Technical Memorandum

TO: Michael Warfel, Washington State Department of Ecology

FROM: Jenny Green, EIT, and Evelyn Ives, PE

DATE: May 12, 2021

RE: **March 2021 Progress Report**
Beckwith & Kuffel, Inc. Property
1313 South 96th Street
Seattle, Washington
VCP Project No. NW3119
LAI Project No. 1645001.030

Introduction

At the request of Beckwith & Kuffel, Inc. (B&K), Landau Associates, Inc. (LAI) prepared this technical memorandum, which provides a progress update for remediation activities conducted at the B&K property located at 1313 South 96th Street in Seattle, Washington (Site; Figure 1). Remedial activities address treatment of chlorinated volatile organic compound (cVOC) contamination in Site groundwater. Activities have been performed as part of the Washington State Department of Ecology's (Ecology's) Voluntary Cleanup Program (VCP). The Site VCP project number is NW3119.

This technical memorandum describes implementation of *in situ* biotic (biological) and abiotic (chemical) treatment in the area of highest remaining cVOC concentrations in groundwater and performance monitoring results. Both biotic and abiotic degradation of cVOCs were stimulated through direct-push injection of a treatment agent, EHC® in October 2020. EHC is proprietary product from PeroxyChem containing both electron donor substrate and zero valent iron (ZVI). The injection work was completed in accordance with the Enhanced Biotic and Abiotic Trichloroethene Degradation Work Plan (work plan; LAI 2020). The first round of post-injection performance groundwater monitoring was conducted in March 2021.

Background Information

The Site was likely undeveloped land prior to 1977 and then became the location of two forklift maintenance companies (Clarklift of Washington and later FMH Material Handling Solutions [FMH]). In 2010, Industrial Materials Handling, which had purchased FMH, vacated the Site. The Site was vacant until B&K purchased it in 2013 (Shannon & Wilson 2012). Previous investigations discovered cVOCs, including trichloroethene (TCE), cis-1,2-dichloroethene (cDCE), and vinyl chloride (VC), in groundwater at the southeast end of the Site in the vicinity of an old concrete wash pad with a severely cracked surface (Shannon & Wilson 2014). Based on the sampling results and the Site's prior use, LAI assumed that the source of the cVOC contamination was TCE degreasing solvents used by the former Site occupants to clean forklift parts at the wash pad; cDCE and VC are biodegradation breakdown products of TCE.

Extent of Contamination

TCE and breakdown products cDCE and VC occur in the southeast corner of the B&K Site and extend onto the adjacent Sea Mar Community Health Centers (Sea Mar) and Wooldridge Boats (Wooldridge) properties (properties shown on Figure 2). Depth-discrete sampling results indicated that the cVOC contamination in groundwater was generally limited to the uppermost 20 feet (ft) of the subsurface in an interbedded sand/silt/clay unit that underlies fill material at the Site. Prior to remedial excavation on the B&K property, the highest concentration of TCE was detected in Site well MW-5 (1,320 micrograms per liter [µg/L]) (Shannon & Wilson 2014). Further investigation on the Wooldridge property, south of the former wash pad on the B&K property, identified a similar TCE concentration of 1,100 µg/L at well MW-11. After remedial excavation of the wash pad and adjacent source material around MW-5 in 2013 (discussed below), the maximum TCE concentration remaining was at MW-11. The southern extent of TCE contamination extends beneath the northeast corner of the Wooldridge building to include well MW-12 but is bounded to the south, east, and west by borings and a well where TCE was not detected. The remedial excavation and cVOC groundwater data from 2017 through March 2021[1] are shown on Figure 3.

Prior Chlorinated Volatile Organic Compound Treatment

The former wash pad was excavated in 2013. The excavation extended to approximately 18 ft below ground surface within the approximate extents shown on Figure 3. The northern half of the excavation was backfilled with pea gravel and the southern half with sand and gravel fill. Approximately 1,100 pounds of Regenesis' 3D Microemulsion® electron donor product was added to the excavation during backfilling to enhance natural biodegradation of the cVOCs in groundwater at the Site post-excavation (Shannon & Wilson 2014).

Additional enhancement of bioremediation in the excavation area was performed in 2018. Electron donor substrate (LactOil®) was injected to the permeable backfill of the remedial excavation through well MW-7. Approximately 8,500 gallons of injection solution containing 4,400 pounds (480 gallons) of LactOil was injected to the well. The injection was challenging due to short-circuiting of injection fluid into a broken underground storm drain line on the adjacent Sea Mar property. Injection fluid that infiltrated to the storm drain was contained at a downgradient manhole and removed from the stormwater system (LAI 2019).

Injection testing using tap water was conducted in 2019 at two monitoring wells on the Wooldridge property to evaluate injection feasibility. Injection rates were low and water "daylighted" at the ground surface near the test injection wells after a relatively small volume was injected. Both injection attempts confirmed that injection of liquid donor was infeasible at the Site due to the high silt and

[1] Direct-push boring data from 2017 and monitoring well data from November 2017 through March 2021.

clay content of the contaminated water-bearing zone that would be targeted for treatment (LAI 2020).

