicles in area.

Signature: Gary Kaufman Date 7/15/19

Title: Principal, Redwood Environmental Group, LLC

REDWOOD
ENVIRONMENTAL GROUP, LLC

June 16, 2019 Project 201942

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

Re: Letter Report
Soil Sampling Results-RCRA 8 Metals
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 RCRA-8 Metal analysis by U.S. EPA Method 6010. An orange flag was placed in each sample location. Figure 1 provides an approximate location of the sample points.

RCRA-8 metals include Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium and Silver. Table 1 attached shows the results as compared to the Rhode Island Department of Environment Management (RI DEM) Residential Direct Exposure Criteria (RDEC) applicable to the Site. Only lead was identified above the RDEC of 150 milligrams per kilograms (mg/kg). Soil samples 201942-SS2-060419 and 201942-SS3-060419 were identified with lead at concentrations of 424 mg/kg and 197 mg/kg, respectively. All other metals listed above were either identified with low level concentrations or concentrations below the laboratory reporting limits for that metal.

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

Gary S. Kaufman
Principal/Senior Project Manager

Attachments
Figure 1
Table 1

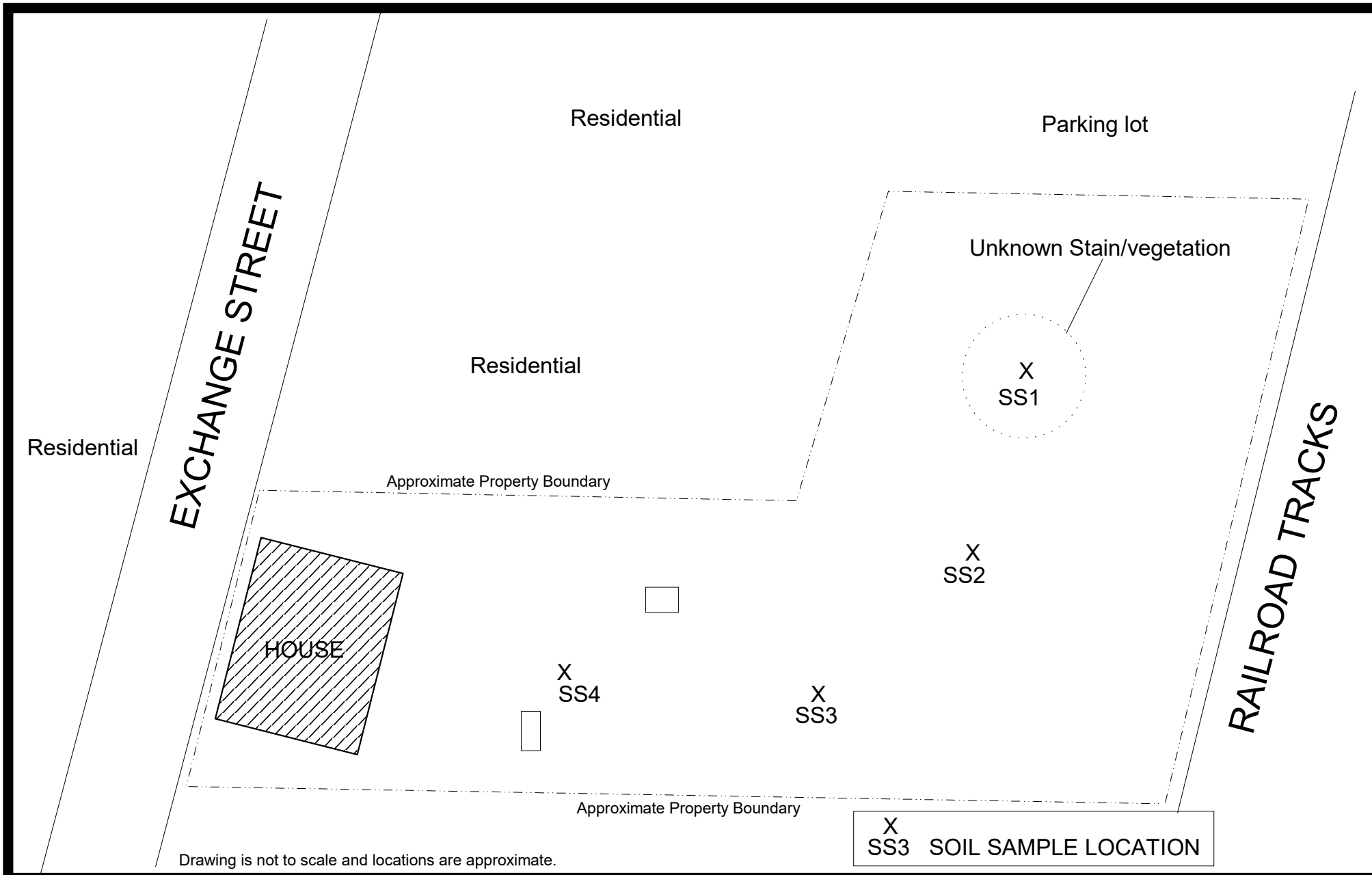


FIGURE 1

SAMPLING PLAN

REDWOOD ENVIRONMENTAL GROUP, LLC

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

NORTH

PROJECT NO. 201942

TABLE 1-METALS

Laboratory Sample Designation		RES DEC	19F0164-01		19F0164-02		19F0164-03		19F0164-04	
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	
Total Metals										
Arsenic	mg/kg	7	2.46	U	2.89	-	2.50	-	2.35	-
Barium	mg/kg	5500	38.9	-	74.8	-	61.8	-	35.5	-
Cadmium	mg/kg	39	1.31	-	1.99	-	1.27	-	0.85	-
Chromium	mg/kg	1400	7.99	-	12.3	-	8.42	-	8.29	-
Lead	mg/kg	**150**	80.0	-	**424**	-	**197**	-	119	-
Mercury	mg/kg	23	0.064	-	0.102	-	0.071	-	0.068	-
Selenium	mg/kg	390	4.93	U	3.93	U	4.36	U	4.55	U
Silver	mg/kg	200	0.49	U	0.39	U	0.44	U	0.46	U

Qualifier	**Description**
U	Undetected
Bold	Constituent identified above RI DEM Residential Direct Exposure Criteria

CERTIFICATE OF ANALYSIS

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

RE: Exchange Street (201942)
ESS Laboratory Work Order Number: 19F0164

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 7:03 pm, Jun 14, 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: 19F0164

SAMPLE RECEIPT

The following samples were received on June 06, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
19F0164-01	201942-SS1-060419	Soil	6010C, 7471B
19F0164-02	201942-SS2-060419	Soil	6010C, 7471B
19F0164-03	201942-SS3-060419	Soil	6010C, 7471B
19F0164-04	201942-SS4-060419	Soil	6010C, 7471B

CERTIFICATE OF ANALYSIS

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

ESS Laboratory Work Order: 19F0164

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

[redacted]

[redacted]

CERTIFICATE OF ANALYSIS

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

ESS Laboratory Work Order: 19F0164

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

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	ND (2.46)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Barium	**38.9** (2.46)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Cadmium	**1.31** (0.49)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Chromium	**7.99** (0.99)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Lead	**80.0** (4.93)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Mercury	**0.064** (0.026)		7471B		1	MKS	06/11/19 9:39	0.8	40	CF90742
Selenium	ND (4.93)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741
Silver	ND (0.49)		6010C		1	KJK	06/12/19 17:42	2.16	100	CF90741

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

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**2.89** (1.97)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Barium	**74.8** (1.97)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Cadmium	**1.99** (0.39)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Chromium	**12.3** (0.79)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Lead	**424** (3.93)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Mercury	**0.102** (0.029)		7471B		1	MKS	06/11/19 9:53	0.72	40	CF90742
Selenium	ND (3.93)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741
Silver	ND (0.39)		6010C		1	KJK	06/12/19 18:14	2.71	100	CF90741

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: 94

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**2.50** (2.18)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Barium	**61.8** (2.18)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Cadmium	**1.27** (0.44)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Chromium	**8.42** (0.87)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Lead	**197** (4.36)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Mercury	**0.071** (0.031)		7471B		1	MKS	06/11/19 10:03	0.67	40	CF90742
Selenium	ND (4.36)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741
Silver	ND (0.44)		6010C		1	KJK	06/12/19 18:33	2.43	100	CF90741

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

ESS Laboratory Work Order: 19F0164
ESS Laboratory Sample ID: 19F0164-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**2.35** (2.28)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Barium	**35.5** (2.28)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Cadmium	**0.85** (0.46)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Chromium	**8.29** (0.91)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Lead	**119** (4.55)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Mercury	**0.068** (0.025)		7471B		1	MKS	06/11/19 10:05	0.83	40	CF90742
Selenium	ND (4.55)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741
Silver	ND (0.46)		6010C		1	KJK	06/12/19 18:37	2.33	100	CF90741

CERTIFICATE OF ANALYSIS

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

ESS Laboratory Work Order: 19F0164

Quality Control Data

Total Metals

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch CF90741 - 3050B										
Blank										
Arsenic	ND	2.50	mg/kg wet							
Barium	ND	2.50	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
Selenium	ND	5.00	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
LCS										
Arsenic	132	9.26	mg/kg wet	128.0		104	80-120			
Barium	509	9.26	mg/kg wet	536.0		95	80-120			
Cadmium	89.2	1.85	mg/kg wet	99.00		90	80-120			
Chromium	116	3.70	mg/kg wet	116.0		100	80-120			
Lead	273	18.5	mg/kg wet	277.0		99	80-120			
Selenium	237	18.5	mg/kg wet	242.0		98	80-120			
Silver	61.8	1.85	mg/kg wet	64.30		96	80-120			
LCS Dup										
Arsenic	138	9.80	mg/kg wet	128.0		108	80-120	4	20	
Barium	556	9.80	mg/kg wet	536.0		104	80-120	9	20	
Cadmium	92.2	1.96	mg/kg wet	99.00		93	80-120	3	20	
Chromium	115	3.92	mg/kg wet	116.0		99	80-120	0.4	20	
Lead	279	19.6	mg/kg wet	277.0		101	80-120	2	20	
Selenium	244	19.6	mg/kg wet	242.0		101	80-120	3	20	
Silver	61.5	1.96	mg/kg wet	64.30		96	80-120	0.5	20	
Reference										
Barium	509	8.77	mg/kg wet	500.0		102	70-130			
Cadmium	516	1.75	mg/kg wet	500.0		103	70-130			
Chromium	541	3.51	mg/kg wet	500.0		108	70-130			
Lead	540	17.5	mg/kg wet	500.0		108	70-130			
Silver	140	1.75	mg/kg wet	500.0		28	70-130			
Batch CF90742 - 7471B										
Blank										
Mercury	ND	0.033	mg/kg wet							
LCS										
Mercury	12.5	0.868	mg/kg wet	16.80		75	51-105			
LCS Dup										
Mercury	11.0	0.900	mg/kg wet	16.80		66	51-105	13	20	
Reference										
Mercury	0.981	0.168	mg/kg wet	1000		0.1	0-200			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Exchange Street ESS Laboratory Work Order: 19F0164

Notes and Definitions

U	Analyte included in the analysis, but not detected
D	Diluted.
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: 19F0164

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 - KPB/EO

Shipped/Delivered Via: ESS Courier

ESS Project ID: 19F0164
Date Received: 6/6/2019
Project Due Date: 6/13/2019
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: 5.7 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	353158	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
02	353157	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
03	353156	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
04	353155	Yes	NA	Yes	4 oz. Jar - Unpres	NP	

2nd Review
Were all containers scanned into storage/lab? Initials
Are barcode labels on correct containers? Yes / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: Date & Time: 6/6/19 1109
Reviewed By: Date & Time: 6/6/19 1328
Delivered By: 6/6/19 1328

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time ✓ Standard Other _____
If faster than 5 days, prior approval by laboratory is required # _____

State where samples were collected from:
MA (RI) CT NH NJ NY ME Other _____

Is this project for any of the following:
MA-MCP Navy USACE Other _____

Reporting Limits: Reg.

ESS LAB PROJECT ID: 19F0164

Electronic Deliverable Yes ____ No ____

Format: Excel __ Access __ PDF __ Other _____

Co. Name	Project #	Project Name (20 Char. or less)
Redwood Env Grp	201942	Exchange ST

Contact Person	Address
G Kaufman	

City	State	Zip	PO#

Telephone #	Fax #	Email Address

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: RCRA8 6010
1	6/4/19	2:30		X	S	201942-551-060419	1	1	G	X
2		2:45				201942-552-060419	1	1	G	X
3		3:00				201942-553-060419	1	1	G	X
4		3:15				201942-554-060419	1	1	G	X

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ✓ Yes ___ No Internal Use Only

Seals Intact ___ Yes ___ No NA: ✓ [ ] Pickup

Cooler Temp: 5.7 Hand Sen [ ] Technicians ____

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____

Sampled by: GSK

Comments: on ice Prior to Lab delivery

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
GKaufman	6/6/19 9:14	KoRL	6/6/19 9:14				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A

REDWOOD ENVIRONMENTAL GROUP, LLC

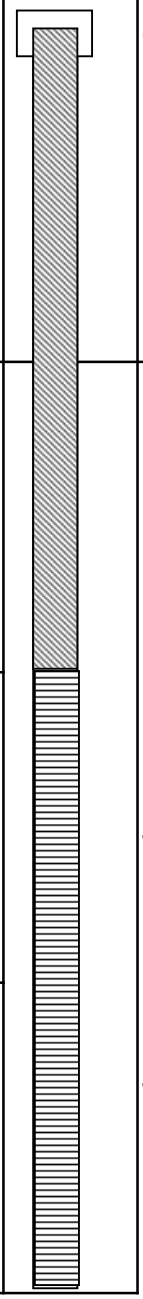
Boring Log No.: MW-3

Site: Residential Property
32 & 33 Excahnge Street
East Greenwich, Rhode Island

Project No.: 201942
Date: 11/6/2019
Well Size: 1-inch
Drilling Method GeoProbe

Engineer: GSK Time:

Depth in Feet	Sample	PID	Recovery (inches)	Description	Well Design
1	X	0.5	39/60	Brown loamy sand to brown medium sand and gravel to layer of dark dense fine sand to brown coarse sand trace gravel, no odor, dry, Lab Analysis-SVOCs	Cover
2					
3					
4					
5					
6	X	0.7	43/60	Brown loose coarse sand to loose coarse sand and gravel, no odor, dry, Lab Analysis-VOC, TPH, EPH, VPH	Riser
7					
8					
9					
10					
11		0	55/60	Brown loos coarse sand and gravel to brown fine sand WET @ 14 feet.	Water Table
12					
13					
14					
15					
16					Well Screen
17					
18					
19					
20					



Set well with casing @ 20-feet, screen 10-20, riser 0-10

APPENDIX B
LABORATORY DATA SHEETS

CERTIFICATE OF ANALYSIS

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

RE: Grenier (201942)
ESS Laboratory Work Order Number: 19K0159

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

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: Grenier

ESS Laboratory Work Order: 19K0159

SAMPLE RECEIPT

The following samples were received on November 06, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
19K0159-01	201942-MW1-110619	Soil	EPH8270, MADEP-EPH, MA-VPH-2.1
19K0159-02	201942-MW2-110619	Soil	EPH8270, MADEP-EPH, MA-VPH-2.1
19K0159-03	201942-MW3-110619	Soil	EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0159

PROJECT NARRATIVE

MADEP-EPH Extractable Petroleum Hydrocarbons
C9K0243-CCV2 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
Benzo(g,h,i)perylene (26% @ 20%), Dibenzo(a,h)Anthracene (22% @ 20%), Indeno(1,2,3-cd)Pyrene (24% @ 20%), Phenanthrene (22% @ 20%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0159

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: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 96
Initial Volume: 24.4
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19K0159
ESS Laboratory Sample ID: 19K0159-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 11/6/19 20:47

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (16.0)		MADEP-EPH		1	CAD	11/09/19 4:00	C9K0051	CK90614
C19-C36 Aliphatics1	ND (16.0)		MADEP-EPH		1	CAD	11/09/19 4:00	C9K0051	CK90614
C11-C22 Unadjusted Aromatics1	ND (16.0)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
C11-C22 Aromatics1,2	ND (16.0)		EPH8270			ZLC	11/14/19 13:23		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Acenaphthene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Naphthalene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Phenanthrene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Acenaphthylene	ND (0.21)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Anthracene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Benzo(a)anthracene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Benzo(a)pyrene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Benzo(b)fluoranthene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Benzo(g,h,i)perylene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Benzo(k)fluoranthene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Chrysene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Fluoranthene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Fluorene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Indeno(1,2,3-cd)Pyrene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614
Pyrene	ND (0.43)		EPH8270		1	ZLC	11/14/19 13:23	C9K0243	CK90614

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*59 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*117 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*113 %*		*40-140*
Surrogate: O-Terphenyl	*79 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 96
Initial Volume: 27.1
Final Volume: 15
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 19K0159
ESS Laboratory Sample ID: 19K0159-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (6.13)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
C5-C8 Aliphatics1,2	ND (6.40)		MA-VPH-2.1		1	11/07/19 20:25		[CALC]
C9-C12 Aliphatics2,3	ND (12.7)		MA-VPH-2.1		1	11/07/19 20:25		[CALC]
Benzene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
Ethylbenzene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
Methyl tert-Butyl Ether	ND (0.03)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
Naphthalene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
Toluene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
Xylene O	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
Xylene P,M	ND (0.25)		MA-VPH-2.1		1	11/07/19 20:25	C9K0135	CK90759
1:1 Methanol/Soil Ratio %D	**81** (N/A)		MA-VPH-2.1			11/07/19 7:40		CK90759
Preservative:	**MeOH - covered**		MA-VPH-2.1					CK90759

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*80 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*84 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*113 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*116 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 95
Initial Volume: 25.3
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19K0159
ESS Laboratory Sample ID: 19K0159-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 11/6/19 20:47

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (15.7)		MADEP-EPH		1	CAD	11/09/19 4:47	C9K0051	CK90614
C19-C36 Aliphatics1	ND (15.7)		MADEP-EPH		1	CAD	11/09/19 4:47	C9K0051	CK90614
C11-C22 Unadjusted Aromatics1	ND (15.7)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
C11-C22 Aromatics1,2	ND (15.7)		EPH8270			ZLC	11/14/19 14:00		[CALC]
2-Methylnaphthalene	ND (0.21)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Acenaphthene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Naphthalene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Phenanthrene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Acenaphthylene	ND (0.21)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Anthracene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Benzo(a)anthracene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Benzo(a)pyrene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Benzo(b)fluoranthene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Benzo(g,h,i)perylene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Benzo(k)fluoranthene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Chrysene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Dibenzo(a,h)Anthracene	ND (0.21)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Fluoranthene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Fluorene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Indeno(1,2,3-cd)Pyrene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614
Pyrene	ND (0.42)		EPH8270		1	ZLC	11/14/19 14:00	C9K0243	CK90614

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*51 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*116 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*111 %*		*40-140*
Surrogate: O-Terphenyl	*67 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 95
Initial Volume: 28.7
Final Volume: 15
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 19K0159
ESS Laboratory Sample ID: 19K0159-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (6.11)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
C5-C8 Aliphatics1,2	ND (6.38)		MA-VPH-2.1		1	11/07/19 20:59		[CALC]
C9-C12 Aliphatics2,3	ND (12.7)		MA-VPH-2.1		1	11/07/19 20:59		[CALC]
Benzene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
Ethylbenzene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
Methyl tert-Butyl Ether	ND (0.03)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
Naphthalene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
Toluene	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
Xylene O	ND (0.12)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
Xylene P,M	ND (0.24)		MA-VPH-2.1		1	11/07/19 20:59	C9K0135	CK90759
1:1 Methanol/Soil Ratio %D	**91** (N/A)		MA-VPH-2.1			11/07/19 7:40		CK90759
Preservative:	**MeOH - covered**		MA-VPH-2.1					CK90759

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*80 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*84 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*111 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*113 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 24.9
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19K0159
ESS Laboratory Sample ID: 19K0159-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 11/6/19 20:47