Modified Approach for Biotic and Abiotic *In Situ* Treatment

To overcome the difficulty of injecting liquid amendments at the Site, *in situ* treatment using a high-pressure injection of a slurry substrate was proposed. The substrate, EHC, is powdered material composed of ZVI and fermentable organic material used for stimulation of both biotic and abiotic degradation of TCE and its breakdown products. The EHC is mixed with water to form a slurry, which can then be injected under high pressure to distribute the slurry into fractures created in the interbedded sand/silt/clay. Treatment was proposed for the area of MW-11 on the Wooldridge property where the highest TCE concentrations in groundwater remained.

Anaerobic aquifer conditions are required for the desired biotic and abiotic degradation of TCE and its breakdown products. The presence of dissolved oxygen (DO) is an indicator of aerobic, or oxidative, aquifer conditions. In the absence of DO, conditions are anaerobic, or reducing. The most significant biodegradation process for the treatment of TCE is reductive dechlorination. Reductive dechlorination occurs as bacteria gain energy from mediating (redox) reactions involving the chlorinated compounds as electron acceptors and electron donor consisting of volatile fatty acids (VFAs) and hydrogen. VFAs and hydrogen are generated as the organic material in the EHC is fermented. The reductive dechlorination process is sequential, transforming TCE into cDCE, cDCE into VC, and VC into ethene and ethane (non-toxic end products). Highly reducing (methanogenic conditions) are required for complete dechlorination to end products to occur. The ZVI in the EHC promotes the abiotic (i.e., chemical) degradation of TCE by the β-elimination and hydrogenolysis pathways. By these pathways, TCE is transformed to short-lived acetylenes, which quickly degrade to ethene and ethane. ZVI also helps in creating the redox conditions necessary for the biotic degradation.

2020 EHC Implementation

Treatment by direct-push injection of EHC slurry was implemented in accordance with the work plan (LAI 2020) from October 5 through 15, 2020. Approximately 13,400 pounds of EHC and 250 gallons of LactOil[2] were injected to 36 locations at the Site. An average of 24 pounds of EHC slurry with water and LactOil were emplaced per vertical foot. Injection pressures were approximately 50 pounds per square inch during the event.

The 40-ft by 40-ft treatment area proposed in the work plan on the Wooldridge property was adjusted in the field when underground utility locates identified a water main on the northern boundary of the injection area and a roof drain line on the southern boundary of the injection area. To provide enough distance from both utilities during drilling, the treatment area was reduced to 32 ft (north-south) by

[2] A surplus 250-gallon tote of LactOil remaining after the 2018 injection was used to provide additional electron donor. This amount was evenly used in the EHC slurry.

40 ft (east-west) with 8-ft spacing maintained between injection locations. Reducing the size of the treatment area required the relocation of five proposed injection points to new locations on the western edge of the treatment area and a tighter density in the immediate vicinity of monitoring well MW-11. Spacing and injection locations were adjusted over the course of injection due to surfacing of slurry and other issues with the high-pressure injection. Injection began on the western boundary of the injection grid. The as-built injection locations are shown on Figure 4. The order of injection points is provided in Table 1.

Challenges with surfacing of injected slurry and slow dissipation of back pressure were encountered due to the low-permeability soil within the treatment area. To address this challenge, the downhole tooling could be capped and left in place overnight, if needed, after completing injection at a location; tooling was removed after the pressure subsided. Leaving the tooling in place also prevented slurry from surfacing through adjacent prior injection locations (e.g., tooling had to be left in place for several days at location #4 because injection at #7 caused surfacing; tooling had to be reinstalled into #19 because injection at #20 caused surfacing through #19). EHC slurry that surfaced was recovered using shovels and/or a wet-dry vacuum; recovered slurry that was free of large particles/debris was injected into the final borings at the end of the injection event.

Two additional locations planned along the northern injection grid boundary on the Wooldridge property (north of #25 and #18) were not injected due to asphalt mounding on the Wooldridge property and surfacing of injection slurry on the B&K property through the cement block retaining wall that separates the two properties. Mounding was mitigated naturally, by allowing the pressure in the subsurface to dissipate. The asphalt was cored and inspected following injection activities to ensure mounding caused no cracks or void space beneath the asphalt that would present a hazard when driven over by large trucks. The mounding dissipated after several weeks. The surfacing through the retaining wall was cleaned up and slurry was recovered for reuse when possible.

The four planned injection points on the Sea Mar property were injected with slight adjustments in location due to their proximity to underground utilities. An additional four locations were injected on the Sea Mar property to maximize treatment on the southeast side of the former wash pad using EHC material that remained after injection on the Wooldridge property, including recovered EHC slurry (Figure 4; Table 1). Particular attention was paid to the stormwater catch basin the immediate vicinity of these borings to ensure that EHC slurry did not reach the stormwater system and downstream wetlands. A catch basin drain cover was used to prevent spilled/surfaced EHC slurry from reaching the drain. No slurry was observed in the stormwater lines during injection on the Sea Mar property.