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (15.3)		MADEP-EPH		1	CAD	11/09/19 5:34	C9K0051	CK90614
C19-C36 Aliphatics1	ND (15.3)		MADEP-EPH		1	CAD	11/09/19 5:34	C9K0051	CK90614
C11-C22 Unadjusted Aromatics1	ND (15.3)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
C11-C22 Aromatics1,2	ND (15.3)		EPH8270			ZLC	11/14/19 14:37		[CALC]
2-Methylnaphthalene	ND (0.20)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Acenaphthene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Naphthalene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Phenanthrene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Acenaphthylene	ND (0.20)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Anthracene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Benzo(a)anthracene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Benzo(a)pyrene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Benzo(b)fluoranthene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Benzo(g,h,i)perylene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Benzo(k)fluoranthene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Chrysene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Dibenzo(a,h)Anthracene	ND (0.20)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Fluoranthene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Fluorene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Indeno(1,2,3-cd)Pyrene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614
Pyrene	ND (0.41)		EPH8270		1	ZLC	11/14/19 14:37	C9K0243	CK90614

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*57 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*120 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*119 %*		*40-140*
Surrogate: O-Terphenyl	*84 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 26.9
Final Volume: 15
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 19K0159
ESS Laboratory Sample ID: 19K0159-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (5.80)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
C5-C8 Aliphatics1,2	ND (6.06)		MA-VPH-2.1		1	11/07/19 21:33		[CALC]
C9-C12 Aliphatics2,3	ND (12.1)		MA-VPH-2.1		1	11/07/19 21:33		[CALC]
Benzene	ND (0.12)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
Ethylbenzene	ND (0.12)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
Methyl tert-Butyl Ether	ND (0.03)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
Naphthalene	ND (0.12)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
Toluene	ND (0.12)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
Xylene O	ND (0.12)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
Xylene P,M	ND (0.23)		MA-VPH-2.1		1	11/07/19 21:33	C9K0135	CK90759
1:1 Methanol/Soil Ratio %D	**79** (N/A)		MA-VPH-2.1			11/07/19 7:40		CK90759
Preservative:	**MeOH - covered**		MA-VPH-2.1					CK90759

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*81 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*85 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*110 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*111 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0159

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CK90614 - 3546										
Blank										
C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.52*		mg/kg wet	*2.020*		*75*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*56.6*		mg/L	*50.00*		*113*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*58.0*		mg/L	*50.00*		*116*	*40-140*			
Surrogate: O-Terphenyl	*1.64*		mg/kg wet	*2.008*		*82*	*40-140*			
LCS										
C19-C36 Aliphatics1	13.2	15.0	mg/kg wet	16.00		82	40-140			
C9-C18 Aliphatics1	6.8	15.0	mg/kg wet	12.00		57	40-140			
Decane (C10)	0.8	0.5	mg/kg wet	2.000		42	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0159

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CK90614 - 3546										
Docosane (C22)	1.5	0.5	mg/kg wet	2.000		74	40-140			
Dodecane (C12)	0.9	0.5	mg/kg wet	2.000		47	40-140			
Eicosane (C20)	1.4	0.5	mg/kg wet	2.000		72	40-140			
Hexacosane (C26)	1.5	0.5	mg/kg wet	2.000		73	40-140			
Hexadecane (C16)	1.3	0.5	mg/kg wet	2.000		67	40-140			
Hexatriacontane (C36)	1.7	0.5	mg/kg wet	2.000		87	40-140			
Nonadecane (C19)	1.4	0.5	mg/kg wet	2.000		72	40-140			
Nonane (C9)	0.7	0.5	mg/kg wet	2.000		33	30-140			
Octacosane (C28)	1.5	0.5	mg/kg wet	2.000		73	40-140			
Octadecane (C18)	1.4	0.5	mg/kg wet	2.000		71	40-140			
Tetracosane (C24)	1.5	0.5	mg/kg wet	2.000		74	40-140			
Tetradecane (C14)	1.1	0.5	mg/kg wet	2.000		54	40-140			
Triacontane (C30)	1.5	0.5	mg/kg wet	2.000		73	40-140			
Surrogate: 1-Chlorooctadecane	*1.51*		mg/kg wet	*2.020*		*75*	*40-140*			
LCS										
2-Methylnaphthalene	1.55	0.20	mg/kg wet	2.000		78	40-140			
Acenaphthene	1.46	0.40	mg/kg wet	2.000		73	40-140			
Acenaphthylene	1.40	0.20	mg/kg wet	2.000		70	40-140			
Anthracene	1.57	0.40	mg/kg wet	2.000		79	40-140			
Benzo(a)anthracene	1.57	0.40	mg/kg wet	2.000		79	40-140			
Benzo(a)pyrene	1.59	0.40	mg/kg wet	2.000		80	40-140			
Benzo(b)fluoranthene	1.52	0.40	mg/kg wet	2.000		76	40-140			
Benzo(g,h,i)perylene	1.48	0.40	mg/kg wet	2.000		74	40-140			
Benzo(k)fluoranthene	1.63	0.40	mg/kg wet	2.000		81	40-140			
C11-C22 Unadjusted Aromatics1	25.8	15.0	mg/kg wet	34.00		76	40-140			
Chrysene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Dibenzo(a,h)Anthracene	1.47	0.20	mg/kg wet	2.000		74	40-140			
Fluoranthene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Fluorene	1.48	0.40	mg/kg wet	2.000		74	40-140			
Indeno(1,2,3-cd)Pyrene	1.46	0.40	mg/kg wet	2.000		73	40-140			
Naphthalene	1.43	0.40	mg/kg wet	2.000		71	40-140			
Phenanthrene	1.55	0.40	mg/kg wet	2.000		78	40-140			
Pyrene	1.61	0.40	mg/kg wet	2.000		80	40-140			
Surrogate: 2-Bromonaphthalene	*55.8*		mg/L	*50.00*		*112*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*57.6*		mg/L	*50.00*		*115*	*40-140*			
Surrogate: O-Terphenyl	*1.50*		mg/kg wet	*2.008*		*75*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	14.0	15.0	mg/kg wet	16.00		88	40-140	6	25	
C9-C18 Aliphatics1	7.5	15.0	mg/kg wet	12.00		63	40-140	9	25	
Decane (C10)	0.9	0.5	mg/kg wet	2.000		46	40-140	10	25	
Docosane (C22)	1.6	0.5	mg/kg wet	2.000		80	40-140	7	25	

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0159

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CK90614 - 3546										
Dodecane (C12)	1.0	0.5	mg/kg wet	2.000		52	40-140	11	25	
Eicosane (C20)	1.6	0.5	mg/kg wet	2.000		78	40-140	7	25	
Hexacosane (C26)	1.6	0.5	mg/kg wet	2.000		79	40-140	7	25	
Hexadecane (C16)	1.5	0.5	mg/kg wet	2.000		73	40-140	8	25	
Hexatriacontane (C36)	1.9	0.5	mg/kg wet	2.000		93	40-140	7	25	
Nonadecane (C19)	1.5	0.5	mg/kg wet	2.000		77	40-140	8	25	
Nonane (C9)	0.7	0.5	mg/kg wet	2.000		36	30-140	8	25	
Octacosane (C28)	1.6	0.5	mg/kg wet	2.000		78	40-140	8	25	
Octadecane (C18)	1.5	0.5	mg/kg wet	2.000		76	40-140	8	25	
Tetracosane (C24)	1.6	0.5	mg/kg wet	2.000		79	40-140	7	25	
Tetradecane (C14)	1.2	0.5	mg/kg wet	2.000		60	40-140	10	25	
Triacontane (C30)	1.6	0.5	mg/kg wet	2.000		79	40-140	7	25	
Surrogate: 1-Chlorooctadecane	*1.60*		mg/kg wet	*2.020*		*79*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.76	0.20	mg/kg wet	2.000		88	40-140	13	30	
Acenaphthene	1.67	0.40	mg/kg wet	2.000		83	40-140	13	30	
Acenaphthylene	1.59	0.20	mg/kg wet	2.000		80	40-140	13	30	
Anthracene	1.76	0.40	mg/kg wet	2.000		88	40-140	11	30	
Benzo(a)anthracene	1.78	0.40	mg/kg wet	2.000		89	40-140	12	30	
Benzo(a)pyrene	1.79	0.40	mg/kg wet	2.000		89	40-140	12	30	
Benzo(b)fluoranthene	1.71	0.40	mg/kg wet	2.000		86	40-140	12	30	
Benzo(g,h,i)perylene	1.66	0.40	mg/kg wet	2.000		83	40-140	11	30	
Benzo(k)fluoranthene	1.87	0.40	mg/kg wet	2.000		93	40-140	14	30	
C11-C22 Unadjusted Aromatics1	29.0	15.0	mg/kg wet	34.00		85	40-140	12	25	
Chrysene	1.77	0.40	mg/kg wet	2.000		88	40-140	11	30	
Dibenzo(a,h)Anthracene	1.65	0.20	mg/kg wet	2.000		83	40-140	12	30	
Fluoranthene	1.77	0.40	mg/kg wet	2.000		88	40-140	12	30	
Fluorene	1.67	0.40	mg/kg wet	2.000		84	40-140	12	30	
Indeno(1,2,3-cd)Pyrene	1.65	0.40	mg/kg wet	2.000		82	40-140	12	30	
Naphthalene	1.59	0.40	mg/kg wet	2.000		80	40-140	11	30	
Phenanthrene	1.73	0.40	mg/kg wet	2.000		87	40-140	11	30	
Pyrene	1.83	0.40	mg/kg wet	2.000		91	40-140	13	30	
Surrogate: 2-Bromonaphthalene	*55.2*		mg/L	*50.00*		*110*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*56.8*		mg/L	*50.00*		*114*	*40-140*			
Surrogate: O-Terphenyl	*1.68*		mg/kg wet	*2.008*		*84*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CK90759 - 5035										
Blank										
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0159

Quality Control Data

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch CK90759 - 5035										
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							
Xylene P,M	ND	0.40	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	*4.01*		mg/kg wet	*5.000*		*80*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.27*		mg/kg wet	*5.000*		*85*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.21*		mg/kg wet	*5.333*		*98*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.25*		mg/kg wet	*5.333*		*98*	*70-130*			
LCS										
Benzene	4.93	0.20	mg/kg wet	5.000		99	70-130			
C5-C8 Unadjusted Aliphatics	42.4	10.0	mg/kg wet	40.00		106	70-130			
C9-C10 Aromatics	10.6	10.0	mg/kg wet	10.00		106	70-130			
C9-C12 Unadjusted Aliphatics	26.0	10.0	mg/kg wet	30.00		87	70-130			
Ethylbenzene	5.14	0.20	mg/kg wet	5.000		103	70-130			
Methyl tert-Butyl Ether	14.7	0.05	mg/kg wet	15.00		98	70-130			
Naphthalene	9.35	0.20	mg/kg wet	10.00		93	70-130			
Toluene	15.7	0.20	mg/kg wet	15.00		105	70-130			
Xylene O	9.99	0.20	mg/kg wet	10.00		100	70-130			
Xylene P,M	20.3	0.40	mg/kg wet	20.00		102	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*4.52*		mg/kg wet	*5.000*		*90*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.80*		mg/kg wet	*5.000*		*96*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.40*		mg/kg wet	*5.333*		*101*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.50*		mg/kg wet	*5.333*		*103*	*70-130*			
LCS Dup										
Benzene	4.93	0.20	mg/kg wet	5.000		99	70-130	0.03	25	
C5-C8 Unadjusted Aliphatics	41.1	10.0	mg/kg wet	40.00		103	70-130	3	25	
C9-C10 Aromatics	10.4	10.0	mg/kg wet	10.00		104	70-130	2	25	
C9-C12 Unadjusted Aliphatics	24.7	10.0	mg/kg wet	30.00		82	70-130	5	25	
Ethylbenzene	5.09	0.20	mg/kg wet	5.000		102	70-130	0.9	25	
Methyl tert-Butyl Ether	15.0	0.05	mg/kg wet	15.00		100	70-130	2	25	
Naphthalene	9.64	0.20	mg/kg wet	10.00		96	70-130	3	25	
Toluene	15.6	0.20	mg/kg wet	15.00		104	70-130	0.4	25	
Xylene O	9.86	0.20	mg/kg wet	10.00		99	70-130	1	25	
Xylene P,M	20.1	0.40	mg/kg wet	20.00		101	70-130	1	25	
Surrogate: 2,5-Dibromotoluene - FID	*4.53*		mg/kg wet	*5.000*		*91*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.76*		mg/kg wet	*5.000*		*95*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.18*		mg/kg wet	*5.333*		*97*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.23*		mg/kg wet	*5.333*		*98*	*70-130*			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0159

Notes and Definitions

Z-04	MeOH - covered
U	Analyte included in the analysis, but not detected
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: Grenier

ESS Laboratory Work Order: 19K0159

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 - KPB/HDM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 19K0159
Date Received: 11/6/2019
Project Due Date: 11/13/2019
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: 3.2 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? No
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:

Collection times not listed on COC

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	409877	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
01	409880	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
02	409876	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
02	409879	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
03	409875	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
03	409878	Yes	NA	Yes	8 oz. Jar - Unpres	NP	

2nd Review
Were all containers scanned into storage/lab? Initials
(Yes) / No
Are barcode labels on correct containers? Yes / No / (NA)
Are all Flashpoint stickers attached/container ID # circled? Yes / No / (NA)
Are all Hex Chrome stickers attached? Yes / No / (NA)
Are all QC stickers attached? Yes / No / (NA)
Are VOA stickers attached if bubbles noted? Yes / No / (NA)

Completed By: Date & Time: 11/6/19 14:32
Reviewed By: Date & Time: 11/6/19 1519
Delivered By: 11/6/19 1579

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____

State where samples were collected from:
MA (RI) CT NH NJ NY ME Other ____

Is this project for any of the following:
MA-MCP Navy USACE Other ____

Reporting Limits: Residential

ESS LAB PROJECT ID: 9K0159

Electronic Deliverable ___ Yes ___ No
Format: Excel__ Access__ PDF__ Other checker

Co. Name	Project #	Project Name (20 Char. or less)
Redwood Env	201942	Granier

Contact Person	Address

City	State	Zip	PO#

Telephone #	Fax #	Email Address

Circle and/or Write Required Analysis

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	8260 624 524.2	8021 MTBE/BTEX	8015 GRO VPH w/targets	8100 TPH	8015 DRO EPH w/PAHs	EPH w/o PAHs	EPH 4 Diesel	8081 Pesticides	8082 PCB	608 Pesticides	608 PCB	8270 SVOA	625	PAH 8270	RCRA5	RCRA8	PP13	TAL23	TCLP-RCRA8	NBC7	MCP-METALS (13)	MCP-METALS (13) w/Hg
1	11/6/19			X	5	201942-mw1-110619					X				X															
2	/			X	5	201942-mw2-110619					X				X																
3	/			X	5	201942-mw3-110619					X				X																
						~~Trip Blank~~ add					~~X~~																				

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present: Yes ___ No
Seals Intact: ___ Yes ___ No NA: ___
Cooler Temp: Ice 3.2

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Preservation Code: 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____

Sampled by: CRH

Comments: Delivered to lab on ice

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
CRanlon	11/6/19 1141		11/6/19 11:40				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

CERTIFICATE OF ANALYSIS

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

RE: Grenier (201942)
ESS Laboratory Work Order Number: 19K0160

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

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: Grenier

ESS Laboratory Work Order: 19K0160

SAMPLE RECEIPT

The following samples were received on November 06, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
19K0160-01	201942-MW1-110619	Soil	8100M, 8260B, 8270D
19K0160-02	201942-MW2-110619	Soil	8082A, 8100M, 8260B
19K0160-03	201942-MW3-110619	Soil	8100M, 8260B, 8270D
19K0160-04	Trip Blank	Soil	8260B

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Methanol

19K0160-02 **Surrogate recovery(ies) above upper control limit (S+).**
1,2-Dichloroethane-d4 (131% @ 70-130%), 4-Bromofluorobenzene (144% @ 70-130%), Dibromofluoromethane (132% @ 70-130%), Toluene-d8 (140% @ 70-130%)

C9K0156-CCV1 **Continuing Calibration %Diff/Drift is above control limit (CD+).**
Acetone (102% @ 30%), Trichlorofluoromethane (54% @ 30%)

CK90829-BS1 **Blank Spike recovery is above upper control limit (B+).**
Acetone (211% @ 70-130%), Trichlorofluoromethane (152% @ 70-130%)

CK90829-BSD1 **Blank Spike recovery is above upper control limit (B+).**
Acetone (189% @ 70-130%), Trichlorofluoromethane (158% @ 70-130%)

8270D Semi-Volatile Organic Compounds

C9K0110-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (61% @ 80-120%), 4,6-Dinitro-2-Methylphenol (87% @ 80-120%), Benzoic Acid (56% @ 80-120%), Pentachlorophenol (102% @ 80-120%)

C9K0110-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
4-Nitrophenol (34% @ 20%), Benzoic Acid (44% @ 20%), N-Nitrosodimethylamine (33% @ 20%)

C9K0114-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (72% @ 80-120%), 4,6-Dinitro-2-Methylphenol (87% @ 80-120%), Benzoic Acid (75% @ 80-120%), Di-n-octylphthalate (100% @ 80-120%), Pentachlorophenol (96% @ 80-120%)

C9K0114-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
2,4-Dinitrophenol (28% @ 20%), 2-Nitroaniline (23% @ 20%), 4-Nitrophenol (33% @ 20%), Benzoic Acid (25% @ 20%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

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: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 93
Initial Volume: 28.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,1,1-Trichloroethane	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,1,2,2-Tetrachloroethane	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,1,2-Trichloroethane	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,1-Dichloroethane	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,1-Dichloroethene	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,1-Dichloropropene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2,3-Trichlorobenzene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2,3-Trichloropropane	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2,4-Trichlorobenzene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2,4-Trimethylbenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2-Dibromo-3-Chloropropane	ND (0.644)	0.129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2-Dibromoethane	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2-Dichlorobenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2-Dichloroethane	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,2-Dichloropropane	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,3,5-Trimethylbenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,3-Dichlorobenzene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,3-Dichloropropane	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,4-Dichlorobenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
1,4-Dioxane - Screen	ND (25.8)	24.5	8260B		1	11/08/19 15:10	C9K0156	CK90829
1-Chlorohexane	ND (0.129)	0.0515	8260B		1	11/08/19 15:10	C9K0156	CK90829
2,2-Dichloropropane	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
2-Butanone	ND (0.644)	0.438	8260B		1	11/08/19 15:10	C9K0156	CK90829
2-Chlorotoluene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
2-Hexanone	ND (0.644)	0.193	8260B		1	11/08/19 15:10	C9K0156	CK90829
4-Chlorotoluene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
4-Isopropyltoluene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
4-Methyl-2-Pentanone	ND (0.644)	0.206	8260B		1	11/08/19 15:10	C9K0156	CK90829
Acetone	ND (0.644)	0.348	8260B		1	11/08/19 15:10	C9K0156	CK90829
Benzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Bromobenzene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 93
Initial Volume: 28.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
Bromodichloromethane	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Bromoform	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Bromomethane	ND (0.129)	0.0515	8260B		1	11/08/19 15:10	C9K0156	CK90829
Carbon Disulfide	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Carbon Tetrachloride	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Chlorobenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Chloroethane	ND (0.129)	0.0515	8260B		1	11/08/19 15:10	C9K0156	CK90829
Chloroform	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Chloromethane	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
cis-1,2-Dichloroethene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
cis-1,3-Dichloropropene	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
Dibromochloromethane	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Dibromomethane	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
Dichlorodifluoromethane	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
Diethyl Ether	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
Di-isopropyl ether	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Ethyl tertiary-butyl ether	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Ethylbenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Hexachlorobutadiene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Isopropylbenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Methyl tert-Butyl Ether	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
Methylene Chloride	ND (0.258)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Naphthalene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
n-Butylbenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
n-Propylbenzene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
sec-Butylbenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Styrene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
tert-Butylbenzene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Tertiary-amyl methyl ether	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Tetrachloroethene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Tetrahydrofuran	ND (0.644)	0.206	8260B		1	11/08/19 15:10	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 93
Initial Volume: 28.1
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Toluene	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
trans-1,2-Dichloroethene	ND (0.129)	0.0386	8260B		1	11/08/19 15:10	C9K0156	CK90829
trans-1,3-Dichloropropene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Trichloroethene	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Trichlorofluoromethane	ND (0.129)	0.0515	8260B		1	11/08/19 15:10	C9K0156	CK90829
Vinyl Acetate	ND (0.129)	0.0644	8260B		1	11/08/19 15:10	C9K0156	CK90829
Vinyl Chloride	ND (0.129)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Xylene O	ND (0.129)	0.0129	8260B		1	11/08/19 15:10	C9K0156	CK90829
Xylene P,M	ND (0.258)	0.0258	8260B		1	11/08/19 15:10	C9K0156	CK90829
Xylenes (Total)	ND (0.258)		8260B		1	11/08/19 15:10		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*107 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*117 %*		*70-130*
Surrogate: Dibromofluoromethane	*111 %*		*70-130*
Surrogate: Toluene-d8	*113 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 93
Initial Volume: 19.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 11/6/19 20:47

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	ND (41.2)		8100M		1	11/07/19 14:27	C9K0122	CK90613

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*90 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 93
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/6/19 20:47

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
1,2,4-Trichlorobenzene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
1,2-Dichlorobenzene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
1,3-Dichlorobenzene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
1,4-Dichlorobenzene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,3,4,6-Tetrachlorophenol	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,4,5-Trichlorophenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,4,6-Trichlorophenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,4-Dichlorophenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,4-Dimethylphenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,4-Dinitrophenol	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,4-Dinitrotoluene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2,6-Dinitrotoluene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2-Chloronaphthalene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2-Chlorophenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2-Methylnaphthalene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2-Methylphenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2-Nitroaniline	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
2-Nitrophenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
3,3′-Dichlorobenzidine	ND (0.730)		8270D		1	11/07/19 19:47	C9K0114	CK90612
3+4-Methylphenol	ND (0.730)		8270D		1	11/07/19 19:47	C9K0114	CK90612
3-Nitroaniline	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
4,6-Dinitro-2-Methylphenol	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612
4-Bromophenyl-phenylether	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
4-Chloro-3-Methylphenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
4-Chloroaniline	ND (0.730)		8270D		1	11/07/19 19:47	C9K0114	CK90612
4-Chloro-phenyl-phenyl ether	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
4-Nitroaniline	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
4-Nitrophenol	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Acenaphthene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Acenaphthylene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Acetophenone	ND (0.730)		8270D		1	11/07/19 19:47	C9K0114	CK90612

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 93
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/6/19 20:47

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aniline	ND (0.730)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Anthracene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Azobenzene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Benzo(a)anthracene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Benzo(a)pyrene	ND (0.183)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Benzo(b)fluoranthene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Benzo(g,h,i)perylene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Benzo(k)fluoranthene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Benzoic Acid	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Benzyl Alcohol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
bis(2-Chloroethoxy)methane	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
bis(2-Chloroethyl)ether	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
bis(2-chloroisopropyl)Ether	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
bis(2-Ethylhexyl)phthalate	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Butylbenzylphthalate	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Carbazole	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Chrysene	ND (0.183)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Dibenzo(a,h)Anthracene	ND (0.183)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Dibenzofuran	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Diethylphthalate	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Dimethylphthalate	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Di-n-butylphthalate	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Di-n-octylphthalate	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Fluoranthene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Fluorene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Hexachlorobenzene	ND (0.183)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Hexachlorobutadiene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Hexachlorocyclopentadiene	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Hexachloroethane	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Indeno(1,2,3-cd)Pyrene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Isophorone	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Naphthalene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 93
Initial Volume: 14.7
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/6/19 20:47

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Nitrobenzene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
N-Nitrosodimethylamine	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
N-Nitroso-Di-n-Propylamine	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
N-nitrosodiphenylamine	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Pentachlorophenol	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Phenanthrene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Phenol	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Pyrene	ND (0.364)		8270D		1	11/07/19 19:47	C9K0114	CK90612
Pyridine	ND (1.83)		8270D		1	11/07/19 19:47	C9K0114	CK90612

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*78 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*94 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*83 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*75 %*		*30-130*
Surrogate: 2-Fluorophenol	*79 %*		*30-130*
Surrogate: Nitrobenzene-d5	*73 %*		*30-130*
Surrogate: Phenol-d6	*83 %*		*30-130*
Surrogate: p-Terphenyl-d14	*87 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 89
Initial Volume: 24.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,1,1-Trichloroethane	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,1,2,2-Tetrachloroethane	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,1,2-Trichloroethane	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,1-Dichloroethane	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,1-Dichloroethene	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,1-Dichloropropene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2,3-Trichlorobenzene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2,3-Trichloropropane	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2,4-Trichlorobenzene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2,4-Trimethylbenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2-Dibromo-3-Chloropropane	ND (0.809)	0.162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2-Dibromoethane	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2-Dichlorobenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2-Dichloroethane	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,2-Dichloropropane	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,3,5-Trimethylbenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,3-Dichlorobenzene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,3-Dichloropropane	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,4-Dichlorobenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
1,4-Dioxane - Screen	ND (32.3)	30.7	8260B		1	11/08/19 15:36	C9K0156	CK90829
1-Chlorohexane	ND (0.162)	0.0647	8260B		1	11/08/19 15:36	C9K0156	CK90829
2,2-Dichloropropane	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
2-Butanone	ND (0.809)	0.550	8260B		1	11/08/19 15:36	C9K0156	CK90829
2-Chlorotoluene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
2-Hexanone	ND (0.809)	0.243	8260B		1	11/08/19 15:36	C9K0156	CK90829
4-Chlorotoluene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
4-Isopropyltoluene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
4-Methyl-2-Pentanone	ND (0.809)	0.259	8260B		1	11/08/19 15:36	C9K0156	CK90829
Acetone	ND (0.809)	0.437	8260B		1	11/08/19 15:36	C9K0156	CK90829
Benzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Bromobenzene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 89
Initial Volume: 24.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
Bromodichloromethane	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Bromoform	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Bromomethane	ND (0.162)	0.0647	8260B		1	11/08/19 15:36	C9K0156	CK90829
Carbon Disulfide	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Carbon Tetrachloride	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Chlorobenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Chloroethane	ND (0.162)	0.0647	8260B		1	11/08/19 15:36	C9K0156	CK90829
Chloroform	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Chloromethane	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
cis-1,2-Dichloroethene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
cis-1,3-Dichloropropene	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
Dibromochloromethane	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Dibromomethane	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
Dichlorodifluoromethane	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
Diethyl Ether	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
Di-isopropyl ether	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Ethyl tertiary-butyl ether	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Ethylbenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Hexachlorobutadiene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Isopropylbenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Methyl tert-Butyl Ether	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
Methylene Chloride	ND (0.323)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Naphthalene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
n-Butylbenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
n-Propylbenzene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
sec-Butylbenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Styrene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
tert-Butylbenzene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Tertiary-amyl methyl ether	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Tetrachloroethene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Tetrahydrofuran	ND (0.809)	0.259	8260B		1	11/08/19 15:36	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 89
Initial Volume: 24.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Toluene	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
trans-1,2-Dichloroethene	ND (0.162)	0.0485	8260B		1	11/08/19 15:36	C9K0156	CK90829
trans-1,3-Dichloropropene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Trichloroethene	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Trichlorofluoromethane	ND (0.162)	0.0647	8260B		1	11/08/19 15:36	C9K0156	CK90829
Vinyl Acetate	ND (0.162)	0.0809	8260B		1	11/08/19 15:36	C9K0156	CK90829
Vinyl Chloride	ND (0.162)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Xylene O	ND (0.162)	0.0162	8260B		1	11/08/19 15:36	C9K0156	CK90829
Xylene P,M	ND (0.323)	0.0323	8260B		1	11/08/19 15:36	C9K0156	CK90829
Xylenes (Total)	ND (0.323)		8260B		1	11/08/19 15:36		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*131 %*	*S+*	*70-130*
Surrogate: 4-Bromofluorobenzene	*144 %*	*S+*	*70-130*
Surrogate: Dibromofluoromethane	*132 %*	*S+*	*70-130*
Surrogate: Toluene-d8	*140 %*	*S+*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 89
Initial Volume: 20.8
Final Volume: 10
Extraction Method: 3540C

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MJV
Prepared: 11/7/19 15:45

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1221	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1232	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1242	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1248	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1254	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1260	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1262	ND (0.05)		8082A		1	11/12/19 9:17		CK90702
Aroclor 1268	ND (0.05)		8082A		1	11/12/19 9:17		CK90702

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*58 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*67 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*70 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*77 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 89
Initial Volume: 19.5
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 11/6/19 20:47

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	ND (43.4)		8100M		1	11/07/19 14:59	C9K0122	CK90613

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*91 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 27.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,1,1-Trichloroethane	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,1,2,2-Tetrachloroethane	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,1,2-Trichloroethane	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,1-Dichloroethane	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,1-Dichloroethene	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,1-Dichloropropene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2,3-Trichlorobenzene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2,3-Trichloropropane	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2,4-Trichlorobenzene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2,4-Trimethylbenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2-Dibromo-3-Chloropropane	ND (0.561)	0.112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2-Dibromoethane	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2-Dichlorobenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2-Dichloroethane	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,2-Dichloropropane	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,3,5-Trimethylbenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,3-Dichlorobenzene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,3-Dichloropropane	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,4-Dichlorobenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
1,4-Dioxane - Screen	ND (22.4)	21.3	8260B		1	11/08/19 16:03	C9K0156	CK90829
1-Chlorohexane	ND (0.112)	0.0448	8260B		1	11/08/19 16:03	C9K0156	CK90829
2,2-Dichloropropane	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
2-Butanone	ND (0.561)	0.381	8260B		1	11/08/19 16:03	C9K0156	CK90829
2-Chlorotoluene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
2-Hexanone	ND (0.561)	0.168	8260B		1	11/08/19 16:03	C9K0156	CK90829
4-Chlorotoluene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
4-Isopropyltoluene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
4-Methyl-2-Pentanone	ND (0.561)	0.179	8260B		1	11/08/19 16:03	C9K0156	CK90829
Acetone	ND (0.561)	0.303	8260B		1	11/08/19 16:03	C9K0156	CK90829
Benzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Bromobenzene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 27.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
Bromodichloromethane	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Bromoform	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Bromomethane	ND (0.112)	0.0448	8260B		1	11/08/19 16:03	C9K0156	CK90829
Carbon Disulfide	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Carbon Tetrachloride	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Chlorobenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Chloroethane	ND (0.112)	0.0448	8260B		1	11/08/19 16:03	C9K0156	CK90829
Chloroform	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Chloromethane	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
cis-1,2-Dichloroethene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
cis-1,3-Dichloropropene	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
Dibromochloromethane	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Dibromomethane	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
Dichlorodifluoromethane	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
Diethyl Ether	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
Di-isopropyl ether	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Ethyl tertiary-butyl ether	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Ethylbenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Hexachlorobutadiene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Isopropylbenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Methyl tert-Butyl Ether	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
Methylene Chloride	ND (0.224)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Naphthalene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
n-Butylbenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
n-Propylbenzene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
sec-Butylbenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Styrene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
tert-Butylbenzene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Tertiary-amyl methyl ether	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Tetrachloroethene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Tetrahydrofuran	ND (0.561)	0.179	8260B		1	11/08/19 16:03	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 27.9
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Toluene	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
trans-1,2-Dichloroethene	ND (0.112)	0.0336	8260B		1	11/08/19 16:03	C9K0156	CK90829
trans-1,3-Dichloropropene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Trichloroethene	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Trichlorofluoromethane	ND (0.112)	0.0448	8260B		1	11/08/19 16:03	C9K0156	CK90829
Vinyl Acetate	ND (0.112)	0.0561	8260B		1	11/08/19 16:03	C9K0156	CK90829
Vinyl Chloride	ND (0.112)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Xylene O	ND (0.112)	0.0112	8260B		1	11/08/19 16:03	C9K0156	CK90829
Xylene P,M	ND (0.224)	0.0224	8260B		1	11/08/19 16:03	C9K0156	CK90829
Xylenes (Total)	ND (0.224)		8260B		1	11/08/19 16:03		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*100 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*110 %*		*70-130*
Surrogate: Dibromofluoromethane	*103 %*		*70-130*
Surrogate: Toluene-d8	*107 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 19
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: CAD
Prepared: 11/7/19 13:58

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons	ND (40.1)		8100M		1	11/07/19 20:55	C9K0122	CK90708

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*77 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/6/19 20:47

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
1,2,4-Trichlorobenzene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
1,2-Dichlorobenzene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
1,3-Dichlorobenzene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
1,4-Dichlorobenzene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,3,4,6-Tetrachlorophenol	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,4,5-Trichlorophenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,4,6-Trichlorophenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,4-Dichlorophenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,4-Dimethylphenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,4-Dinitrophenol	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,4-Dinitrotoluene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2,6-Dinitrotoluene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2-Chloronaphthalene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2-Chlorophenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2-Methylnaphthalene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2-Methylphenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2-Nitroaniline	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
2-Nitrophenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
3,3′-Dichlorobenzidine	ND (0.659)		8270D		1	11/07/19 20:14	C9K0114	CK90612
3+4-Methylphenol	ND (0.659)		8270D		1	11/07/19 20:14	C9K0114	CK90612
3-Nitroaniline	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
4,6-Dinitro-2-Methylphenol	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612
4-Bromophenyl-phenylether	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
4-Chloro-3-Methylphenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
4-Chloroaniline	ND (0.659)		8270D		1	11/07/19 20:14	C9K0114	CK90612
4-Chloro-phenyl-phenyl ether	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
4-Nitroaniline	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
4-Nitrophenol	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Acenaphthene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Acenaphthylene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Acetophenone	ND (0.659)		8270D		1	11/07/19 20:14	C9K0114	CK90612

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/6/19 20:47

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aniline	ND (0.659)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Anthracene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Azobenzene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Benzo(a)anthracene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Benzo(a)pyrene	ND (0.165)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Benzo(b)fluoranthene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Benzo(g,h,i)perylene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Benzo(k)fluoranthene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Benzoic Acid	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Benzyl Alcohol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
bis(2-Chloroethoxy)methane	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
bis(2-Chloroethyl)ether	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
bis(2-chloroisopropyl)Ether	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
bis(2-Ethylhexyl)phthalate	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Butylbenzylphthalate	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Carbazole	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Chrysene	ND (0.165)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Dibenzo(a,h)Anthracene	ND (0.165)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Dibenzofuran	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Diethylphthalate	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Dimethylphthalate	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Di-n-butylphthalate	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Di-n-octylphthalate	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Fluoranthene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Fluorene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Hexachlorobenzene	ND (0.165)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Hexachlorobutadiene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Hexachlorocyclopentadiene	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Hexachloroethane	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Indeno(1,2,3-cd)Pyrene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Isophorone	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Naphthalene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110619
Date Sampled: 11/06/19 00:00
Percent Solids: 99
Initial Volume: 15.4
Final Volume: 0.5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 11/6/19 20:47

8270D Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Nitrobenzene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
N-Nitrosodimethylamine	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
N-Nitroso-Di-n-Propylamine	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
N-nitrosodiphenylamine	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Pentachlorophenol	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Phenanthrene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Phenol	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Pyrene	ND (0.329)		8270D		1	11/07/19 20:14	C9K0114	CK90612
Pyridine	ND (1.65)		8270D		1	11/07/19 20:14	C9K0114	CK90612

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*79 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*78 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*78 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*76 %*		*30-130*
Surrogate: 2-Fluorophenol	*70 %*		*30-130*
Surrogate: Nitrobenzene-d5	*74 %*		*30-130*
Surrogate: Phenol-d6	*76 %*		*30-130*
Surrogate: p-Terphenyl-d14	*86 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: Trip Blank
Date Sampled: 11/06/19 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-04
Sample Matrix: Soil
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,1,1-Trichloroethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,1,2,2-Tetrachloroethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,1,2-Trichloroethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,1-Dichloroethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,1-Dichloroethene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,1-Dichloropropene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2,3-Trichlorobenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2,3-Trichloropropane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2,4-Trichlorobenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2,4-Trimethylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2-Dibromo-3-Chloropropane	ND (1.00)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2-Dibromoethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2-Dichlorobenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2-Dichloroethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,2-Dichloropropane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,3,5-Trimethylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,3-Dichlorobenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,3-Dichloropropane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,4-Dichlorobenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1,4-Dioxane - Screen	ND (40.0)		8260B		1	11/08/19 12:32	C9K0156	CK90829
1-Chlorohexane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
2,2-Dichloropropane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
2-Butanone	ND (1.00)		8260B		1	11/08/19 12:32	C9K0156	CK90829
2-Chlorotoluene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
2-Hexanone	ND (1.00)		8260B		1	11/08/19 12:32	C9K0156	CK90829
4-Chlorotoluene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
4-Isopropyltoluene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
4-Methyl-2-Pentanone	ND (1.00)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Acetone	ND (1.00)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Benzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Bromobenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: Trip Blank
Date Sampled: 11/06/19 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-04
Sample Matrix: Soil
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Bromodichloromethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Bromoform	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Bromomethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Carbon Disulfide	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Carbon Tetrachloride	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Chlorobenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Chloroethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Chloroform	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Chloromethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
cis-1,2-Dichloroethene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
cis-1,3-Dichloropropene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Dibromochloromethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Dibromomethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Dichlorodifluoromethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Diethyl Ether	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Di-isopropyl ether	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Ethyl tertiary-butyl ether	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Ethylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Hexachlorobutadiene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Isopropylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Methyl tert-Butyl Ether	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Methylene Chloride	ND (0.400)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Naphthalene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
n-Butylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
n-Propylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
sec-Butylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Styrene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
tert-Butylbenzene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Tertiary-amyl methyl ether	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Tetrachloroethene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Tetrahydrofuran	ND (1.00)		8260B		1	11/08/19 12:32	C9K0156	CK90829

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: Trip Blank
Date Sampled: 11/06/19 00:00
Percent Solids: N/A
Initial Volume: 15
Final Volume: 15
Extraction Method: 5035

ESS Laboratory Work Order: 19K0160
ESS Laboratory Sample ID: 19K0160-04
Sample Matrix: Soil
Units: mg/kg
Analyst: MD

5035/8260B Volatile Organic Compounds / Methanol

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Toluene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
trans-1,2-Dichloroethene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
trans-1,3-Dichloropropene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Trichloroethene	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Trichlorofluoromethane	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Vinyl Acetate	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Vinyl Chloride	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Xylene O	ND (0.200)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Xylene P,M	ND (0.400)		8260B		1	11/08/19 12:32	C9K0156	CK90829
Xylenes (Total)	ND (0.600)		8260B		0	11/08/19 12:32	C9K0156	CK90829