Post-Injection Monitoring Results

Groundwater sampling was conducted at 12 monitoring wells in March 2021 to monitor treatment progress approximately 5 months after injection of EHC with LactOil in October 2020. Monitoring parameters included the laboratory analyses and field parameters summarized in Table 2. A summary

of cumulative groundwater monitoring results is provided in Table 3; the laboratory analytical data report from March 2021 is provided in Attachment 1. Groundwater cVOC results for 2017 through March 2021 are shown on Figure 3.

Elevated total organic carbon (TOC) concentrations, more reduced aquifer conditions (i.e., sulfate-reducing to methanogenic), and decreasing cVOC concentrations are all indicators of enhanced anerobic bioremediation by dechlorinating bacteria and/or chemical reduction by ZVI. In March 2021, clear evidence of enhanced abiotic degradation due to the EHC injection (October 2020) was present in southern monitoring wells near the EHC treatment area. In wells located farther north, there was continued evidence of enhanced biodegradation due to the 2018 LactOil injection with some changes that may be attributed to the 2020 EHC injection. Results for these two groups of wells are discussed below.

Treatment Area (Southern Wells)

As expected, the most prominent indicators of enhanced TCE degradation in March 2021 were observed at monitoring well MW-11, located within the EHC injection grid. TCE concentrations at this well decreased from 423 µg/L in August 2019 to 14.6 µg/L just 5 months after the EHC injection. This represents a reduction of nearly 97 percent. Coincident with decreased TCE, the increased cDCE concentrations, production of end products ethene and ethane, and no change in VC concentrations at MW-11 is indicative of enhanced abiotic reduction of TCE via the β-elimination and hydrogenolysis pathways (see "Treatment Approach"). These abiotic pathways reduce TCE to non-toxic end products without producing VC; where present, VC indicates the reductive dechlorination (biotic) pathway is occurring. Biotic and abiotic pathways often occur concurrently. The TOC concentration in March was 157.4 milligrams per liter (mg/L), indicating substantial available electron donor for continued reduced aquifer conditions and ongoing biotic and abiotic degradation. TOC concentrations above 10 mg/L are generally conducive to ongoing degradation (Major et al. 2003).

Clear effects of EHC injection were not yet observed at the nearest monitoring wells located upgradient (MW-12) and downgradient (MW-6 and SM-MW-18) of the Site. The cVOC and TOC results for the three wells in March 2021 were generally consistent with prior results, with the exception of increased TCE at SM-MW-18, which may reflect enhanced desorption of TCE mass in the EHC-injected area. However, detection of end products ethene and ethane for the first time at SM-MW-18 results from upgradient biotic and/or abiotic treatment.

No significant changes were observed at cross gradient monitoring wells MW-10 and MW-13, which bound the plume to the east and west.

Downgradient Area (Northern Wells)

Effects of the 2018 LactOil injection continued to be observed in March 2021 at three Site monitoring wells (MW-7, SM-MW-21, and SM-MW-17A) along with changes that may be attributed to the 2020

EHC injection. TOC concentrations declined substantially at MW-7 since August 2019 (251 to 9 mg/L) due to ongoing consumption of donor injected in 2018 and no TOC increase resulting from the EHC injection. TOC concentrations at wells SM-MW-21 and SM-MW-17A remained low and consistent with prior results. However, a slight increase in TCE at MW-7 (4 µg/L), accompanied by substantial increases in cDCE (97 µg/L) and VC (33 µg/L) and ethene and ethane detected for the first time, are significant changes that may be attributable to the EHC injection. End products ethene and/or ethane were also detected for the first time at wells SM-MW-21 and SM-MW-17A, potentially as a result of the EHC injection.

Concentrations of cVOCs at three additional northern wells (MW-8, MW-9, and SM-MW-8) continued a generally declining trend. Other data do not indicate direct treatment effects from the 2018 LactOil injection or the 2020 EHC injection at these wells.

Trends for All Monitored Wells

As further evaluation of treatment progress, total chlorinated ethenes and average molar fractions for the 12 monitored wells were compared for March 2021 and prior sampling events (Figure 5). For this evaluation, groundwater concentrations of TCE, cDCE, and VC were divided by the compound molecular weights, converting the groundwater concentrations in µg/L to molar concentrations in micromoles per liter. Total chlorinated ethenes is the sum of molar concentrations of TCE+cDCE+VC for all 12 wells for each sampling event. The average molar fraction of each compound was calculated for each event by dividing the average molar concentration of each compound for all sampling locations by the average molar concentration of total ethenes (TCE+cDCE+VC+E+E) for all sampling locations. Molar conversion and evaluation of molar fractions are useful because one mole of TCE is converted sequentially to one mole of cDCE, then to one mole VC, and finally to end products ethene and ethane. The molar fraction for each compound indicates which dominates at the Site on the basis of mass and demonstrates overall mass destruction at the Site.

The benefits of *in situ* treatment from November 2017 to March 2021 are shown on Figure 5, and are described below.