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*106 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*120 %*		*70-130*
Surrogate: Dibromofluoromethane	*108 %*		*70-130*
Surrogate: Toluene-d8	*116 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CK90829 - 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: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CK90829 - 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	ND	0.200	mg/kg wet							
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	*4.73*		mg/kg wet	*5.000*		*95*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*5.11*		mg/kg wet	*5.000*		*102*	*70-130*			
Surrogate: Dibromofluoromethane	*4.74*		mg/kg wet	*5.000*		*95*	*70-130*			
Surrogate: Toluene-d8	*5.07*		mg/kg wet	*5.000*		*101*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	1.99	0.200	mg/kg wet	2.000		100	70-130			
1,1,1-Trichloroethane	1.91	0.200	mg/kg wet	2.000		96	70-130			
1,1,2,2-Tetrachloroethane	1.88	0.200	mg/kg wet	2.000		94	70-130			
1,1,2-Trichloroethane	1.97	0.200	mg/kg wet	2.000		99	70-130			
1,1-Dichloroethane	1.96	0.200	mg/kg wet	2.000		98	70-130			
1,1-Dichloroethene	2.04	0.200	mg/kg wet	2.000		102	70-130			
1,1-Dichloropropene	2.02	0.200	mg/kg wet	2.000		101	70-130			
1,2,3-Trichlorobenzene	1.99	0.200	mg/kg wet	2.000		100	70-130			
1,2,3-Trichloropropane	1.73	0.200	mg/kg wet	2.000		87	70-130			
1,2,4-Trichlorobenzene	2.08	0.200	mg/kg wet	2.000		104	70-130			
1,2,4-Trimethylbenzene	2.11	0.200	mg/kg wet	2.000		105	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CK90829 - 5035										
1,2-Dibromo-3-Chloropropane	2.03	1.00	mg/kg wet	2.000		102	70-130			
1,2-Dibromoethane	2.04	0.200	mg/kg wet	2.000		102	70-130			
1,2-Dichlorobenzene	1.95	0.200	mg/kg wet	2.000		97	70-130			
1,2-Dichloroethane	1.87	0.200	mg/kg wet	2.000		93	70-130			
1,2-Dichloropropane	1.96	0.200	mg/kg wet	2.000		98	70-130			
1,3,5-Trimethylbenzene	2.05	0.200	mg/kg wet	2.000		102	70-130			
1,3-Dichlorobenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
1,3-Dichloropropane	1.95	0.200	mg/kg wet	2.000		98	70-130			
1,4-Dichlorobenzene	1.99	0.200	mg/kg wet	2.000		100	70-130			
1,4-Dioxane - Screen	54.6	40.0	mg/kg wet	40.00		137	44-241			
1-Chlorohexane	1.93	0.200	mg/kg wet	2.000		97	70-130			
2,2-Dichloropropane	1.90	0.200	mg/kg wet	2.000		95	70-130			
2-Butanone	9.15	1.00	mg/kg wet	10.00		92	70-130			
2-Chlorotoluene	1.90	0.200	mg/kg wet	2.000		95	70-130			
2-Hexanone	9.65	1.00	mg/kg wet	10.00		96	70-130			
4-Chlorotoluene	1.98	0.200	mg/kg wet	2.000		99	70-130			
4-Isopropyltoluene	2.07	0.200	mg/kg wet	2.000		103	70-130			
4-Methyl-2-Pentanone	9.31	1.00	mg/kg wet	10.00		93	70-130			
Acetone	21.1	1.00	mg/kg wet	10.00		211	70-130			B+
Benzene	1.92	0.200	mg/kg wet	2.000		96	70-130			
Bromobenzene	2.08	0.200	mg/kg wet	2.000		104	70-130			
Bromochloromethane	1.86	0.200	mg/kg wet	2.000		93	70-130			
Bromodichloromethane	1.92	0.200	mg/kg wet	2.000		96	70-130			
Bromoform	2.09	0.200	mg/kg wet	2.000		104	70-130			
Bromomethane	2.12	0.200	mg/kg wet	2.000		106	70-130			
Carbon Disulfide	2.01	0.200	mg/kg wet	2.000		100	70-130			
Carbon Tetrachloride	1.94	0.200	mg/kg wet	2.000		97	70-130			
Chlorobenzene	1.91	0.200	mg/kg wet	2.000		95	70-130			
Chloroethane	1.51	0.200	mg/kg wet	2.000		75	70-130			
Chloroform	1.95	0.200	mg/kg wet	2.000		98	70-130			
Chloromethane	2.16	0.200	mg/kg wet	2.000		108	70-130			
cis-1,2-Dichloroethene	1.93	0.200	mg/kg wet	2.000		97	70-130			
cis-1,3-Dichloropropene	1.97	0.200	mg/kg wet	2.000		99	70-130			
Dibromochloromethane	2.08	0.200	mg/kg wet	2.000		104	70-130			
Dibromomethane	1.92	0.200	mg/kg wet	2.000		96	70-130			
Dichlorodifluoromethane	1.48	0.200	mg/kg wet	2.000		74	70-130			
Diethyl Ether	2.48	0.200	mg/kg wet	2.000		124	70-130			
Di-isopropyl ether	1.97	0.200	mg/kg wet	2.000		99	70-130			
Ethyl tertiary-butyl ether	1.93	0.200	mg/kg wet	2.000		96	70-130			
Ethylbenzene	1.94	0.200	mg/kg wet	2.000		97	70-130			
Hexachlorobutadiene	2.17	0.200	mg/kg wet	2.000		109	70-130			
Isopropylbenzene	1.98	0.200	mg/kg wet	2.000		99	70-130			
Methyl tert-Butyl Ether	1.99	0.200	mg/kg wet	2.000		100	70-130			
Methylene Chloride	1.77	0.400	mg/kg wet	2.000		88	70-130			
Naphthalene	2.02	0.200	mg/kg wet	2.000		101	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CK90829 - 5035										
n-Butylbenzene	2.04	0.200	mg/kg wet	2.000		102	70-130			
n-Propylbenzene	1.97	0.200	mg/kg wet	2.000		99	70-130			
sec-Butylbenzene	1.94	0.200	mg/kg wet	2.000		97	70-130			
Styrene	1.96	0.200	mg/kg wet	2.000		98	70-130			
tert-Butylbenzene	2.01	0.200	mg/kg wet	2.000		101	70-130			
Tertiary-amyl methyl ether	2.05	0.200	mg/kg wet	2.000		102	70-130			
Tetrachloroethene	1.71	0.200	mg/kg wet	2.000		85	70-130			
Tetrahydrofuran	1.94	1.00	mg/kg wet	2.000		97	70-130			
Toluene	1.90	0.200	mg/kg wet	2.000		95	70-130			
trans-1,2-Dichloroethene	1.97	0.200	mg/kg wet	2.000		99	70-130			
trans-1,3-Dichloropropene	1.91	0.200	mg/kg wet	2.000		96	70-130			
Trichloroethene	1.92	0.200	mg/kg wet	2.000		96	70-130			
Trichlorofluoromethane	3.05	0.200	mg/kg wet	2.000		152	70-130			B+
Vinyl Acetate	2.07	0.200	mg/kg wet	2.000		104	70-130			
Vinyl Chloride	1.93	0.200	mg/kg wet	2.000		96	70-130			
Xylene O	2.06	0.200	mg/kg wet	2.000		103	70-130			
Xylene P,M	3.94	0.400	mg/kg wet	4.000		98	70-130			
Surrogate: 1,2-Dichloroethane-d4	*4.49*		mg/kg wet	*5.000*		*90*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*5.10*		mg/kg wet	*5.000*		*102*	*70-130*			
Surrogate: Dibromofluoromethane	*4.51*		mg/kg wet	*5.000*		*90*	*70-130*			
Surrogate: Toluene-d8	*4.88*		mg/kg wet	*5.000*		*98*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	1.97	0.200	mg/kg wet	2.000		99	70-130	0.9	25	
1,1,1-Trichloroethane	2.02	0.200	mg/kg wet	2.000		101	70-130	5	25	
1,1,2,2-Tetrachloroethane	1.91	0.200	mg/kg wet	2.000		96	70-130	1	25	
1,1,2-Trichloroethane	1.91	0.200	mg/kg wet	2.000		95	70-130	3	25	
1,1-Dichloroethane	2.00	0.200	mg/kg wet	2.000		100	70-130	2	25	
1,1-Dichloroethene	2.11	0.200	mg/kg wet	2.000		106	70-130	3	25	
1,1-Dichloropropene	2.15	0.200	mg/kg wet	2.000		107	70-130	6	25	
1,2,3-Trichlorobenzene	1.95	0.200	mg/kg wet	2.000		98	70-130	2	25	
1,2,3-Trichloropropane	1.74	0.200	mg/kg wet	2.000		87	70-130	0.2	25	
1,2,4-Trichlorobenzene	2.07	0.200	mg/kg wet	2.000		104	70-130	0.3	25	
1,2,4-Trimethylbenzene	2.16	0.200	mg/kg wet	2.000		108	70-130	2	25	
1,2-Dibromo-3-Chloropropane	1.86	1.00	mg/kg wet	2.000		93	70-130	9	25	
1,2-Dibromoethane	2.02	0.200	mg/kg wet	2.000		101	70-130	1	25	
1,2-Dichlorobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	3	25	
1,2-Dichloroethane	1.93	0.200	mg/kg wet	2.000		96	70-130	3	25	
1,2-Dichloropropane	1.84	0.200	mg/kg wet	2.000		92	70-130	6	25	
1,3,5-Trimethylbenzene	2.07	0.200	mg/kg wet	2.000		104	70-130	1	25	
1,3-Dichlorobenzene	2.04	0.200	mg/kg wet	2.000		102	70-130	3	25	
1,3-Dichloropropane	1.98	0.200	mg/kg wet	2.000		99	70-130	1	25	
1,4-Dichlorobenzene	2.00	0.200	mg/kg wet	2.000		100	70-130	0.4	25	
1,4-Dioxane - Screen	51.2	40.0	mg/kg wet	40.00		128	44-241	6	200	
1-Chlorohexane	2.06	0.200	mg/kg wet	2.000		103	70-130	6	25	
2,2-Dichloropropane	2.02	0.200	mg/kg wet	2.000		101	70-130	6	25	

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CK90829 - 5035										
2-Butanone	8.89	1.00	mg/kg wet	10.00		89	70-130	3	25	
2-Chlorotoluene	1.98	0.200	mg/kg wet	2.000		99	70-130	4	25	
2-Hexanone	9.03	1.00	mg/kg wet	10.00		90	70-130	7	25	
4-Chlorotoluene	2.01	0.200	mg/kg wet	2.000		100	70-130	2	25	
4-Isopropyltoluene	2.09	0.200	mg/kg wet	2.000		104	70-130	1	25	
4-Methyl-2-Pentanone	8.65	1.00	mg/kg wet	10.00		86	70-130	7	25	
Acetone	18.9	1.00	mg/kg wet	10.00		189	70-130	11	25	B+
Benzene	1.93	0.200	mg/kg wet	2.000		97	70-130	0.8	25	
Bromobenzene	2.19	0.200	mg/kg wet	2.000		109	70-130	5	25	
Bromochloromethane	1.94	0.200	mg/kg wet	2.000		97	70-130	4	25	
Bromodichloromethane	1.98	0.200	mg/kg wet	2.000		99	70-130	3	25	
Bromoform	2.04	0.200	mg/kg wet	2.000		102	70-130	2	25	
Bromomethane	2.27	0.200	mg/kg wet	2.000		114	70-130	7	25	
Carbon Disulfide	1.98	0.200	mg/kg wet	2.000		99	70-130	1	25	
Carbon Tetrachloride	2.07	0.200	mg/kg wet	2.000		104	70-130	7	25	
Chlorobenzene	1.96	0.200	mg/kg wet	2.000		98	70-130	3	25	
Chloroethane	1.65	0.200	mg/kg wet	2.000		82	70-130	9	25	
Chloroform	1.97	0.200	mg/kg wet	2.000		98	70-130	0.9	25	
Chloromethane	2.20	0.200	mg/kg wet	2.000		110	70-130	2	25	
cis-1,2-Dichloroethene	1.99	0.200	mg/kg wet	2.000		100	70-130	3	25	
cis-1,3-Dichloropropene	1.96	0.200	mg/kg wet	2.000		98	70-130	0.7	25	
Dibromochloromethane	2.06	0.200	mg/kg wet	2.000		103	70-130	1	25	
Dibromomethane	1.96	0.200	mg/kg wet	2.000		98	70-130	2	25	
Dichlorodifluoromethane	1.53	0.200	mg/kg wet	2.000		77	70-130	3	25	
Diethyl Ether	2.47	0.200	mg/kg wet	2.000		124	70-130	0.3	25	
Di-isopropyl ether	1.93	0.200	mg/kg wet	2.000		96	70-130	2	25	
Ethyl tertiary-butyl ether	2.01	0.200	mg/kg wet	2.000		100	70-130	4	25	
Ethylbenzene	2.03	0.200	mg/kg wet	2.000		102	70-130	5	25	
Hexachlorobutadiene	2.16	0.200	mg/kg wet	2.000		108	70-130	0.6	25	
Isopropylbenzene	2.06	0.200	mg/kg wet	2.000		103	70-130	4	25	
Methyl tert-Butyl Ether	1.95	0.200	mg/kg wet	2.000		97	70-130	2	25	
Methylene Chloride	1.90	0.400	mg/kg wet	2.000		95	70-130	7	25	
Naphthalene	1.93	0.200	mg/kg wet	2.000		97	70-130	5	25	
n-Butylbenzene	2.04	0.200	mg/kg wet	2.000		102	70-130	0.3	25	
n-Propylbenzene	2.02	0.200	mg/kg wet	2.000		101	70-130	2	25	
sec-Butylbenzene	2.04	0.200	mg/kg wet	2.000		102	70-130	5	25	
Styrene	2.03	0.200	mg/kg wet	2.000		102	70-130	4	25	
tert-Butylbenzene	2.06	0.200	mg/kg wet	2.000		103	70-130	2	25	
Tertiary-amyl methyl ether	1.96	0.200	mg/kg wet	2.000		98	70-130	4	25	
Tetrachloroethene	1.77	0.200	mg/kg wet	2.000		88	70-130	4	25	
Tetrahydrofuran	1.87	1.00	mg/kg wet	2.000		93	70-130	4	25	
Toluene	1.93	0.200	mg/kg wet	2.000		97	70-130	2	25	
trans-1,2-Dichloroethene	2.02	0.200	mg/kg wet	2.000		101	70-130	2	25	
trans-1,3-Dichloropropene	2.03	0.200	mg/kg wet	2.000		101	70-130	6	25	
Trichloroethene	1.92	0.200	mg/kg wet	2.000		96	70-130	0	25	

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Client Name: Redwood Environmental Group
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
5035/8260B Volatile Organic Compounds / Methanol										
Batch CK90829 - 5035										
Trichlorofluoromethane	3.16	0.200	mg/kg wet	2.000		158	70-130	3	25	B+
Vinyl Acetate	2.07	0.200	mg/kg wet	2.000		104	70-130	0	25	
Vinyl Chloride	2.03	0.200	mg/kg wet	2.000		102	70-130	5	25	
Xylene O	2.06	0.200	mg/kg wet	2.000		103	70-130	0.3	25	
Xylene P,M	4.11	0.400	mg/kg wet	4.000		103	70-130	4	25	
Surrogate: 1,2-Dichloroethane-d4	*4.58*		mg/kg wet	*5.000*		*92*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*5.37*		mg/kg wet	*5.000*		*107*	*70-130*			
Surrogate: Dibromofluoromethane	*4.75*		mg/kg wet	*5.000*		*95*	*70-130*			
Surrogate: Toluene-d8	*5.05*		mg/kg wet	*5.000*		*101*	*70-130*			
8082A Polychlorinated Biphenyls (PCB)										
Batch CK90702 - 3540C										
Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0182*		mg/kg wet	*0.02500*		*73*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0202*		mg/kg wet	*0.02500*		*81*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0167*		mg/kg wet	*0.02500*		*67*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0180*		mg/kg wet	*0.02500*		*72*	*30-150*			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		82	40-140			
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		87	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		77	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		83	40-140			
Surrogate: Decachlorobiphenyl	*0.0184*		mg/kg wet	*0.02500*		*74*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0199*		mg/kg wet	*0.02500*		*80*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0171*		mg/kg wet	*0.02500*		*68*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch CK90702 - 3540C										
Surrogate: Tetrachloro-m-xylene [2C]	*0.0174*		mg/kg wet	*0.02500*		*69*	*30-150*			
LCS Dup										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		86	40-140	5	30	
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		91	40-140	4	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		82	40-140	5	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		88	40-140	6	30	
Surrogate: Decachlorobiphenyl	*0.0196*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0212*		mg/kg wet	*0.02500*		*85*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0179*		mg/kg wet	*0.02500*		*71*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0182*		mg/kg wet	*0.02500*		*73*	*30-150*			
8100M Total Petroleum Hydrocarbons										
Batch CK90613 - 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	*4.21*		mg/kg wet	*5.000*		*84*	*40-140*			
LCS										
Decane (C10)	1.8	0.2	mg/kg wet	2.500		71	40-140			
Docosane (C22)	2.3	0.2	mg/kg wet	2.500		91	40-140			
Dodecane (C12)	1.8	0.2	mg/kg wet	2.500		74	40-140			
Eicosane (C20)	2.2	0.2	mg/kg wet	2.500		89	40-140			
Hexacosane (C26)	2.3	0.2	mg/kg wet	2.500		91	40-140			
Hexadecane (C16)	2.0	0.2	mg/kg wet	2.500		79	40-140			
Nonadecane (C19)	2.4	0.2	mg/kg wet	2.500		96	40-140			
Nonane (C9)	1.6	0.2	mg/kg wet	2.500		63	30-140			
Octacosane (C28)	2.3	0.2	mg/kg wet	2.500		91	40-140			
Octadecane (C18)	2.1	0.2	mg/kg wet	2.500		84	40-140			
Tetracosane (C24)	2.3	0.2	mg/kg wet	2.500		91	40-140			
Tetradecane (C14)	1.9	0.2	mg/kg wet	2.500		77	40-140			