- The generally declining trend in total cVOCs is apparent, with the most significant declines occurring after the 2018 and 2020 injections. A 44 percent decline in total cVOCs has occurred in the area monitored at the Site over the approximate 3.5 years represented.
- The molar fraction bar graphs for each sampling event show a transition from the parent product TCE to degradation products over time. The TCE molar fraction has been reduced from approximately 77 percent to 27 percent. Combined breakdown products (cDCE and VC) and end products (ethene and ethane) in March 2021 constituted 73 percent of the molar fraction, including non-toxic end products ethene plus ethane at 22 percent.

Vapor Intrusion Evaluation

Due to the proximity of the highest TCE concentrations at the Site to active manufacturing facilities, Ecology has requested an evaluation of current groundwater concentrations with respect to the short-term TCE exposure screening level for vapor intrusion (VI). Since the original VI guidance was prepared by Ecology in 2009, the US Environmental Protection Agency (EPA) has concluded that even short-term exposures to TCE may cause serious health problems, including heart defects in a developing fetus. Based on these guidelines, Ecology developed VI screening levels for TCE in groundwater and soil gas that are protective of women of childbearing age assuming VI is occurring and TCE is present in indoor air (Ecology 2019). If subsurface TCE concentrations exceed these screening levels and TCE is present below or within 100 ft of a building footprint, then VI should be evaluated.

For groundwater, the non-residential (i.e., commercial/industrial workplace scenario) short-term TCE VI screening level is 31 µg/L. Detections in groundwater that have exceeded the screening level since 2017 are shown on Figure 4. Of the 12 locations sampled in March 2021, three wells (MW-12, MW-8, and SM-MW-21) exceeded the VI screening level and are located within 100 ft of an occupied commercial/industrial building.

Monitoring well MW-12 is located beneath the Wooldridge building and groundwater contamination is bounded within the northeast corner of the building, as evidenced by three groundwater samples (at LB-19, LB-20, and LB-21) collected in 2018 that did not contain TCE concentrations above laboratory reporting limit (<2.0 µg/L). Concentrations at MW-12 exceeded the VI screening level and, therefore, further VI assessment is warranted at the northeast corner of the Wooldridge building.

Monitoring well MW-8 is approximately 35 ft southeast of the B&K building's southeast corner. Although TCE concentrations at MW-8 exceed the VI screening level, they do not extend underneath the building footprint. TCE was not detected from sampling locations LB-2, LB-3, and LB-4 beneath the B&K building at the southeast corner (Figure 4). Although the groundwater plume does not extend beneath the building, a potential vapor plume could still migrate underneath the B&K building through preferential pathways such as utility trenches (e.g., sewer or stormwater lines). Therefore, further VI assessment is warranted near the southeast corner of the B&K building.

Monitoring well SM-MW-12 is within 30 ft (horizontally) of the Sea Mar Community Health Building and VI was evaluated by the property owner between 2018 and 2020 (Riley Group 2020). Soil gas and indoor air samples were collected at the Sea Mar property to evaluate the risk of TCE VI. The results indicate that TCE concentrations in soil gas beneath the Sea Mar building and indoor air in the Sea Mar building are below the applicable VI screening levels.

A tiered VI assessment, using Ecology's VI guidance(Ecology 2018a, b, 2019, 2020), at the B&K and Wooldridge buildings is recommended to evaluate potential exposure risk and determine next steps. The tier assessment approach consists of the following steps:

- **Preliminary assessment:** Quickly identifies whether the potential for VI exists at a site, and if it does, which buildings may be affected. If the preliminary assessment concludes that there are toxic, volatile hazardous substances at a site and the contamination is close to an existing or future building, then a Tier I assessment must be conducted.
- **Tier I assessment:** Evaluates whether concentrations at a site are high enough to constitute an unacceptable source. This assessment looks at volatile contamination in vadose zone soils near current or future buildings, the presence of light non-aqueous phase liquids, and how contaminant concentrations in shallow groundwater and/or soil gas compare to applicable screening levels. Soil gas sampling is performed during this tier (if data are not already available) to quantify concentrations of hazardous chemicals that may reside underneath a building's foundation. If contaminant concentrations in groundwater and/or soil gas exceed applicable screening levels, then a Tier II assessment must be conducted.
- **Tier II assessment:** Evaluates whether VI is occurring and contributing to indoor air quality that could pose a risk to occupants. Indoor air and ambient air samples are collected during this tier. Soil gas samples (typically sub-slab) can also be collected at, or nearly at, the same time as indoor air samples to help approximate the contribution VI is making to the measured contaminant concentrations in indoor air. Estimated indoor air impacts due to VI are used to determine if mitigation measures are required to protect building occupants.

Based on a preliminary assessment, a VI investigation should be conducted at the B&K and Wooldridge buildings. A Tier I assessment is recommended and should include collection of sub-slab soil gas samples at two or three locations under each building, depending on the extent of groundwater impacts and the location of utilities that may be potential preferential pathways for soil gas migration. A sampling and analysis plan for additional VI investigation will be prepared detailing the sampling plan, analytical methods, sampling procedures, and evaluation criteria based on recommendations from Ecology's VI guidance (Ecology 2018a, b, 2019, 2020) and referenced publications (CalEPA 2011).

Summary and Next Steps

Initial results following injection of EHC indicate that the remediation substrates have been effective at stimulating adequate conditions for biotic and abiotic degradation of TCE in groundwater in the immediate treatment area and potentially downgradient locations. Beneficial effects of the 2018 LactOil injection also continue to be observed.

A sub-slab investigation is proposed for the B&K and Wooldridge buildings to quantify TCE concentrations beneath each building's slab and evaluate the potential for VI effects from the underlying TCE groundwater contamination. The results of the sub-slab investigation will determine if indoor air sampling is warranted.

Groundwater monitoring will continue for evaluation of treatment effects of the 2018 and 2020 injections. A second groundwater sampling event will be conducted during the dry season (August or September) of 2021 to continue evaluation of treatment effectiveness and VI risks. Sampling will

continue on a semiannual basis for the next 3 years; it will transition to annual monitoring at that time. The next progress report will be prepared in the first quarter of 2022 documenting treatment progress and results through the wet season sampling event in 2022.

* * * * *

Please call or email the undersigned if you have any questions or if you would like to discuss any of the sampling results in more detail.

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Attachments

Figure 1: Vicinity Map
Figure 2: Site Plan
Figure 3: Chlorinated Volatile Organic Compound Sampling Results
Figure 4: As-Built Injection Grid
Figure 5: Average Total Chlorinated Volatile Organic Compound Concentrations
Table 1: EHC Injection Summary
Table 2: Groundwater Sampling Matrix
Table 3: Groundwater Data Summary
Attachment 1: Laboratory Analytical Data Report

Data Source: Esri 2012

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Beckwith & Kuffel, Inc. Seattle, Washington	**Vicinity Map**	Figure 1

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Legend

MW-12 Monitoring Well (LAI)
SM-MW-11 Monitoring Well (Sea Mar)
MW-4 Former Monitoring Well
LB-1 Former Direct-Push Boring
Parcels

0 50 100
Scale in Feet

Data Source: Sea Mar; Google Earth Imagery.

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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Beckwith & Kuffel, Inc. Seattle, Washington	**Site Plan**	Figure 2

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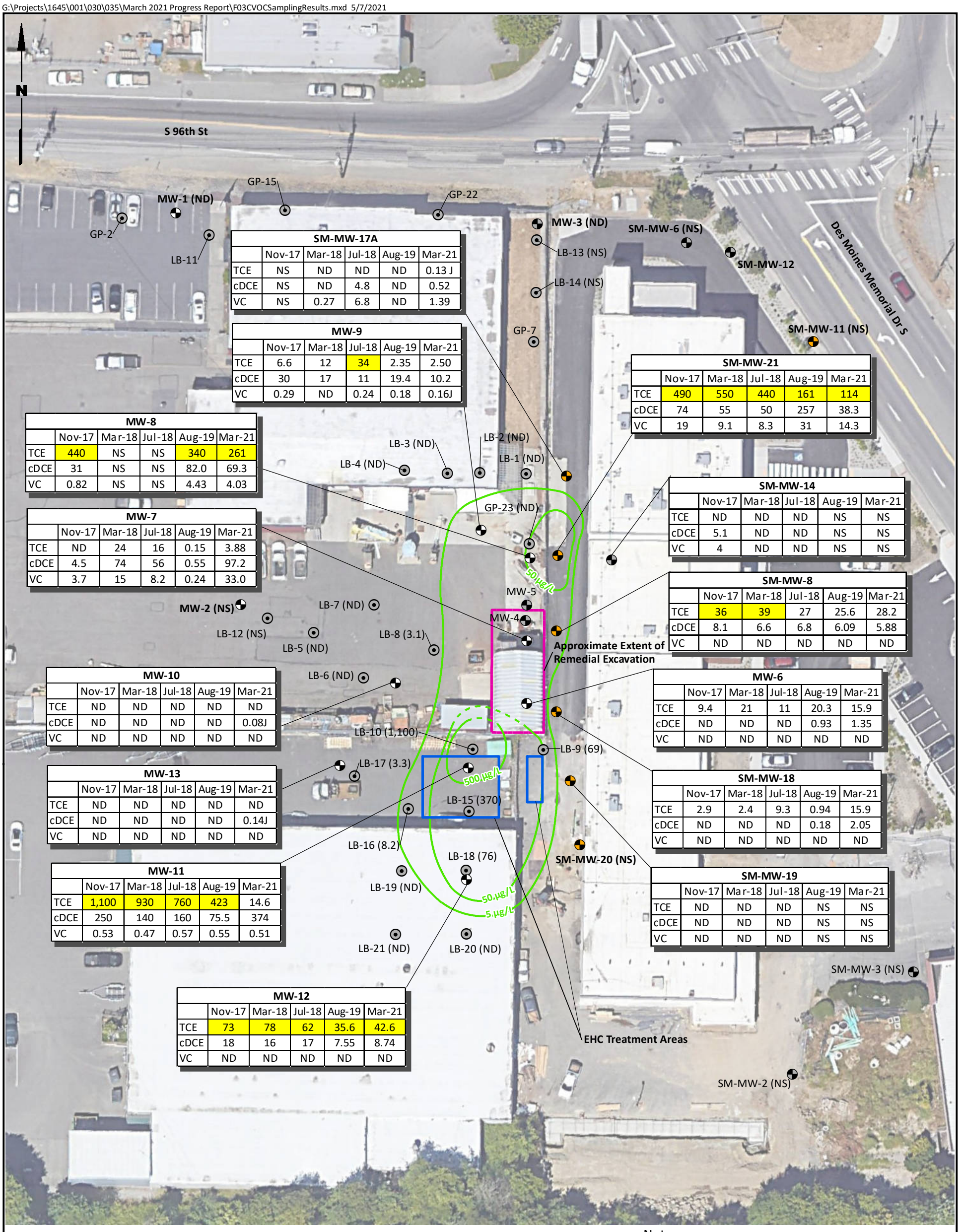