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Quality Control Data

8100M Total Petroleum Hydrocarbons

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Batch CK90613 - 3546										
Total Petroleum Hydrocarbons	29.7	37.5	mg/kg wet	35.00		85	40-140			
Triacontane (C30)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Surrogate: O-Terphenyl	*4.16*		mg/kg wet	*5.000*		*83*	*40-140*			
LCS Dup										
Decane (C10)	1.8	0.2	mg/kg wet	2.500		72	40-140	1	25	
Docosane (C22)	2.3	0.2	mg/kg wet	2.500		92	40-140	1	25	
Dodecane (C12)	1.9	0.2	mg/kg wet	2.500		77	40-140	4	25	
Eicosane (C20)	2.3	0.2	mg/kg wet	2.500		90	40-140	2	25	
Hexacosane (C26)	2.3	0.2	mg/kg wet	2.500		92	40-140	1	25	
Hexadecane (C16)	2.1	0.2	mg/kg wet	2.500		83	40-140	6	25	
Nonadecane (C19)	2.5	0.2	mg/kg wet	2.500		99	40-140	3	25	
Nonane (C9)	1.6	0.2	mg/kg wet	2.500		63	30-140	0.4	25	
Octacosane (C28)	2.3	0.2	mg/kg wet	2.500		93	40-140	2	25	
Octadecane (C18)	2.2	0.2	mg/kg wet	2.500		87	40-140	4	25	
Tetracosane (C24)	2.3	0.2	mg/kg wet	2.500		92	40-140	1	25	
Tetradecane (C14)	2.0	0.2	mg/kg wet	2.500		81	40-140	5	25	
Total Petroleum Hydrocarbons	30.4	37.5	mg/kg wet	35.00		87	40-140	2	25	
Triacontane (C30)	2.3	0.2	mg/kg wet	2.500		93	40-140	1	25	
Surrogate: O-Terphenyl	*4.24*		mg/kg wet	*5.000*		*85*	*40-140*			
Batch CK90708 - 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	*4.34*		mg/kg wet	*5.000*		*87*	*40-140*			
LCS										
Decane (C10)	2.0	0.2	mg/kg wet	2.500		80	40-140			
Docosane (C22)	2.3	0.2	mg/kg wet	2.500		93	40-140			
Dodecane (C12)	2.1	0.2	mg/kg wet	2.500		84	40-140			
Eicosane (C20)	2.3	0.2	mg/kg wet	2.500		92	40-140			
Hexacosane (C26)	2.3	0.2	mg/kg wet	2.500		93	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch CK90708 - 3546										
Hexadecane (C16)	2.2	0.2	mg/kg wet	2.500		89	40-140			
Nonadecane (C19)	2.5	0.2	mg/kg wet	2.500		102	40-140			
Nonane (C9)	1.8	0.2	mg/kg wet	2.500		71	30-140			
Octacosane (C28)	2.3	0.2	mg/kg wet	2.500		94	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		93	40-140			
Tetradecane (C14)	2.2	0.2	mg/kg wet	2.500		87	40-140			
Total Petroleum Hydrocarbons	31.5	37.5	mg/kg wet	35.00		90	40-140			
Triacontane (C30)	2.3	0.2	mg/kg wet	2.500		94	40-140			
Surrogate: O-Terphenyl	*4.49*		mg/kg wet	*5.000*		*90*	*40-140*			
LCS Dup										
Decane (C10)	2.1	0.2	mg/kg wet	2.500		82	40-140	3	25	
Docosane (C22)	2.5	0.2	mg/kg wet	2.500		98	40-140	6	25	
Dodecane (C12)	2.2	0.2	mg/kg wet	2.500		88	40-140	4	25	
Eicosane (C20)	2.4	0.2	mg/kg wet	2.500		97	40-140	6	25	
Hexacosane (C26)	2.5	0.2	mg/kg wet	2.500		98	40-140	6	25	
Hexadecane (C16)	2.4	0.2	mg/kg wet	2.500		94	40-140	6	25	
Nonadecane (C19)	2.7	0.2	mg/kg wet	2.500		107	40-140	6	25	
Nonane (C9)	1.8	0.2	mg/kg wet	2.500		73	30-140	2	25	
Octacosane (C28)	2.5	0.2	mg/kg wet	2.500		100	40-140	6	25	
Octadecane (C18)	2.4	0.2	mg/kg wet	2.500		97	40-140	6	25	
Tetracosane (C24)	2.5	0.2	mg/kg wet	2.500		98	40-140	6	25	
Tetradecane (C14)	2.3	0.2	mg/kg wet	2.500		92	40-140	5	25	
Total Petroleum Hydrocarbons	33.3	37.5	mg/kg wet	35.00		95	40-140	5	25	
Triacontane (C30)	2.5	0.2	mg/kg wet	2.500		100	40-140	6	25	
Surrogate: O-Terphenyl	*4.70*		mg/kg wet	*5.000*		*94*	*40-140*			
8270D Semi-Volatile Organic Compounds										
Batch CK90612 - 3546										
Blank										
1,1-Biphenyl	ND	0.333	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.333	mg/kg wet							
1,2-Dichlorobenzene	ND	0.333	mg/kg wet							
1,3-Dichlorobenzene	ND	0.333	mg/kg wet							
1,4-Dichlorobenzene	ND	0.333	mg/kg wet							
2,3,4,6-Tetrachlorophenol	ND	1.67	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.333	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.333	mg/kg wet							
2,4-Dichlorophenol	ND	0.333	mg/kg wet							
2,4-Dimethylphenol	ND	0.333	mg/kg wet							
2,4-Dinitrophenol	ND	1.67	mg/kg wet							
2,4-Dinitrotoluene	ND	0.333	mg/kg wet							
2,6-Dinitrotoluene	ND	0.333	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK90612 - 3546										
2-Chloronaphthalene	ND	0.333	mg/kg wet							
2-Chlorophenol	ND	0.333	mg/kg wet							
2-Methylnaphthalene	ND	0.333	mg/kg wet							
2-Methylphenol	ND	0.333	mg/kg wet							
2-Nitroaniline	ND	0.333	mg/kg wet							
2-Nitrophenol	ND	0.333	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.333	mg/kg wet							
3+4-Methylphenol	ND	0.667	mg/kg wet							
3-Nitroaniline	ND	0.333	mg/kg wet							
4,6-Dinitro-2-Methylphenol	ND	1.67	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.333	mg/kg wet							
4-Chloro-3-Methylphenol	ND	0.333	mg/kg wet							
4-Chloroaniline	ND	0.667	mg/kg wet							
4-Chloro-phenyl-phenyl ether	ND	0.333	mg/kg wet							
4-Nitroaniline	ND	0.333	mg/kg wet							
4-Nitrophenol	ND	1.67	mg/kg wet							
Acenaphthene	ND	0.333	mg/kg wet							
Acenaphthylene	ND	0.333	mg/kg wet							
Acetophenone	ND	0.667	mg/kg wet							
Aniline	ND	0.667	mg/kg wet							
Anthracene	ND	0.333	mg/kg wet							
Azobenzene	ND	0.333	mg/kg wet							
Benzo(a)anthracene	ND	0.333	mg/kg wet							
Benzo(a)pyrene	ND	0.167	mg/kg wet							
Benzo(b)fluoranthene	ND	0.333	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.333	mg/kg wet							
Benzo(k)fluoranthene	ND	0.333	mg/kg wet							
Benzoic Acid	ND	1.67	mg/kg wet							
Benzyl Alcohol	ND	0.333	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.333	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.167	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.333	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.333	mg/kg wet							
Butylbenzylphthalate	ND	0.333	mg/kg wet							
Carbazole	ND	0.333	mg/kg wet							
Chrysene	ND	0.167	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.167	mg/kg wet							
Dibenzofuran	ND	0.333	mg/kg wet							
Diethylphthalate	ND	0.333	mg/kg wet							
Dimethylphthalate	ND	0.333	mg/kg wet							
Di-n-butylphthalate	ND	0.333	mg/kg wet							
Di-n-octylphthalate	ND	0.333	mg/kg wet							
Fluoranthene	ND	0.333	mg/kg wet							
Fluorene	ND	0.333	mg/kg wet							
Hexachlorobenzene	ND	0.167	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK90612 - 3546										
Hexachlorobutadiene	ND	0.333	mg/kg wet							
Hexachlorocyclopentadiene	ND	1.67	mg/kg wet							
Hexachloroethane	ND	0.333	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.333	mg/kg wet							
Isophorone	ND	0.333	mg/kg wet							
Naphthalene	ND	0.333	mg/kg wet							
Nitrobenzene	ND	0.333	mg/kg wet							
N-Nitrosodimethylamine	ND	0.333	mg/kg wet							
N-Nitroso-Di-n-Propylamine	ND	0.333	mg/kg wet							
N-nitrosodiphenylamine	ND	0.333	mg/kg wet							
Pentachlorophenol	ND	1.67	mg/kg wet							
Phenanthrene	ND	0.333	mg/kg wet							
Phenol	ND	0.333	mg/kg wet							
Pyrene	ND	0.333	mg/kg wet							
Pyridine	ND	1.67	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.11*		mg/kg wet	*3.333*		*63*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*4.45*		mg/kg wet	*5.000*		*89*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.28*		mg/kg wet	*5.000*		*66*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.08*		mg/kg wet	*3.333*		*62*	*30-130*			
Surrogate: 2-Fluorophenol	*3.20*		mg/kg wet	*5.000*		*64*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.96*		mg/kg wet	*3.333*		*59*	*30-130*			
Surrogate: Phenol-d6	*3.07*		mg/kg wet	*5.000*		*61*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.16*		mg/kg wet	*3.333*		*95*	*30-130*			
LCS										
1,1-Biphenyl	2.25	0.333	mg/kg wet	3.333		68	40-140			
1,2,4-Trichlorobenzene	2.05	0.333	mg/kg wet	3.333		61	40-140			
1,2-Dichlorobenzene	1.87	0.333	mg/kg wet	3.333		56	40-140			
1,3-Dichlorobenzene	1.77	0.333	mg/kg wet	3.333		53	40-140			
1,4-Dichlorobenzene	1.80	0.333	mg/kg wet	3.333		54	40-140			
2,3,4,6-Tetrachlorophenol	2.90	1.67	mg/kg wet	3.333		87	30-130			
2,4,5-Trichlorophenol	2.71	0.333	mg/kg wet	3.333		81	30-130			
2,4,6-Trichlorophenol	2.61	0.333	mg/kg wet	3.333		78	30-130			
2,4-Dichlorophenol	2.26	0.333	mg/kg wet	3.333		68	30-130			
2,4-Dimethylphenol	2.05	0.333	mg/kg wet	3.333		61	30-130			
2,4-Dinitrophenol	2.38	1.67	mg/kg wet	3.333		72	30-130			
2,4-Dinitrotoluene	2.89	0.333	mg/kg wet	3.333		87	40-140			
2,6-Dinitrotoluene	2.62	0.333	mg/kg wet	3.333		79	40-140			
2-Chloronaphthalene	2.25	0.333	mg/kg wet	3.333		68	40-140			
2-Chlorophenol	1.98	0.333	mg/kg wet	3.333		60	30-130			
2-Methylnaphthalene	2.12	0.333	mg/kg wet	3.333		64	40-140			
2-Methylphenol	2.11	0.333	mg/kg wet	3.333		63	30-130			
2-Nitroaniline	2.25	0.333	mg/kg wet	3.333		68	40-140			
2-Nitrophenol	1.77	0.333	mg/kg wet	3.333		53	30-130			
3,3´-Dichlorobenzidine	2.06	0.333	mg/kg wet	3.333		62	40-140			
3+4-Methylphenol	4.37	0.667	mg/kg wet	6.667		66	30-130			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK90612 - 3546										
3-Nitroaniline	2.40	0.333	mg/kg wet	3.333		72	40-140			
4,6-Dinitro-2-Methylphenol	2.68	1.67	mg/kg wet	3.333		81	30-130			
4-Bromophenyl-phenylether	2.96	0.333	mg/kg wet	3.333		89	40-140			
4-Chloro-3-Methylphenol	2.34	0.333	mg/kg wet	3.333		70	30-130			
4-Chloroaniline	1.39	0.667	mg/kg wet	3.333		42	40-140			
4-Chloro-phenyl-phenyl ether	2.70	0.333	mg/kg wet	3.333		81	40-140			
4-Nitroaniline	2.14	0.333	mg/kg wet	3.333		64	40-140			
4-Nitrophenol	2.14	1.67	mg/kg wet	3.333		64	30-130			
Acenaphthene	2.36	0.333	mg/kg wet	3.333		71	40-140			
Acenaphthylene	2.40	0.333	mg/kg wet	3.333		72	40-140			
Acetophenone	1.93	0.667	mg/kg wet	3.333		58	40-140			
Aniline	1.44	0.667	mg/kg wet	3.333		43	40-140			
Anthracene	2.77	0.333	mg/kg wet	3.333		83	40-140			
Azobenzene	2.17	0.333	mg/kg wet	3.333		65	40-140			
Benzo(a)anthracene	2.98	0.333	mg/kg wet	3.333		89	40-140			
Benzo(a)pyrene	2.56	0.167	mg/kg wet	3.333		77	40-140			
Benzo(b)fluoranthene	3.02	0.333	mg/kg wet	3.333		91	40-140			
Benzo(g,h,i)perylene	3.19	0.333	mg/kg wet	3.333		96	40-140			
Benzo(k)fluoranthene	2.76	0.333	mg/kg wet	3.333		83	40-140			
Benzoic Acid	1.68	1.67	mg/kg wet	3.333		51	40-140			
Benzyl Alcohol	1.48	0.333	mg/kg wet	3.333		45	40-140			
bis(2-Chloroethoxy)methane	1.92	0.333	mg/kg wet	3.333		58	40-140			
bis(2-Chloroethyl)ether	1.81	0.167	mg/kg wet	3.333		54	40-140			
bis(2-chloroisopropyl)Ether	1.82	0.333	mg/kg wet	3.333		55	40-140			
bis(2-Ethylhexyl)phthalate	2.50	0.333	mg/kg wet	3.333		75	40-140			
Butylbenzylphthalate	2.36	0.333	mg/kg wet	3.333		71	40-140			
Carbazole	2.67	0.333	mg/kg wet	3.333		80	40-140			
Chrysene	2.84	0.167	mg/kg wet	3.333		85	40-140			
Dibenzo(a,h)Anthracene	2.90	0.167	mg/kg wet	3.333		87	40-140			
Dibenzofuran	2.52	0.333	mg/kg wet	3.333		76	40-140			
Diethylphthalate	2.83	0.333	mg/kg wet	3.333		85	40-140			
Dimethylphthalate	2.82	0.333	mg/kg wet	3.333		84	40-140			
Di-n-butylphthalate	2.37	0.333	mg/kg wet	3.333		71	40-140			
Di-n-octylphthalate	2.65	0.333	mg/kg wet	3.333		79	40-140			
Fluoranthene	2.80	0.333	mg/kg wet	3.333		84	40-140			
Fluorene	2.57	0.333	mg/kg wet	3.333		77	40-140			
Hexachlorobenzene	2.95	0.167	mg/kg wet	3.333		88	40-140			
Hexachlorobutadiene	2.03	0.333	mg/kg wet	3.333		61	40-140			
Hexachlorocyclopentadiene	1.62	1.67	mg/kg wet	3.333		49	40-140			
Hexachloroethane	1.74	0.333	mg/kg wet	3.333		52	40-140			
Indeno(1,2,3-cd)Pyrene	2.88	0.333	mg/kg wet	3.333		86	40-140			
Isophorone	1.70	0.333	mg/kg wet	3.333		51	40-140			
Naphthalene	1.94	0.333	mg/kg wet	3.333		58	40-140			
Nitrobenzene	1.73	0.333	mg/kg wet	3.333		52	40-140			
N-Nitrosodimethylamine	1.44	0.333	mg/kg wet	3.333		43	40-140			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK90612 - 3546										
N-Nitroso-Di-n-Propylamine	2.09	0.333	mg/kg wet	3.333		63	40-140			
N-nitrosodiphenylamine	2.70	0.333	mg/kg wet	3.333		81	40-140			
Pentachlorophenol	2.91	1.67	mg/kg wet	3.333		87	30-130			
Phenanthrene	2.67	0.333	mg/kg wet	3.333		80	40-140			
Phenol	1.90	0.333	mg/kg wet	3.333		57	30-130			
Pyrene	2.58	0.333	mg/kg wet	3.333		77	40-140			
Pyridine	1.67	1.67	mg/kg wet	3.333		50	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.00*		mg/kg wet	*3.333*		*60*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*5.08*		mg/kg wet	*5.000*		*102*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.25*		mg/kg wet	*5.000*		*65*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.56*		mg/kg wet	*3.333*		*77*	*30-130*			
Surrogate: 2-Fluorophenol	*3.23*		mg/kg wet	*5.000*		*65*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.97*		mg/kg wet	*3.333*		*59*	*30-130*			
Surrogate: Phenol-d6	*3.36*		mg/kg wet	*5.000*		*67*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.00*		mg/kg wet	*3.333*		*90*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.30	0.333	mg/kg wet	3.333		69	40-140	2	30	
1,2,4-Trichlorobenzene	2.26	0.333	mg/kg wet	3.333		68	40-140	10	30	
1,2-Dichlorobenzene	2.21	0.333	mg/kg wet	3.333		66	40-140	17	30	
1,3-Dichlorobenzene	2.08	0.333	mg/kg wet	3.333		63	40-140	16	30	
1,4-Dichlorobenzene	2.11	0.333	mg/kg wet	3.333		63	40-140	16	30	
2,3,4,6-Tetrachlorophenol	2.92	1.67	mg/kg wet	3.333		88	30-130	0.7	30	
2,4,5-Trichlorophenol	2.71	0.333	mg/kg wet	3.333		81	30-130	0.1	30	
2,4,6-Trichlorophenol	2.57	0.333	mg/kg wet	3.333		77	30-130	2	30	
2,4-Dichlorophenol	2.46	0.333	mg/kg wet	3.333		74	30-130	8	30	
2,4-Dimethylphenol	2.10	0.333	mg/kg wet	3.333		63	30-130	3	30	
2,4-Dinitrophenol	2.52	1.67	mg/kg wet	3.333		76	30-130	5	30	
2,4-Dinitrotoluene	3.00	0.333	mg/kg wet	3.333		90	40-140	4	30	
2,6-Dinitrotoluene	2.71	0.333	mg/kg wet	3.333		81	40-140	4	30	
2-Chloronaphthalene	2.31	0.333	mg/kg wet	3.333		69	40-140	3	30	
2-Chlorophenol	2.28	0.333	mg/kg wet	3.333		68	30-130	14	30	
2-Methylnaphthalene	2.21	0.333	mg/kg wet	3.333		66	40-140	4	30	
2-Methylphenol	2.25	0.333	mg/kg wet	3.333		67	30-130	6	30	
2-Nitroaniline	2.27	0.333	mg/kg wet	3.333		68	40-140	0.9	30	
2-Nitrophenol	1.94	0.333	mg/kg wet	3.333		58	30-130	10	30	
3,3´-Dichlorobenzidine	2.32	0.333	mg/kg wet	3.333		70	40-140	12	30	
3+4-Methylphenol	4.58	0.667	mg/kg wet	6.667		69	30-130	5	30	
3-Nitroaniline	2.49	0.333	mg/kg wet	3.333		75	40-140	3	30	
4,6-Dinitro-2-Methylphenol	2.99	1.67	mg/kg wet	3.333		90	30-130	11	30	
4-Bromophenyl-phenylether	2.95	0.333	mg/kg wet	3.333		88	40-140	0.6	30	
4-Chloro-3-Methylphenol	2.42	0.333	mg/kg wet	3.333		73	30-130	3	30	
4-Chloroaniline	1.60	0.667	mg/kg wet	3.333		48	40-140	14	30	
4-Chloro-phenyl-phenyl ether	2.81	0.333	mg/kg wet	3.333		84	40-140	4	30	
4-Nitroaniline	2.39	0.333	mg/kg wet	3.333		72	40-140	11	30	
4-Nitrophenol	2.11	1.67	mg/kg wet	3.333		63	30-130	1	30	

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK90612 - 3546										
Acenaphthene	2.43	0.333	mg/kg wet	3.333		73	40-140	3	30	
Acenaphthylene	2.46	0.333	mg/kg wet	3.333		74	40-140	3	30	
Acetophenone	2.06	0.667	mg/kg wet	3.333		62	40-140	7	30	
Aniline	1.73	0.667	mg/kg wet	3.333		52	40-140	19	30	
Anthracene	2.77	0.333	mg/kg wet	3.333		83	40-140	0.2	30	
Azobenzene	2.32	0.333	mg/kg wet	3.333		69	40-140	6	30	
Benzo(a)anthracene	3.06	0.333	mg/kg wet	3.333		92	40-140	3	30	
Benzo(a)pyrene	2.60	0.167	mg/kg wet	3.333		78	40-140	1	30	
Benzo(b)fluoranthene	2.98	0.333	mg/kg wet	3.333		90	40-140	1	30	
Benzo(g,h,i)perylene	3.21	0.333	mg/kg wet	3.333		96	40-140	0.6	30	
Benzo(k)fluoranthene	2.86	0.333	mg/kg wet	3.333		86	40-140	4	30	
Benzoic Acid	2.01	1.67	mg/kg wet	3.333		60	40-140	18	30	
Benzyl Alcohol	1.91	0.333	mg/kg wet	3.333		57	40-140	25	30	
bis(2-Chloroethoxy)methane	2.01	0.333	mg/kg wet	3.333		60	40-140	5	30	
bis(2-Chloroethyl)ether	2.12	0.167	mg/kg wet	3.333		64	40-140	16	30	
bis(2-chloroisopropyl)Ether	2.08	0.333	mg/kg wet	3.333		62	40-140	13	30	
bis(2-Ethylhexyl)phthalate	2.73	0.333	mg/kg wet	3.333		82	40-140	9	30	
Butylbenzylphthalate	2.49	0.333	mg/kg wet	3.333		75	40-140	5	30	
Carbazole	2.88	0.333	mg/kg wet	3.333		86	40-140	7	30	
Chrysene	2.98	0.167	mg/kg wet	3.333		89	40-140	5	30	
Dibenzo(a,h)Anthracene	2.98	0.167	mg/kg wet	3.333		89	40-140	3	30	
Dibenzofuran	2.41	0.333	mg/kg wet	3.333		72	40-140	5	30	
Diethylphthalate	2.96	0.333	mg/kg wet	3.333		89	40-140	4	30	
Dimethylphthalate	2.88	0.333	mg/kg wet	3.333		86	40-140	2	30	
Di-n-butylphthalate	2.48	0.333	mg/kg wet	3.333		74	40-140	5	30	
Di-n-octylphthalate	2.79	0.333	mg/kg wet	3.333		84	40-140	5	30	
Fluoranthene	2.97	0.333	mg/kg wet	3.333		89	40-140	6	30	
Fluorene	2.68	0.333	mg/kg wet	3.333		81	40-140	4	30	
Hexachlorobenzene	3.04	0.167	mg/kg wet	3.333		91	40-140	3	30	
Hexachlorobutadiene	2.27	0.333	mg/kg wet	3.333		68	40-140	11	30	
Hexachlorocyclopentadiene	1.80	1.67	mg/kg wet	3.333		54	40-140	10	30	
Hexachloroethane	2.08	0.333	mg/kg wet	3.333		62	40-140	18	30	
Indeno(1,2,3-cd)Pyrene	2.97	0.333	mg/kg wet	3.333		89	40-140	3	30	
Isophorone	1.82	0.333	mg/kg wet	3.333		55	40-140	7	30	
Naphthalene	2.12	0.333	mg/kg wet	3.333		64	40-140	9	30	
Nitrobenzene	1.93	0.333	mg/kg wet	3.333		58	40-140	11	30	
N-Nitrosodimethylamine	1.64	0.333	mg/kg wet	3.333		49	40-140	13	30	
N-Nitroso-Di-n-Propylamine	2.17	0.333	mg/kg wet	3.333		65	40-140	4	30	
N-nitrosodiphenylamine	2.87	0.333	mg/kg wet	3.333		86	40-140	6	30	
Pentachlorophenol	2.91	1.67	mg/kg wet	3.333		87	30-130	0.03	30	
Phenanthrene	2.72	0.333	mg/kg wet	3.333		82	40-140	2	30	
Phenol	2.09	0.333	mg/kg wet	3.333		63	30-130	9	30	
Pyrene	2.89	0.333	mg/kg wet	3.333		87	40-140	12	30	
Pyridine	1.83	1.67	mg/kg wet	3.333		55	40-140	9	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.28*		mg/kg wet	*3.333*		*68*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8270D Semi-Volatile Organic Compounds										
Batch CK90612 - 3546										
Surrogate: 2,4,6-Tribromophenol	*5.06*		mg/kg wet	*5.000*		*101*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.60*		mg/kg wet	*5.000*		*72*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.48*		mg/kg wet	*3.333*		*75*	*30-130*			
Surrogate: 2-Fluorophenol	*3.51*		mg/kg wet	*5.000*		*70*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.12*		mg/kg wet	*3.333*		*64*	*30-130*			
Surrogate: Phenol-d6	*3.60*		mg/kg wet	*5.000*		*72*	*30-130*			
Surrogate: p-Terphenyl-d14	*3.17*		mg/kg wet	*3.333*		*95*	*30-130*			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0160