SM-MW-17A

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	NS	ND	ND	ND	0.13 J
cDCE	NS	ND	4.8	ND	0.52
VC	NS	0.27	6.8	ND	1.39

MW-9

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	6.6	12	34	2.35	2.50
cDCE	30	17	11	19.4	10.2
VC	0.29	ND	0.24	0.18	0.16J

SM-MW-21

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	490	550	440	161	114
cDCE	74	55	50	257	38.3
VC	19	9.1	8.3	31	14.3

MW-8

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	440	NS	NS	340	261
cDCE	31	NS	NS	82.0	69.3
VC	0.82	NS	NS	4.43	4.03

SM-MW-14

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	ND	ND	ND	NS	NS
cDCE	5.1	ND	ND	NS	NS
VC	4	ND	ND	NS	NS

MW-7

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	ND	24	16	0.15	3.88
cDCE	4.5	74	56	0.55	97.2
VC	3.7	15	8.2	0.24	33.0

SM-MW-8

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	36	39	27	25.6	28.2
cDCE	8.1	6.6	6.8	6.09	5.88
VC	ND	ND	ND	ND	ND

MW-10

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	ND	ND	ND	ND	ND
cDCE	ND	ND	ND	ND	0.08J
VC	ND	ND	ND	ND	ND

MW-6

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	9.4	21	11	20.3	15.9
cDCE	ND	ND	ND	0.93	1.35
VC	ND	ND	ND	ND	ND

MW-13

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	ND	ND	ND	ND	ND
cDCE	ND	ND	ND	ND	0.14J
VC	ND	ND	ND	ND	ND

SM-MW-18

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	2.9	2.4	9.3	0.94	15.9
cDCE	ND	ND	ND	0.18	2.05
VC	ND	ND	ND	ND	ND

MW-11

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	1,100	930	760	423	14.6
cDCE	250	140	160	75.5	374
VC	0.53	0.47	0.57	0.55	0.51

SM-MW-19

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	ND	ND	ND	NS	NS
cDCE	ND	ND	ND	NS	NS
VC	ND	ND	ND	NS	NS

MW-12

	Nov-17	Mar-18	Jul-18	Aug-19	Mar-21
TCE	73	78	62	35.6	42.6
cDCE	18	16	17	7.55	8.74
VC	ND	ND	ND	ND	ND

Legend

- MW-12 — Monitoring Well (LAI)
- SM-MW-11 — Monitoring Well (Sea Mar)
- MW-4 — Former Monitoring Well
- LB-1 — Former Direct-Push Boring
- TCE Baseline Iso-Concentration Contour (Approx.)
- TCE Baseline Iso-Concentration Contour

Boring Name — LB-16 (8.2) — Maximum TCE concentration detected in groundwater grab sample collected at time of drilling (2016)

MW-12			
	Nov-17	Mar-18	Jul-18
TCE	73	78	62

- MW-12 - Monitoring Well Designation
- Nov-17 / Mar-18 / Jul-18 - Sampling Date
- 73 / 78 / 62 - Detected Concentration (µg/L)
- TCE - Detected Analyte

0 50 100

Scale in Feet

Data Source: Sea Mar; Google Earth Imagery.

Notes

1. Iso-concentration contours also informed by prior results from temporary groundwater borings not shown.
2. Highlighed results exceed the 31 µg/L short-term TCE vapor intrusion screening level.
3. All detected concentrations are reported in micrograms per liter (µg/L).
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

cDCE = *cis*-1,2-dichloroethene
ND = not detected
NS = not sampled
TCE = trichoroethene
VC = vinyl chloride