Notes and Definitions

U	Analyte included in the analysis, but not detected
S+	Surrogate recovery(ies) above upper control limit (S+).
Q	Calibration required quadratic regression (Q).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
B+	Blank Spike recovery is above upper control limit (B+).
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: Grenier

ESS Laboratory Work Order: 19K0160

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 - KPB/HDM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 19K0160
Date Received: 11/6/2019
Project Due Date: 11/13/2019
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: 3.2 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? No
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	409883	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
01	409886	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
01	409889	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
02	409882	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
02	409885	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
02	409888	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
03	409881	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
03	409884	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
03	409887	Yes	NA	Yes	4 oz. Jar - Unpres	NP	
04	409923	Yes	NA	Yes	VOA Vial - Methanol	MeOH	

2nd Review
Were all containers scanned into storage/lab? Initials
Are barcode labels on correct containers? ~~Yes~~ / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: Date & Time: 11/6/19 14:31

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Redwood Environmental Group - KPB/HDM

ESS Project ID: 19K0160
Date Received: 11/6/2019

Reviewed By: [signature]
Date & Time: 11/6/19 1520

Delivered By: [signature]
11/6/19 1520

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: X Standard Other ____
If faster than 5 days, prior approval by laboratory is required # ____
State where samples were collected from: MA (RI) CT NH NJ NY ME Other ____
Is this project for any of the following: MA-MCP Navy USACE Other ____

Reporting Limits: ~~[illegible]~~ Residential
ESS LAB PROJECT ID: 19K0160
Electronic Deliverable ___ Yes ___ No
Format: Excel__ Access__ PDF__ Other checker

Co. Name	Project #	Project Name (20 Char. or less)
Redwood Env.	201942	Grenier

Contact Person: | Address:
City: State: Zip: PO#:
Telephone #: Fax #: Email Address:

Circle and/or Write Required Analysis

ESS LAB Sample#	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	(8260 VOA) / 624 / 524.2	8021 MTBE/BTEX / 8015 GRO / VPH w/targets	(8100 TPH) / 8015 DRO	EPH w/o PAHs / EPH w/PAHs / EPH 4 Diesel	8081 Pesticides / 8082 PCB / 608 Pesticides / (608 PCB)	(8270 SVOA) / 625 / PAH 8270	RCRA5 / RCRA8 / PP13 / TAL23	TCLP-RCRA8 / NBC7	MCP-METALS (13) / MCP-METALS (13) w/Hg
1	11/6/19			X	S	201942-mw1-110619				X		X			X			
2				X	S	201942-mw2-110619				X		X		X				
3				X	S	201942-mw3-110619				X		X			X			
4						TRIP Blank				X								

Container Type: P-Poly G-Glass S-Sterile V-VOA
Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present: ~~Yes~~ ___ No
Seals Intact: ___ Yes — No NA: ___
Cooler Temp: Ice 3.2

Internal Use Only
[ ] Pickup
[ ] Technicians ____

Preservation Code: 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____
Sampled by: [signature]
Comments: Delivered to Lab on ice.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
G Kaufman [signature]	11/6/19 1141	[signature]	11/6/19 11:40				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

CERTIFICATE OF ANALYSIS

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

RE: Grenier (201942)
ESS Laboratory Work Order Number: 19K0206

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

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: Grenier

ESS Laboratory Work Order: 19K0206

SAMPLE RECEIPT

The following samples were received on November 07, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
19K0206-01	201942-MW1-110719	Ground Water	EPH8270, MADEP-EPH, MA-VPH-2.1
19K0206-02	201942-MW2-110719	Ground Water	EPH8270, MADEP-EPH, MA-VPH-2.1
19K0206-03	201942-MW3-110719	Ground Water	EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0206

PROJECT NARRATIVE

MADEP-EPH Extractable Petroleum Hydrocarbons

CK90802-BS1 **Blank Spike recovery is below lower control limit (B-).**
Decane (C10) (35% @ 40-140%), Nonane (C9) (26% @ 30-140%)

CK90802-BSD1 **Blank Spike recovery is below lower control limit (B-).**
Decane (C10) (38% @ 40-140%), Nonane (C9) (29% @ 30-140%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0206

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: Grenier
Client Sample ID: 201942-MW1-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 19K0206
ESS Laboratory Sample ID: 19K0206-01
Sample Matrix: Ground Water
Units: ug/L

Prepared: 11/8/19 12:03

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (93)		MADEP-EPH		1	CAD	11/09/19 14:58	C9K0052	CK90802
C19-C36 Aliphatics1	ND (93)		MADEP-EPH		1	CAD	11/09/19 14:58	C9K0052	CK90802
C11-C22 Unadjusted Aromatics1	ND (93.5)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
C11-C22 Aromatics1,2	ND (93.5)		EPH8270			VSC	11/09/19 16:21		[CALC]
2-Methylnaphthalene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Acenaphthene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Naphthalene	ND (9.3)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Phenanthrene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Acenaphthylene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Benzo(a)anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Benzo(a)pyrene	ND (9.3)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Benzo(b)fluoranthene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Benzo(g,h,i)perylene	ND (9.3)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Benzo(k)fluoranthene	ND (9.3)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Chrysene	ND (9.3)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Dibenzo(a,h)Anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Fluoranthene	ND (9.3)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Fluorene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Indeno(1,2,3-cd)Pyrene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Pyrene	ND (4.7)		EPH8270		1	VSC	11/09/19 16:21	C9K0143	CK90802
Preservative:	**pH <= 2**		MADEP-EPH			CAD			CK90802

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*62 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*108 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*116 %*		*40-140*
Surrogate: O-Terphenyl	*87 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 19K0206
ESS Laboratory Sample ID: 19K0206-01
Sample Matrix: Ground Water
Units: ug/L
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (100)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
C5-C8 Aliphatics1,2	ND (158)		MA-VPH-2.1		1	11/11/19 17:31		[CALC]
C9-C12 Aliphatics2,3	ND (270)		MA-VPH-2.1		1	11/11/19 17:31		[CALC]
Benzene	ND (1.5)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
Ethylbenzene	ND (5.0)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
Methyl tert-Butyl Ether	ND (1.5)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
Naphthalene	ND (5.0)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
Toluene	ND (5.0)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
Xylene O	ND (5.0)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
Xylene P,M	ND (10.0)		MA-VPH-2.1		1	11/11/19 17:31	C9K0179	CK91128
Preservative:	**pH <= 2**		MA-VPH-2.1					CK91128

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*88 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*91 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 19K0206
ESS Laboratory Sample ID: 19K0206-02
Sample Matrix: Ground Water
Units: ug/L

Prepared: 11/8/19 12:03

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (93)		MADEP-EPH		1	CAD	11/09/19 15:45	C9K0052	CK90802
C19-C36 Aliphatics1	ND (93)		MADEP-EPH		1	CAD	11/09/19 15:45	C9K0052	CK90802
C11-C22 Unadjusted Aromatics1	ND (93.5)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
C11-C22 Aromatics1,2	ND (93.5)		EPH8270			VSC	11/09/19 17:04		[CALC]
2-Methylnaphthalene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Acenaphthene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Naphthalene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Phenanthrene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Acenaphthylene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Benzo(a)anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Benzo(a)pyrene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Benzo(b)fluoranthene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Benzo(g,h,i)perylene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Benzo(k)fluoranthene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Chrysene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Dibenzo(a,h)Anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Fluoranthene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Fluorene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Indeno(1,2,3-cd)Pyrene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Pyrene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:04	C9K0143	CK90802
Preservative:	**pH <= 2**		MADEP-EPH			CAD			CK90802

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*52 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*112 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*116 %*		*40-140*
Surrogate: O-Terphenyl	*83 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 19K0206
ESS Laboratory Sample ID: 19K0206-02
Sample Matrix: Ground Water
Units: ug/L
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (100)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
C5-C8 Aliphatics1,2	ND (158)		MA-VPH-2.1		1	11/11/19 18:05		[CALC]
C9-C12 Aliphatics2,3	ND (270)		MA-VPH-2.1		1	11/11/19 18:05		[CALC]
Benzene	ND (1.5)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
Ethylbenzene	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
Methyl tert-Butyl Ether	ND (1.5)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
Naphthalene	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
Toluene	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
Xylene O	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
Xylene P,M	ND (10.0)		MA-VPH-2.1		1	11/11/19 18:05	C9K0179	CK91128
Preservative:	**pH <= 2**		MA-VPH-2.1					CK91128

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*87 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*90 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 1070
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 19K0206
ESS Laboratory Sample ID: 19K0206-03
Sample Matrix: Ground Water
Units: ug/L

Prepared: 11/8/19 12:03

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (93)		MADEP-EPH		1	CAD	11/09/19 16:32	C9K0052	CK90802
C19-C36 Aliphatics1	ND (93)		MADEP-EPH		1	CAD	11/09/19 16:32	C9K0052	CK90802
C11-C22 Unadjusted Aromatics1	ND (93.5)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
C11-C22 Aromatics1,2	ND (93.5)		EPH8270			VSC	11/09/19 17:47		[CALC]
2-Methylnaphthalene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Acenaphthene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Naphthalene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Phenanthrene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Acenaphthylene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Benzo(a)anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Benzo(a)pyrene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Benzo(b)fluoranthene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Benzo(g,h,i)perylene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Benzo(k)fluoranthene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Chrysene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Dibenzo(a,h)Anthracene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Fluoranthene	ND (9.3)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Fluorene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Indeno(1,2,3-cd)Pyrene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Pyrene	ND (4.7)		EPH8270		1	VSC	11/09/19 17:47	C9K0143	CK90802
Preservative:	**pH <= 2**		MADEP-EPH			CAD			CK90802

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*51 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*109 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*113 %*		*40-140*
Surrogate: O-Terphenyl	*83 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 19K0206
ESS Laboratory Sample ID: 19K0206-03
Sample Matrix: Ground Water
Units: ug/L
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (100)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
C5-C8 Aliphatics1,2	ND (158)		MA-VPH-2.1		1	11/11/19 18:38		[CALC]
C9-C12 Aliphatics2,3	ND (270)		MA-VPH-2.1		1	11/11/19 18:38		[CALC]
Benzene	ND (1.5)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
Ethylbenzene	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
Methyl tert-Butyl Ether	ND (1.5)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
Naphthalene	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
Toluene	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
Xylene O	ND (5.0)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
Xylene P,M	ND (10.0)		MA-VPH-2.1		1	11/11/19 18:38	C9K0179	CK91128
Preservative:	**pH <= 2**		MA-VPH-2.1					CK91128

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*90 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*94 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0206

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CK90802 - 3510C										
Blank										
C19-C36 Aliphatics1	ND	100	ug/L							
C9-C18 Aliphatics1	ND	100	ug/L							
Decane (C10)	ND	5	ug/L							
Docosane (C22)	ND	5	ug/L							
Dodecane (C12)	ND	5	ug/L							
Eicosane (C20)	ND	5	ug/L							
Hexacosane (C26)	ND	5	ug/L							
Hexadecane (C16)	ND	5	ug/L							
Hexatriacontane (C36)	ND	5	ug/L							
Nonadecane (C19)	ND	5	ug/L							
Nonane (C9)	ND	5	ug/L							
Octacosane (C28)	ND	5	ug/L							
Octadecane (C18)	ND	5	ug/L							
Tetracosane (C24)	ND	5	ug/L							
Tetradecane (C14)	ND	5	ug/L							
Triacontane (C30)	ND	5	ug/L							
Surrogate: 1-Chlorooctadecane	*39.0*		ug/L	*50.50*		*77*	*40-140*			
Blank										
2-Methylnaphthalene	ND	5.0	ug/L							
Acenaphthene	ND	5.0	ug/L							
Acenaphthylene	ND	5.0	ug/L							
Anthracene	ND	5.0	ug/L							
Benzo(a)anthracene	ND	5.0	ug/L							
Benzo(a)pyrene	ND	10.0	ug/L							
Benzo(b)fluoranthene	ND	5.0	ug/L							
Benzo(g,h,i)perylene	ND	10.0	ug/L							
Benzo(k)fluoranthene	ND	10.0	ug/L							
C11-C22 Unadjusted Aromatics1	ND	100	ug/L							
Chrysene	ND	10.0	ug/L							
Dibenzo(a,h)Anthracene	ND	5.0	ug/L							
Fluoranthene	ND	10.0	ug/L							
Fluorene	ND	5.0	ug/L							
Indeno(1,2,3-cd)Pyrene	ND	5.0	ug/L							
Naphthalene	ND	10.0	ug/L							
Phenanthrene	ND	5.0	ug/L							
Pyrene	ND	5.0	ug/L							
Surrogate: 2-Bromonaphthalene	*53.6*		mg/L	*50.00*		*107*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*56.6*		mg/L	*50.00*		*113*	*40-140*			
Surrogate: O-Terphenyl	*41.7*		ug/L	*50.20*		*83*	*40-140*			
LCS										
C19-C36 Aliphatics1	325	100	ug/L	400.0		81	40-140			
C9-C18 Aliphatics1	181	100	ug/L	300.0		60	40-140			
Decane (C10)	17	5	ug/L	50.00		35	40-140			B-

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0206

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CK90802 - 3510C										
Docosane (C22)	38	5	ug/L	50.00		76	40-140			
Dodecane (C12)	23	5	ug/L	50.00		46	40-140			
Eicosane (C20)	37	5	ug/L	50.00		74	40-140			
Hexacosane (C26)	37	5	ug/L	50.00		75	40-140			
Hexadecane (C16)	35	5	ug/L	50.00		71	40-140			
Hexatriacontane (C36)	45	5	ug/L	50.00		90	40-140			
Nonadecane (C19)	37	5	ug/L	50.00		74	40-140			
Nonane (C9)	13	5	ug/L	50.00		26	30-140			B-
Octacosane (C28)	37	5	ug/L	50.00		75	40-140			
Octadecane (C18)	36	5	ug/L	50.00		72	40-140			
Tetracosane (C24)	38	5	ug/L	50.00		75	40-140			
Tetradecane (C14)	30	5	ug/L	50.00		60	40-140			
Triacontane (C30)	38	5	ug/L	50.00		76	40-140			
Surrogate: 1-Chlorooctadecane	*38.2*		ug/L	*50.50*		*76*	*40-140*			
LCS										
2-Methylnaphthalene	39.4	5.0	ug/L	50.00		79	40-140			
Acenaphthene	37.6	5.0	ug/L	50.00		75	40-140			
Acenaphthylene	36.6	5.0	ug/L	50.00		73	40-140			
Anthracene	39.4	5.0	ug/L	50.00		79	40-140			
Benzo(a)anthracene	38.4	5.0	ug/L	50.00		77	40-140			
Benzo(a)pyrene	40.0	10.0	ug/L	50.00		80	40-140			
Benzo(b)fluoranthene	37.4	5.0	ug/L	50.00		75	40-140			
Benzo(g,h,i)perylene	38.7	10.0	ug/L	50.00		77	40-140			
Benzo(k)fluoranthene	40.3	10.0	ug/L	50.00		81	40-140			
C11-C22 Unadjusted Aromatics1	669	100	ug/L	850.0		79	40-140			
Chrysene	37.8	10.0	ug/L	50.00		76	40-140			
Dibenzo(a,h)Anthracene	38.3	5.0	ug/L	50.00		77	40-140			
Fluoranthene	38.6	10.0	ug/L	50.00		77	40-140			
Fluorene	37.1	5.0	ug/L	50.00		74	40-140			
Indeno(1,2,3-cd)Pyrene	37.6	5.0	ug/L	50.00		75	40-140			
Naphthalene	36.2	10.0	ug/L	50.00		72	40-140			
Phenanthrene	38.4	5.0	ug/L	50.00		77	40-140			
Pyrene	40.3	5.0	ug/L	50.00		81	40-140			
Surrogate: 2-Bromonaphthalene	*56.4*		mg/L	*50.00*		*113*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*58.5*		mg/L	*50.00*		*117*	*40-140*			
Surrogate: O-Terphenyl	*39.6*		ug/L	*50.20*		*79*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	330	100	ug/L	400.0		82	40-140	1	25	
C9-C18 Aliphatics1	172	100	ug/L	300.0		57	40-140	5	25	
Decane (C10)	19	5	ug/L	50.00		38	40-140	8	25	B-
Docosane (C22)	39	5	ug/L	50.00		77	40-140	2	25	

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0206

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CK90802 - 3510C										
Dodecane (C12)	25	5	ug/L	50.00		50	40-140	8	25	
Eicosane (C20)	38	5	ug/L	50.00		76	40-140	2	25	
Hexacosane (C26)	38	5	ug/L	50.00		76	40-140	2	25	
Hexadecane (C16)	36	5	ug/L	50.00		72	40-140	2	25	
Hexatriacontane (C36)	46	5	ug/L	50.00		92	40-140	2	25	
Nonadecane (C19)	38	5	ug/L	50.00		75	40-140	1	25	
Nonane (C9)	15	5	ug/L	50.00		29	30-140	10	25	B-
Octacosane (C28)	38	5	ug/L	50.00		76	40-140	2	25	
Octadecane (C18)	37	5	ug/L	50.00		73	40-140	1	25	
Tetracosane (C24)	38	5	ug/L	50.00		77	40-140	2	25	
Tetradecane (C14)	32	5	ug/L	50.00		63	40-140	5	25	
Triacontane (C30)	39	5	ug/L	50.00		77	40-140	2	25	
Surrogate: 1-Chlorooctadecane	*37.3*		ug/L	*50.50*		*74*	*40-140*			
LCS Dup										
2-Methylnaphthalene	41.8	5.0	ug/L	50.00		84	40-140	6	20	
Acenaphthene	39.6	5.0	ug/L	50.00		79	40-140	5	20	
Acenaphthylene	38.9	5.0	ug/L	50.00		78	40-140	6	20	
Anthracene	42.4	5.0	ug/L	50.00		85	40-140	7	20	
Benzo(a)anthracene	40.8	5.0	ug/L	50.00		82	40-140	6	20	
Benzo(a)pyrene	42.1	10.0	ug/L	50.00		84	40-140	5	20	
Benzo(b)fluoranthene	39.2	5.0	ug/L	50.00		78	40-140	5	20	
Benzo(g,h,i)perylene	39.7	10.0	ug/L	50.00		79	40-140	3	20	
Benzo(k)fluoranthene	42.3	10.0	ug/L	50.00		85	40-140	5	20	
C11-C22 Unadjusted Aromatics1	690	100	ug/L	850.0		81	40-140	3	25	
Chrysene	40.6	10.0	ug/L	50.00		81	40-140	7	20	
Dibenzo(a,h)Anthracene	38.8	5.0	ug/L	50.00		78	40-140	1	20	
Fluoranthene	41.4	10.0	ug/L	50.00		83	40-140	7	20	
Fluorene	39.7	5.0	ug/L	50.00		79	40-140	7	20	
Indeno(1,2,3-cd)Pyrene	39.7	5.0	ug/L	50.00		79	40-140	5	20	
Naphthalene	38.4	10.0	ug/L	50.00		77	40-140	6	20	
Phenanthrene	41.4	5.0	ug/L	50.00		83	40-140	7	20	
Pyrene	42.9	5.0	ug/L	50.00		86	40-140	6	20	
Surrogate: 2-Bromonaphthalene	*56.2*		mg/L	*50.00*		*112*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*58.0*		mg/L	*50.00*		*116*	*40-140*			
Surrogate: O-Terphenyl	*39.9*		ug/L	*50.20*		*79*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CK91128 - 5030B										
Blank										
Benzene	ND	1.5	ug/L							
C5-C8 Unadjusted Aliphatics	ND	150	ug/L							