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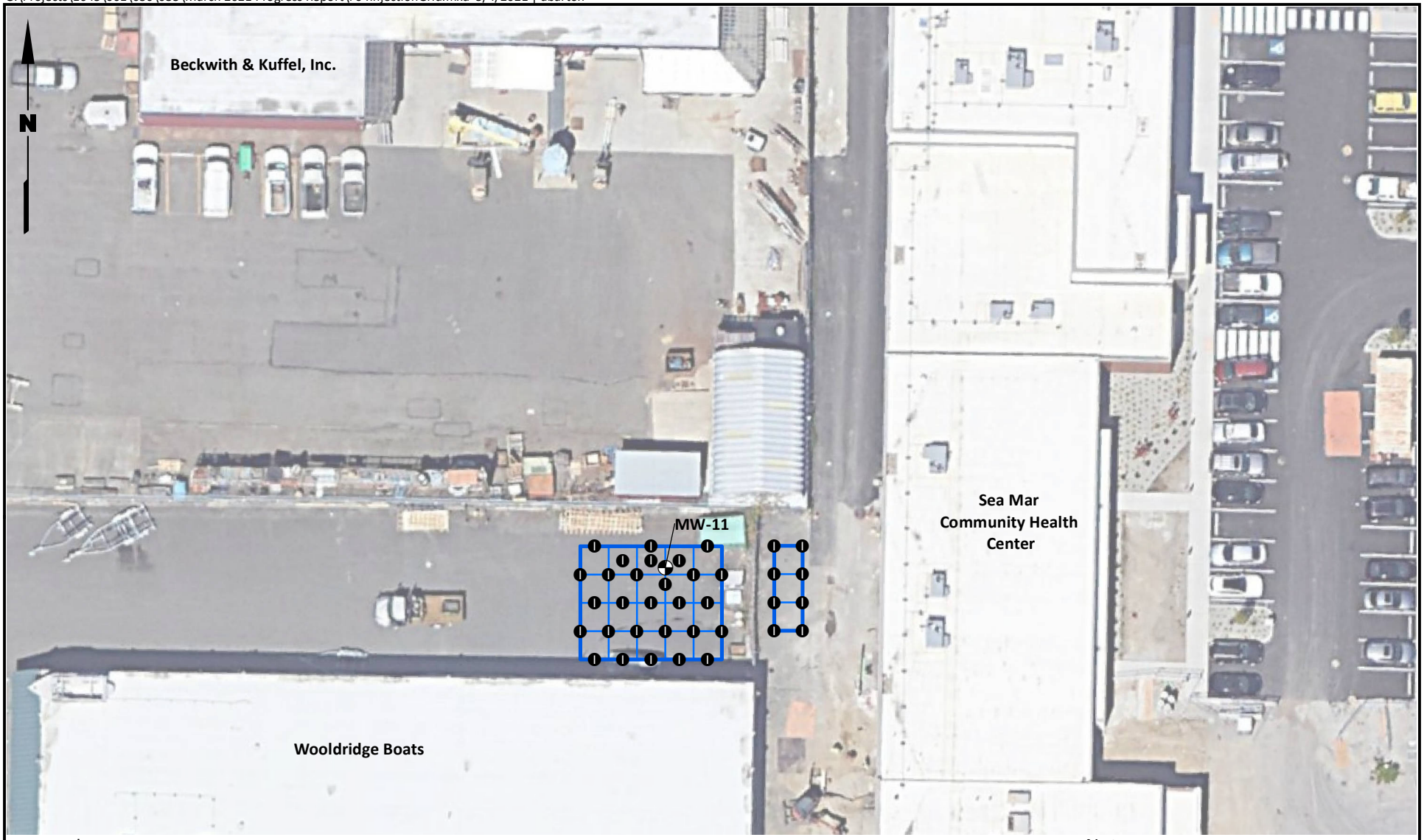
Beckwith & Kuffel, Inc.
Seattle, Washington

Chlorinated Volatile Organic Compound Sampling Results

Figure 3

G:\Projects\1645\001\030\035\March 2021 Progress Report\F04InjectionGrid.mxd 5/4/2021 | abarton