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0206

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch CK91128 - 5030B										
C9-C10 Aromatics	ND	100	ug/L							
C9-C12 Unadjusted Aliphatics	ND	150	ug/L							
Ethylbenzene	ND	5.0	ug/L							
Methyl tert-Butyl Ether	ND	1.5	ug/L							
Naphthalene	ND	5.0	ug/L							
Toluene	ND	5.0	ug/L							
Xylene O	ND	5.0	ug/L							
Xylene P,M	ND	10.0	ug/L							
Surrogate: 2,5-Dibromotoluene - FID	*43.7*		ug/L	*50.00*		*87*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*45.6*		ug/L	*50.00*		*91*	*70-130*			
LCS										
Benzene	52.5		ug/L	50.00		105	70-130			
C5-C8 Unadjusted Aliphatics	436		ug/L	400.0		109	70-130			
C9-C10 Aromatics	108		ug/L	100.0		108	70-130			
C9-C12 Unadjusted Aliphatics	272		ug/L	300.0		91	70-130			
Ethylbenzene	53.7		ug/L	50.00		107	70-130			
Methyl tert-Butyl Ether	153		ug/L	150.0		102	70-130			
Naphthalene	95.0		ug/L	100.0		95	70-130			
Toluene	165		ug/L	150.0		110	70-130			
Xylene O	104		ug/L	100.0		104	70-130			
Xylene P,M	214		ug/L	200.0		107	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*45.6*		ug/L	*50.00*		*91*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*48.2*		ug/L	*50.00*		*96*	*70-130*			
LCS Dup										
Benzene	52.9		ug/L	50.00		106	70-130	0.7	25	
C5-C8 Unadjusted Aliphatics	433		ug/L	400.0		108	70-130	0.7	25	
C9-C10 Aromatics	108		ug/L	100.0		108	70-130	0.8	25	
C9-C12 Unadjusted Aliphatics	269		ug/L	300.0		90	70-130	1	25	
Ethylbenzene	54.1		ug/L	50.00		108	70-130	0.7	25	
Methyl tert-Butyl Ether	158		ug/L	150.0		105	70-130	3	25	
Naphthalene	102		ug/L	100.0		102	70-130	7	25	
Toluene	166		ug/L	150.0		111	70-130	0.5	25	
Xylene O	104		ug/L	100.0		104	70-130	0.4	25	
Xylene P,M	214		ug/L	200.0		107	70-130	0.04	25	
Surrogate: 2,5-Dibromotoluene - FID	*47.1*		ug/L	*50.00*		*94*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*49.3*		ug/L	*50.00*		*99*	*70-130*			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0206

Notes and Definitions

Z-06	pH <= 2
U	Analyte included in the analysis, but not detected
B-	Blank Spike recovery is below lower control limit (B-).
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: Grenier

ESS Laboratory Work Order: 19K0206

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 - KPB/EO

Shipped/Delivered Via: ESS Courier

ESS Project ID: 19K0206
Date Received: 11/7/2019
Project Due Date: 11/14/2019
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: 2.8 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	411097	Yes	No	Yes	VOA Vial - HCl	HCl	
01	411098	Yes	No	Yes	VOA Vial - HCl	HCl	
01	411099	Yes	No	Yes	VOA Vial - HCl	HCl	
01	411104	Yes	NA	Yes	1L Amber - HCl	HCl	
01	411105	Yes	NA	Yes	1L Amber - HCl	HCl	
02	411094	Yes	No	Yes	VOA Vial - HCl	HCl	
02	411095	Yes	No	Yes	VOA Vial - HCl	HCl	
02	411096	Yes	No	Yes	VOA Vial - HCl	HCl	
02	411102	Yes	NA	Yes	1L Amber - HCl	HCl	
02	411103	Yes	NA	Yes	1L Amber - HCl	HCl	
03	411091	Yes	No	Yes	VOA Vial - HCl	HCl	
03	411092	Yes	No	Yes	VOA Vial - HCl	HCl	
03	411093	Yes	No	Yes	VOA Vial - HCl	HCl	
03	411100	Yes	NA	Yes	1L Amber - HCl	HCl	
03	411101	Yes	NA	Yes	1L Amber - HCl	HCl	

2nd Review
Were all containers scanned into storage/lab? Initials (MA)
Are barcode labels on correct containers? (Yes) / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Redwood Environmental Group - KPB/EO

ESS Project ID: 19K0206

Date Received: 11/7/2019

Are VOA stickers attached if bubbles noted? Yes / No / (NA)

Completed By: _____ Date & Time: 11/7/19 2135

Reviewed By: _____ Date & Time: 11/7/19 2256

Delivered By: _____ 11/7/19 2257

ESS Laboratory

Division of Thielsch Engineering, Inc.
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Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time: X Standard; Other ____
If faster than 5 days, prior approval by laboratory is required # ____
State where samples were collected from: MA (RI) CT NH NJ NY ME Other ____
Is this project for any of the following: MA-MCP Navy USACE Other NO

Reporting Limits GW-2 MA DEP MCP
ESS LAB PROJECT ID: 19K0206
Electronic Deliverable: Yes ____ No ____
Format: Excel __ Access __ PDF __ Other Checker

Co. Name	Project #	Project Name (20 Char. or less)
Redwood Env.	201942	Gremier

Contact Person	Address	
G Kaufman		

City	State	Zip	PO#

Telephone #	Fax #	Email Address

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	EPH - MADEP	VPH - MADEP	Write Required Analysis
1	11/7/19				GW	201942-MW1-110719		2/3	G/V	X	X	
2	"				GW	201942-MW2-110719		2/3	G/V	X	X	
3	"				GW	201942-MW3-110719		2/3	G/V	X	X	

Container Type: P-Poly G-Glass S-Sterile V-VOA
Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present: Yes ___ No
Seals Intact: ___ Yes ___ No NA: ___
Cooler Temp: 2.8
Internal Use Only: [ ] Pickup [ ] Technicians ____

Preservation Code: 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- ____
Sampled by: GSK
Comments: Delivered to lab on ice.

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
G Kaufman	11/7/19 1019		11/7/19 1019				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	/						

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A

CERTIFICATE OF ANALYSIS

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

RE: Grenier (201942)
ESS Laboratory Work Order Number: 19K0207

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

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: Grenier

ESS Laboratory Work Order: 19K0207

SAMPLE RECEIPT

The following samples were received on November 07, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Lab Number	Sample Name	Matrix	Analysis
19K0207-01	201942-MW1-110719	Ground Water	8260B
19K0207-02	201942-MW2-110719	Ground Water	8260B
19K0207-03	201942-MW3-110719	Ground Water	8260B
19K0207-04	Trip Blank	Aqueous	8260B

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

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: Grenier
Client Sample ID: 201942-MW1-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,1-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,1-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,1-Dichloropropene	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2-Dibromoethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,3-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1,4-Dioxane - Screen	ND (0.500)		8260B		1	11/08/19 16:23	C9K0155	CK90828
1-Chlorohexane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
2,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
2-Butanone	ND (0.0100)		8260B		1	11/08/19 16:23	C9K0155	CK90828
2-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
2-Hexanone	ND (0.0100)		8260B		1	11/08/19 16:23	C9K0155	CK90828
4-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
4-Isopropyltoluene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Acetone	ND (0.0100)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Benzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Bromobenzene	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Bromodichloromethane	ND (0.0006)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Bromoform	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Bromomethane	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Carbon Disulfide	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Carbon Tetrachloride	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Chlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Chloroethane	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Chloroform	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Chloromethane	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Dibromochloromethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Dibromomethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Dichlorodifluoromethane	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Diethyl Ether	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Di-isopropyl ether	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Ethylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Hexachlorobutadiene	ND (0.0006)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Hexachloroethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Isopropylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Methylene Chloride	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Naphthalene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
n-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
n-Propylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
sec-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Styrene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
tert-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Tetrachloroethene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW1-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-01
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrahydrofuran	ND (0.0050)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Toluene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Trichloroethene	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Trichlorofluoromethane	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Vinyl Acetate	ND (0.0050)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Vinyl Chloride	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Xylene O	ND (0.0010)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Xylene P,M	ND (0.0020)		8260B		1	11/08/19 16:23	C9K0155	CK90828
Xylenes (Total)	ND (0.00200)		8260B		1	11/08/19 16:23		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*95 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*96 %*		*70-130*
Surrogate: Dibromofluoromethane	*96 %*		*70-130*
Surrogate: Toluene-d8	*98 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,1-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,1-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,1-Dichloropropene	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2-Dibromoethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,3-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1,4-Dioxane - Screen	ND (0.500)		8260B		1	11/08/19 16:49	C9K0155	CK90828
1-Chlorohexane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
2,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
2-Butanone	ND (0.0100)		8260B		1	11/08/19 16:49	C9K0155	CK90828
2-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
2-Hexanone	ND (0.0100)		8260B		1	11/08/19 16:49	C9K0155	CK90828
4-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
4-Isopropyltoluene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Acetone	ND (0.0100)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Benzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Bromobenzene	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Bromodichloromethane	ND (0.0006)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Bromoform	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Bromomethane	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Carbon Disulfide	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Carbon Tetrachloride	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Chlorobenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Chloroethane	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Chloroform	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Chloromethane	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Dibromochloromethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Dibromomethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Dichlorodifluoromethane	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Diethyl Ether	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Di-isopropyl ether	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Ethylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Hexachlorobutadiene	ND (0.0006)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Hexachloroethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Isopropylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Methylene Chloride	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Naphthalene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
n-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
n-Propylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
sec-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Styrene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
tert-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Tetrachloroethene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW2-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-02
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrahydrofuran	ND (0.0050)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Toluene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Trichloroethene	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Trichlorofluoromethane	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Vinyl Acetate	ND (0.0050)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Vinyl Chloride	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Xylene O	ND (0.0010)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Xylene P,M	ND (0.0020)		8260B		1	11/08/19 16:49	C9K0155	CK90828
Xylenes (Total)	ND (0.00200)		8260B		1	11/08/19 16:49		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*95 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*96 %*		*70-130*
Surrogate: Dibromofluoromethane	*96 %*		*70-130*
Surrogate: Toluene-d8	*98 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-03
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,1-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,1-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,1-Dichloropropene	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2-Dibromoethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,3-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1,4-Dioxane - Screen	ND (0.500)		8260B		1	11/08/19 17:15	C9K0155	CK90828
1-Chlorohexane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
2,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
2-Butanone	ND (0.0100)		8260B		1	11/08/19 17:15	C9K0155	CK90828
2-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
2-Hexanone	ND (0.0100)		8260B		1	11/08/19 17:15	C9K0155	CK90828
4-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
4-Isopropyltoluene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Acetone	ND (0.0100)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Benzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Bromobenzene	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-03
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Bromodichloromethane	ND (0.0006)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Bromoform	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Bromomethane	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Carbon Disulfide	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Carbon Tetrachloride	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Chlorobenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Chloroethane	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Chloroform	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Chloromethane	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Dibromochloromethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Dibromomethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Dichlorodifluoromethane	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Diethyl Ether	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Di-isopropyl ether	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Ethylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Hexachlorobutadiene	ND (0.0006)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Hexachloroethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Isopropylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Methylene Chloride	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Naphthalene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
n-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
n-Propylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
sec-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Styrene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
tert-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Tetrachloroethene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: 201942-MW3-110719
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-03
Sample Matrix: Ground Water
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrahydrofuran	ND (0.0050)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Toluene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Trichloroethene	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Trichlorofluoromethane	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Vinyl Acetate	ND (0.0050)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Vinyl Chloride	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Xylene O	ND (0.0010)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Xylene P,M	ND (0.0020)		8260B		1	11/08/19 17:15	C9K0155	CK90828
Xylenes (Total)	ND (0.00200)		8260B		1	11/08/19 17:15		[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*96 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*96 %*		*70-130*
Surrogate: Dibromofluoromethane	*96 %*		*70-130*
Surrogate: Toluene-d8	*98 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: Trip Blank
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-04
Sample Matrix: Aqueous
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,1,1-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,1,2,2-Tetrachloroethane	ND (0.0005)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,1,2-Trichloroethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,1-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,1-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,1-Dichloropropene	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2,3-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2,3-Trichloropropane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2,4-Trichlorobenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2,4-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2-Dibromo-3-Chloropropane	ND (0.0050)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2-Dibromoethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2-Dichloroethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,3,5-Trimethylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,3-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,3-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,4-Dichlorobenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1,4-Dioxane - Screen	ND (0.500)		8260B		1	11/08/19 12:54	C9K0155	CK90828
1-Chlorohexane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
2,2-Dichloropropane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
2-Butanone	ND (0.0100)		8260B		1	11/08/19 12:54	C9K0155	CK90828
2-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
2-Hexanone	ND (0.0100)		8260B		1	11/08/19 12:54	C9K0155	CK90828
4-Chlorotoluene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
4-Isopropyltoluene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
4-Methyl-2-Pentanone	ND (0.0250)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Acetone	ND (0.0100)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Benzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Bromobenzene	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: Trip Blank
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-04
Sample Matrix: Aqueous
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Bromochloromethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Bromodichloromethane	ND (0.0006)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Bromoform	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Bromomethane	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Carbon Disulfide	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Carbon Tetrachloride	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Chlorobenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Chloroethane	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Chloroform	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Chloromethane	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828
cis-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
cis-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Dibromochloromethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Dibromomethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Dichlorodifluoromethane	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Diethyl Ether	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Di-isopropyl ether	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Ethyl tertiary-butyl ether	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Ethylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Hexachlorobutadiene	ND (0.0006)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Hexachloroethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Isopropylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Methyl tert-Butyl Ether	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Methylene Chloride	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Naphthalene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
n-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
n-Propylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
sec-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Styrene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
tert-Butylbenzene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Tertiary-amyl methyl ether	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Tetrachloroethene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier
Client Sample ID: Trip Blank
Date Sampled: 11/07/19 00:00
Percent Solids: N/A
Initial Volume: 5
Final Volume: 5
Extraction Method: 5030B

ESS Laboratory Work Order: 19K0207
ESS Laboratory Sample ID: 19K0207-04
Sample Matrix: Aqueous
Units: mg/L
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Tetrahydrofuran	ND (0.0050)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Toluene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
trans-1,2-Dichloroethene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
trans-1,3-Dichloropropene	ND (0.0004)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Trichloroethene	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Trichlorofluoromethane	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Vinyl Acetate	ND (0.0050)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Vinyl Chloride	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Xylene O	ND (0.0010)		8260B		1	11/08/19 12:54	C9K0155	CK90828
Xylene P,M	ND (0.0020)		8260B		1	11/08/19 12:54	C9K0155	CK90828

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*95 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*97 %*		*70-130*
Surrogate: Dibromofluoromethane	*96 %*		*70-130*
Surrogate: Toluene-d8	*99 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CK90828 - 5030B										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0010	mg/L							
1,1,1-Trichloroethane	ND	0.0010	mg/L							
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L							
1,1,2-Trichloroethane	ND	0.0010	mg/L							
1,1-Dichloroethane	ND	0.0010	mg/L							
1,1-Dichloroethene	ND	0.0010	mg/L							
1,1-Dichloropropene	ND	0.0020	mg/L							
1,2,3-Trichlorobenzene	ND	0.0010	mg/L							
1,2,3-Trichloropropane	ND	0.0010	mg/L							
1,2,4-Trichlorobenzene	ND	0.0010	mg/L							
1,2,4-Trimethylbenzene	ND	0.0010	mg/L							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/L							
1,2-Dibromoethane	ND	0.0010	mg/L							
1,2-Dichlorobenzene	ND	0.0010	mg/L							
1,2-Dichloroethane	ND	0.0010	mg/L							
1,2-Dichloropropane	ND	0.0010	mg/L							
1,3,5-Trimethylbenzene	ND	0.0010	mg/L							
1,3-Dichlorobenzene	ND	0.0010	mg/L							
1,3-Dichloropropane	ND	0.0010	mg/L							
1,4-Dichlorobenzene	ND	0.0010	mg/L							
1,4-Dioxane - Screen	ND	0.500	mg/L							
1-Chlorohexane	ND	0.0010	mg/L							
2,2-Dichloropropane	ND	0.0010	mg/L							
2-Butanone	ND	0.0100	mg/L							
2-Chlorotoluene	ND	0.0010	mg/L							
2-Hexanone	ND	0.0100	mg/L							
4-Chlorotoluene	ND	0.0010	mg/L							
4-Isopropyltoluene	ND	0.0010	mg/L							
4-Methyl-2-Pentanone	ND	0.0250	mg/L							
Acetone	ND	0.0100	mg/L							
Benzene	ND	0.0010	mg/L							
Bromobenzene	ND	0.0020	mg/L							
Bromochloromethane	ND	0.0010	mg/L							
Bromodichloromethane	ND	0.0006	mg/L							
Bromoform	ND	0.0010	mg/L							
Bromomethane	ND	0.0020	mg/L							
Carbon Disulfide	ND	0.0010	mg/L							
Carbon Tetrachloride	ND	0.0010	mg/L							
Chlorobenzene	ND	0.0010	mg/L							
Chloroethane	ND	0.0020	mg/L							
Chloroform	ND	0.0010	mg/L							
Chloromethane	ND	0.0020	mg/L							
cis-1,2-Dichloroethene	ND	0.0010	mg/L							
cis-1,3-Dichloropropene	ND	0.0004	mg/L							

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CK90828 - 5030B										
Dibromochloromethane	ND	0.0010	mg/L							
Dibromomethane	ND	0.0010	mg/L							
Dichlorodifluoromethane	ND	0.0020	mg/L							
Diethyl Ether	ND	0.0010	mg/L							
Di-isopropyl ether	ND	0.0010	mg/L							
Ethyl tertiary-butyl ether	ND	0.0010	mg/L							
Ethylbenzene	ND	0.0010	mg/L							
Hexachlorobutadiene	ND	0.0006	mg/L							
Hexachloroethane	ND	0.0010	mg/L							
Isopropylbenzene	ND	0.0010	mg/L							
Methyl tert-Butyl Ether	ND	0.0010	mg/L							
Methylene Chloride	ND	0.0020	mg/L							
Naphthalene	ND	0.0010	mg/L							
n-Butylbenzene	ND	0.0010	mg/L							
n-Propylbenzene	ND	0.0010	mg/L							
sec-Butylbenzene	ND	0.0010	mg/L							
Styrene	ND	0.0010	mg/L							
tert-Butylbenzene	ND	0.0010	mg/L							
Tertiary-amyl methyl ether	ND	0.0010	mg/L							
Tetrachloroethene	ND	0.0010	mg/L							
Tetrahydrofuran	ND	0.0050	mg/L							
Toluene	ND	0.0010	mg/L							
trans-1,2-Dichloroethene	ND	0.0010	mg/L							
trans-1,3-Dichloropropene	ND	0.0004	mg/L							
Trichloroethene	ND	0.0010	mg/L							
Trichlorofluoromethane	ND	0.0010	mg/L							
Vinyl Acetate	ND	0.0050	mg/L							
Vinyl Chloride	ND	0.0010	mg/L							
Xylene O	ND	0.0010	mg/L							
Xylene P,M	ND	0.0020	mg/L							
Surrogate: 1,2-Dichloroethane-d4	*0.0237*		mg/L	*0.02500*		*95*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0242*		mg/L	*0.02500*		*97*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0240*		mg/L	*0.02500*		*96*	*70-130*			
Surrogate: Toluene-d8	*0.0248*		mg/L	*0.02500*		*99*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	9.51		ug/L	10.00		95	70-130			
1,1,1-Trichloroethane	9.72		ug/L	10.00		97	70-130			
1,1,2,2-Tetrachloroethane	10.3		ug/L	10.00		103	70-130			
1,1,2-Trichloroethane	9.94		ug/L	10.00		99	70-130			
1,1-Dichloroethane	10.2		ug/L	10.00		102	70-130			
1,1-Dichloroethene	11.0		ug/L	10.00		110	70-130			
1,1-Dichloropropene	9.81		ug/L	10.00		98	70-130			
1,2,3-Trichlorobenzene	10.6		ug/L	10.00		106	70-130			
1,2,3-Trichloropropane	9.39		ug/L	10.00		94	70-130			
1,2,4-Trichlorobenzene	10.3		ug/L	10.00		103	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CK90828 - 5030B										
1,2,4-Trimethylbenzene	10.6		ug/L	10.00		106	70-130			
1,2-Dibromo-3-Chloropropane	8.90		ug/L	10.00		89	70-130			
1,2-Dibromoethane	9.34		ug/L	10.00		93	70-130			
1,2-Dichlorobenzene	10.3		ug/L	10.00		103	70-130			
1,2-Dichloroethane	9.67		ug/L	10.00		97	70-130			
1,2-Dichloropropane	9.71		ug/L	10.00		97	70-130			
1,3,5-Trimethylbenzene	10.5		ug/L	10.00		105	70-130			
1,3-Dichlorobenzene	10.4		ug/L	10.00		104	70-130			
1,3-Dichloropropane	10.0		ug/L	10.00		100	70-130			
1,4-Dichlorobenzene	10.5		ug/L	10.00		105	70-130			
1,4-Dioxane - Screen	213		ug/L	200.0		107	0-332			
1-Chlorohexane	9.35		ug/L	10.00		94	70-130			
2,2-Dichloropropane	9.73		ug/L	10.00		97	70-130			
2-Butanone	48.0		ug/L	50.00		96	70-130			
2-Chlorotoluene	10.4		ug/L	10.00		104	70-130			
2-Hexanone	47.2		ug/L	50.00		94	70-130			
4-Chlorotoluene	10.3		ug/L	10.00		103	70-130			
4-Isopropyltoluene	10.2		ug/L	10.00		102	70-130			
4-Methyl-2-Pentanone	47.7		ug/L	50.00		95	70-130			
Acetone	43.9		ug/L	50.00		88	70-130			
Benzene	10.2		ug/L	10.00		102	70-130			
Bromobenzene	10.4		ug/L	10.00		104	70-130			
Bromochloromethane	9.72		ug/L	10.00		97	70-130			
Bromodichloromethane	9.80		ug/L	10.00		98	70-130			
Bromoform	9.21		ug/L	10.00		92	70-130			
Bromomethane	10.5		ug/L	10.00		105	70-130			
Carbon Disulfide	9.68		ug/L	10.00		97	70-130			
Carbon Tetrachloride	9.91		ug/L	10.00		99	70-130			
Chlorobenzene	9.99		ug/L	10.00		100	70-130			
Chloroethane	9.28		ug/L	10.00		93	70-130			
Chloroform	10.2		ug/L	10.00		102	70-130			
Chloromethane	8.86		ug/L	10.00		89	70-130			
cis-1,2-Dichloroethene	10.1		ug/L	10.00		101	70-130			
cis-1,3-Dichloropropene	9.68		ug/L	10.00		97	70-130			
Dibromochloromethane	9.07		ug/L	10.00		91	70-130			
Dibromomethane	9.85		ug/L	10.00		98	70-130			
Dichlorodifluoromethane	8.28		ug/L	10.00		83	70-130			
Diethyl Ether	9.36		ug/L	10.00		94	70-130			
Di-isopropyl ether	9.87		ug/L	10.00		99	70-130			
Ethyl tertiary-butyl ether	9.47		ug/L	10.00		95	70-130			
Ethylbenzene	10.0		ug/L	10.00		100	70-130			
Hexachlorobutadiene	10.0		ug/L	10.00		100	70-130			
Hexachloroethane	9.76		ug/L	10.00		98	70-130			
Isopropylbenzene	10.3		ug/L	10.00		103	70-130			
Methyl tert-Butyl Ether	10.3		ug/L	10.00		103	70-130			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CK90828 - 5030B										
Methylene Chloride	10.1		ug/L	10.00		101	70-130			
Naphthalene	10.1		ug/L	10.00		101	70-130			
n-Butylbenzene	10.3		ug/L	10.00		103	70-130			
n-Propylbenzene	10.2		ug/L	10.00		102	70-130			
sec-Butylbenzene	9.98		ug/L	10.00		100	70-130			
Styrene	9.80		ug/L	10.00		98	70-130			
tert-Butylbenzene	10.3		ug/L	10.00		103	70-130			
Tertiary-amyl methyl ether	10.1		ug/L	10.00		101	70-130			
Tetrachloroethene	9.11		ug/L	10.00		91	70-130			
Tetrahydrofuran	9.44		ug/L	10.00		94	70-130			
Toluene	10.3		ug/L	10.00		103	70-130			
trans-1,2-Dichloroethene	10.5		ug/L	10.00		105	70-130			
trans-1,3-Dichloropropene	9.43		ug/L	10.00		94	70-130			
Trichloroethene	9.88		ug/L	10.00		99	70-130			
Trichlorofluoromethane	10.4		ug/L	10.00		104	70-130			
Vinyl Acetate	11.0		ug/L	10.00		110	70-130			
Vinyl Chloride	8.29		ug/L	10.00		83	70-130			
Xylene O	10.0		ug/L	10.00		100	70-130			
Xylene P,M	20.2		ug/L	20.00		101	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0237*		mg/L	*0.02500*		*95*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0240*		mg/L	*0.02500*		*96*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0245*		mg/L	*0.02500*		*98*	*70-130*			
Surrogate: Toluene-d8	*0.0245*		mg/L	*0.02500*		*98*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	9.57		ug/L	10.00		96	70-130	0.6	25	
1,1,1-Trichloroethane	9.57		ug/L	10.00		96	70-130	2	25	
1,1,2,2-Tetrachloroethane	10.6		ug/L	10.00		106	70-130	3	25	
1,1,2-Trichloroethane	9.81		ug/L	10.00		98	70-130	1	25	
1,1-Dichloroethane	9.94		ug/L	10.00		99	70-130	2	25	
1,1-Dichloroethene	10.9		ug/L	10.00		109	70-130	1	25	
1,1-Dichloropropene	9.64		ug/L	10.00		96	70-130	2	25	
1,2,3-Trichlorobenzene	10.6		ug/L	10.00		106	70-130	0.09	25	
1,2,3-Trichloropropane	9.55		ug/L	10.00		96	70-130	2	25	
1,2,4-Trichlorobenzene	10.4		ug/L	10.00		104	70-130	1	25	
1,2,4-Trimethylbenzene	10.5		ug/L	10.00		105	70-130	0.7	25	
1,2-Dibromo-3-Chloropropane	9.42		ug/L	10.00		94	70-130	6	25	
1,2-Dibromoethane	9.43		ug/L	10.00		94	70-130	1	25	
1,2-Dichlorobenzene	10.2		ug/L	10.00		102	70-130	0.8	25	
1,2-Dichloroethane	9.50		ug/L	10.00		95	70-130	2	25	
1,2-Dichloropropane	9.60		ug/L	10.00		96	70-130	1	25	
1,3,5-Trimethylbenzene	10.3		ug/L	10.00		103	70-130	2	25	
1,3-Dichlorobenzene	10.2		ug/L	10.00		102	70-130	2	25	
1,3-Dichloropropane	10.3		ug/L	10.00		103	70-130	3	25	
1,4-Dichlorobenzene	10.4		ug/L	10.00		104	70-130	1	25	
1,4-Dioxane - Screen	215		ug/L	200.0		108	0-332	0.9	200	

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

Quality Control Data

8260B Volatile Organic Compounds

Batch CK90828 - 5030B

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
1-Chlorohexane	9.41		ug/L	10.00		94	70-130	0.6	25	
2,2-Dichloropropane	9.49		ug/L	10.00		95	70-130	2	25	
2-Butanone	48.4		ug/L	50.00		97	70-130	0.7	25	
2-Chlorotoluene	10.2		ug/L	10.00		102	70-130	2	25	
2-Hexanone	48.9		ug/L	50.00		98	70-130	4	25	
4-Chlorotoluene	10.1		ug/L	10.00		101	70-130	2	25	
4-Isopropyltoluene	10.0		ug/L	10.00		100	70-130	2	25	
4-Methyl-2-Pentanone	49.6		ug/L	50.00		99	70-130	4	25	
Acetone	44.4		ug/L	50.00		89	70-130	1	25	
Benzene	10.1		ug/L	10.00		101	70-130	1	25	
Bromobenzene	10.3		ug/L	10.00		103	70-130	1	25	
Bromochloromethane	9.83		ug/L	10.00		98	70-130	1	25	
Bromodichloromethane	9.74		ug/L	10.00		97	70-130	0.6	25	
Bromoform	9.30		ug/L	10.00		93	70-130	1	25	
Bromomethane	10.2		ug/L	10.00		102	70-130	3	25	
Carbon Disulfide	9.54		ug/L	10.00		95	70-130	1	25	
Carbon Tetrachloride	9.69		ug/L	10.00		97	70-130	2	25	
Chlorobenzene	9.96		ug/L	10.00		100	70-130	0.3	25	
Chloroethane	9.09		ug/L	10.00		91	70-130	2	25	
Chloroform	9.96		ug/L	10.00		100	70-130	3	25	
Chloromethane	8.67		ug/L	10.00		87	70-130	2	25	
cis-1,2-Dichloroethene	10.1		ug/L	10.00		101	70-130	0.4	25	
cis-1,3-Dichloropropene	9.52		ug/L	10.00		95	70-130	2	25	
Dibromochloromethane	9.26		ug/L	10.00		93	70-130	2	25	
Dibromomethane	10.0		ug/L	10.00		100	70-130	2	25	
Dichlorodifluoromethane	8.09		ug/L	10.00		81	70-130	2	25	
Diethyl Ether	9.34		ug/L	10.00		93	70-130	0.2	25	
Di-isopropyl ether	9.78		ug/L	10.00		98	70-130	0.9	25	
Ethyl tertiary-butyl ether	9.27		ug/L	10.00		93	70-130	2	25	
Ethylbenzene	10.0		ug/L	10.00		100	70-130	0.3	25	
Hexachlorobutadiene	10.2		ug/L	10.00		102	70-130	2	25	
Hexachloroethane	9.58		ug/L	10.00		96	70-130	2	25	
Isopropylbenzene	10.1		ug/L	10.00		101	70-130	2	25	
Methyl tert-Butyl Ether	10.3		ug/L	10.00		103	70-130	0.1	25	
Methylene Chloride	10.1		ug/L	10.00		101	70-130	0.3	25	
Naphthalene	10.0		ug/L	10.00		100	70-130	0.3	25	
n-Butylbenzene	10.2		ug/L	10.00		102	70-130	2	25	
n-Propylbenzene	10.0		ug/L	10.00		100	70-130	2	25	
sec-Butylbenzene	9.79		ug/L	10.00		98	70-130	2	25	
Styrene	9.86		ug/L	10.00		99	70-130	0.6	25	
tert-Butylbenzene	10.1		ug/L	10.00		101	70-130	2	25	
Tertiary-amyl methyl ether	10.0		ug/L	10.00		100	70-130	0.5	25	
Tetrachloroethene	9.01		ug/L	10.00		90	70-130	1	25	
Tetrahydrofuran	10.3		ug/L	10.00		103	70-130	9	25	
Toluene	10.1		ug/L	10.00		101	70-130	2	25	

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8260B Volatile Organic Compounds										
Batch CK90828 - 5030B										
trans-1,2-Dichloroethene	10.1		ug/L	10.00		101	70-130	3	25	
trans-1,3-Dichloropropene	9.32		ug/L	10.00		93	70-130	1	25	
Trichloroethene	9.65		ug/L	10.00		96	70-130	2	25	
Trichlorofluoromethane	10.1		ug/L	10.00		101	70-130	2	25	
Vinyl Acetate	11.2		ug/L	10.00		112	70-130	2	25	
Vinyl Chloride	8.13		ug/L	10.00		81	70-130	2	25	
Xylene O	10.0		ug/L	10.00		100	70-130	0.1	25	
Xylene P,M	20.2		ug/L	20.00		101	70-130	0.3	25	
Surrogate: 1,2-Dichloroethane-d4	*0.0237*		mg/L	*0.02500*		*95*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0242*		mg/L	*0.02500*		*97*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0242*		mg/L	*0.02500*		*97*	*70-130*			
Surrogate: Toluene-d8	*0.0247*		mg/L	*0.02500*		*99*	*70-130*			

CERTIFICATE OF ANALYSIS

Client Name: Redwood Environmental Group
Client Project ID: Grenier

ESS Laboratory Work Order: 19K0207

Notes and Definitions

U	Analyte included in the analysis, but not detected
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: Grenier

ESS Laboratory Work Order: 19K0207

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 - KPB/EO

Shipped/Delivered Via: Client

ESS Project ID: 19K0207
Date Received: 11/7/2019
Project Due Date: 11/14/2019
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: 2.8 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	411115	Yes	No	Yes	VOA Vial - HCl	HCl	
01	411116	Yes	No	Yes	VOA Vial - HCl	HCl	
01	411117	Yes	No	Yes	VOA Vial - HCl	HCl	
02	411112	Yes	No	Yes	VOA Vial - HCl	HCl	
02	411113	Yes	No	Yes	VOA Vial - HCl	HCl	
02	411114	Yes	No	Yes	VOA Vial - HCl	HCl	
03	411109	Yes	No	Yes	VOA Vial - HCl	HCl	
03	411110	Yes	No	Yes	VOA Vial - HCl	HCl	
03	411111	Yes	No	Yes	VOA Vial - HCl	HCl	
04	411106	Yes	No	Yes	VOA Vial - HCl	HCl	

2nd Review

Were all containers scanned into storage/lab? Initials
Are barcode labels on correct containers? (Yes) / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: Date & Time: 11/7/19 2134

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Redwood Environmental Group - KPB/EO

ESS Project ID: 19K0207

Date Received: 11/7/2019

Reviewed By:

Date & Time: 11/7/19 2257

Delivered By:

11/7/19 2257

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

Page 1 of 1

Turn Time ✓ Standard Other _____
If faster than 5 days, prior approval by laboratory is required # _____

State where samples were collected from:
MA (RI) CT NH NJ NY ME Other _____

Is this project for any of the following:
MA-MCP Navy USACE Other _____

Reporting Limits: GA

ESS LAB PROJECT ID: 19K0207

Electronic Deliverable Yes ___ No ___
Format: Excel ___ Access ___ PDF ___ Other Checker

Co. Name	Project #	Project Name (20 Char. or less)
Redwood Env	201942	Grenier

Contact Person	Address	
G Kaufman		

City	State	Zip	PO#

Telephone #	Fax #	Email Address

ESS LAB Sample #	Date	Collection Time	COMP	GRAB	MATRIX	Sample Identification (20 Char. or less)	Pres Code	Number of Containers	Type of Containers	Write Required Analysis: VOC 8260
1	11/7/19			X	GW	201942 – mw1 – 110719		3	V	X
2				X	GW	201942 – mw2 – 110719		3	V	X
3				X	GW	201942 – mw3 – 110719		3	V	X
4						Trip Blank				

Container Type: P-Poly G-Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Waste Water GW-Ground Water SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filters

Cooler Present ___Yes ___No

Seals Intact ___Yes ___No NA: ___

Cooler Temp: Ice/8

Internal Use Only
[ ] Pickup
[ ] Technicians ___

Preservation Code 1- NP, 2- HCl, 3- H_2SO_4, 4- HNO_3, 5- NaOH, 6- MeOH, 7- Asorbic Acid, 8- ZnAct, 9- _____

Sampled by: GSK

Comments: Delivered to lab on ice

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
G Kaufman	11/7/19 1019		11/7/19 1019				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time

*By circling MA-MCP, client acknowledges samples were collected in accordance with MADEP CAM VII A

Please fax all changes to Chain of Custody in writing.

1 (White) Lab Copy 2 (Yellow) Client Receipt

10/26/04 A

REDWOOD
ENVIRONMENTAL GROUP, LLC

APPENDIX C
CERTIFICATION STATEMENTS

Appendix C

CERTIFICATIONS

In accordance with the Remediation Regulations, the certification expressed below shall apply to the SIR compiled and submitted to RI DEM by Redwood.

I hereby certify that completeness and accuracy of the information contained in the above referenced documents to the best of my knowledge.

Gary S. Kaufman	Principal	January 15, 2020
Signature of Redwood Environmental Group, LLC- Gary S. Kaufman	Title	Date

I hereby certify that this document is a complete and accurate representation of the contaminated Site and the release and contain all available facts surrounding the release to the best of my knowledge.

	President	1/17/2020
Signature of Performing Party	Title	Date

APPENDIX D
ENVIRONMENTAL PROFESSIONAL QUALIFICATIONS

REDWOOD
ENVIRONMENTAL GROUP, LLC

QUALIFICATIONS

Redwood Environmental Group, LLC (Redwood) provides high quality environmental consulting services to commercial and industrial clients throughout the Southern New England area. Redwood focuses on due diligence assessments, regulatory closures of underground storage tanks (USTs) and underground injection control (UIC) structures and remedial design and implementation.

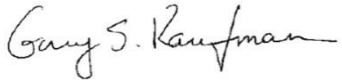
Gary S. Kaufman, Principal/Senior Project Manager

Mr. Kaufman has over 20+ years of experience in the environmental industry at ESS Group, Ransom Environmental Inc., and Redwood Environmental Group, LLC. He has extensive due diligence experience, conducting and preparing Phase I and Phase II Environmental Site Assessments, performing regulatory closures of USTs and UICs, and designing and implementing remedial action work plans. Mr. Kaufman works with major banking and lending institutions, developers and property owners, successfully managing and completing hundreds of due diligence risk assessments at industrial and commercial sites throughout Rhode Island and neighboring areas. He has excellent working relationships with local regulatory agencies. Mr. Kaufman is experienced in all aspects of soil and groundwater sampling, the identification of contamination sources, and delineating the extent and impact of contamination upon the site.

Mr. Kaufman was responsible for the management of a 2-year remediation project of a former manufactured gas plant (MGP), which included the oversight of regulatory closures of underground structures and the proper disposal of hundreds of yards of contaminated soils. Working closely with the developer in the new construction of a commercial bank, Mr. Kaufman managed the remediation of hundreds of cubic yards of arsenic impacted soils through excavation and disposal offsite. Mr. Kaufman has also managed numerous UST closures, from gasoline stations to industrial and commercial facilities.

Mr. Kaufman earned a B.S. in Environmental Management from the University of Rhode Island and a B.A., *cum laude*, in Criminal Justice from Northeastern University.

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. I have the specific qualification based on education, training and experience to assess a property of the nature, history and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.



October 17, 2019

Gary S. Kaufman
Principal/Senior Project Manager

Date