Legend

- Injection Location (Approximate)
- Monitoring Well
- Treatment Area

0 40 80

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

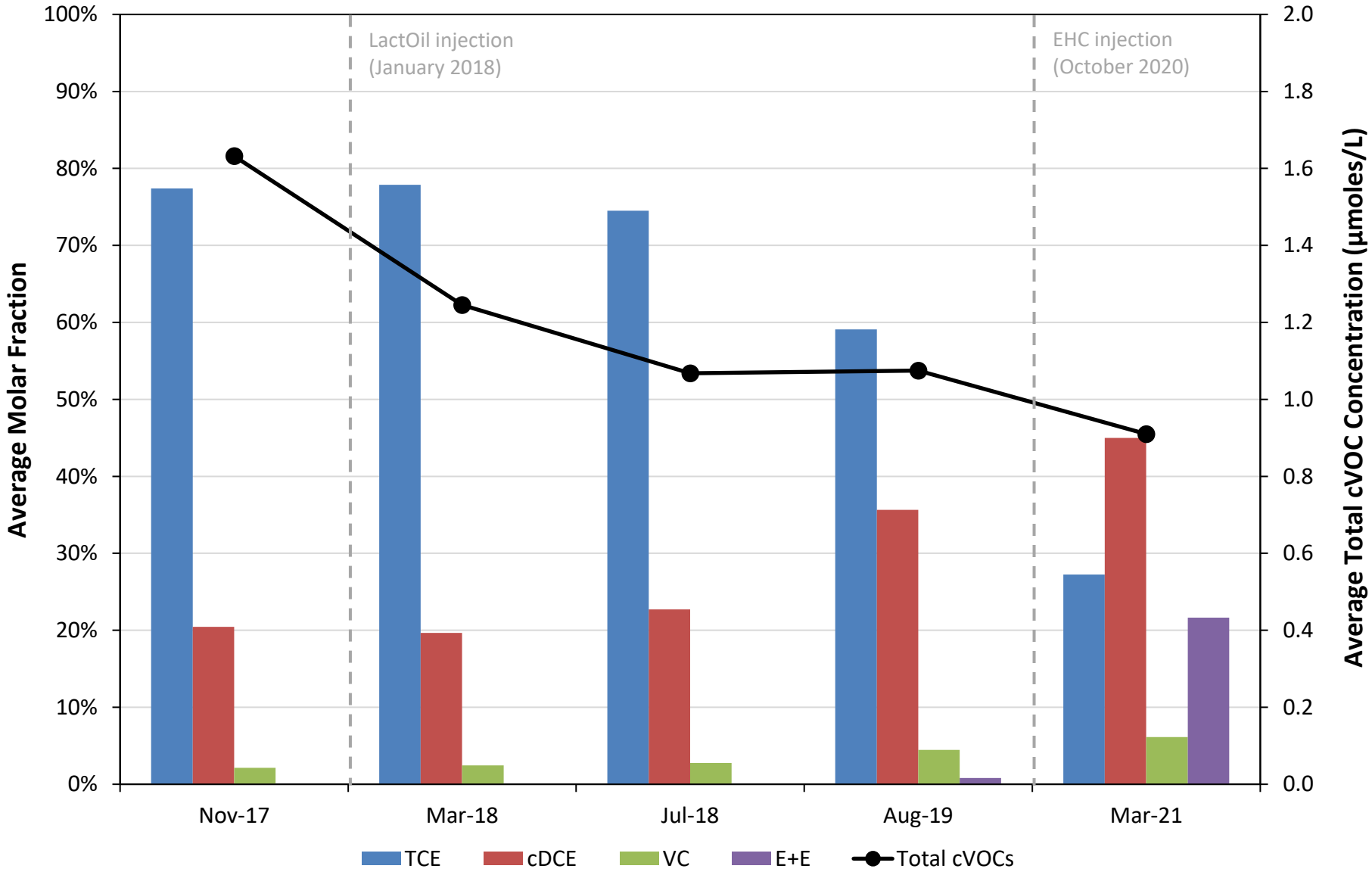
Data Source: Sea Mar; Google Earth Imagery.

LANDAU ASSOCIATES

Beckwith & Kuffel, Inc.
Seattle, Washington

As-Built Injection Grid

Figure
4



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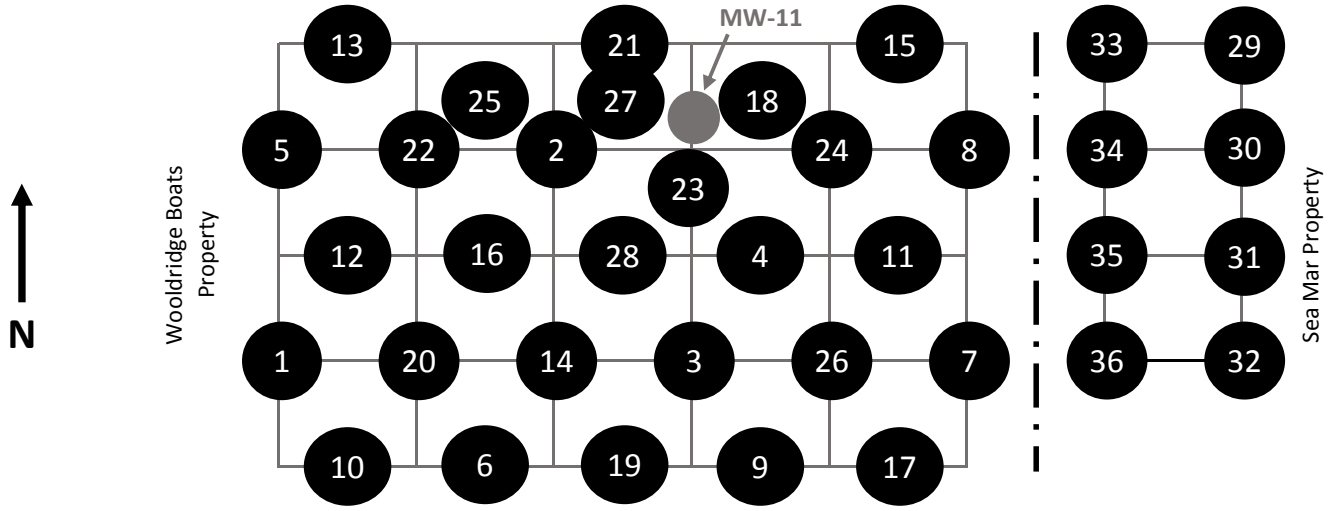
Beckwith & Kuffel, Inc.
Seattle, Washington

Average Total Chlorinated Volatile Organic Compound Concentrations

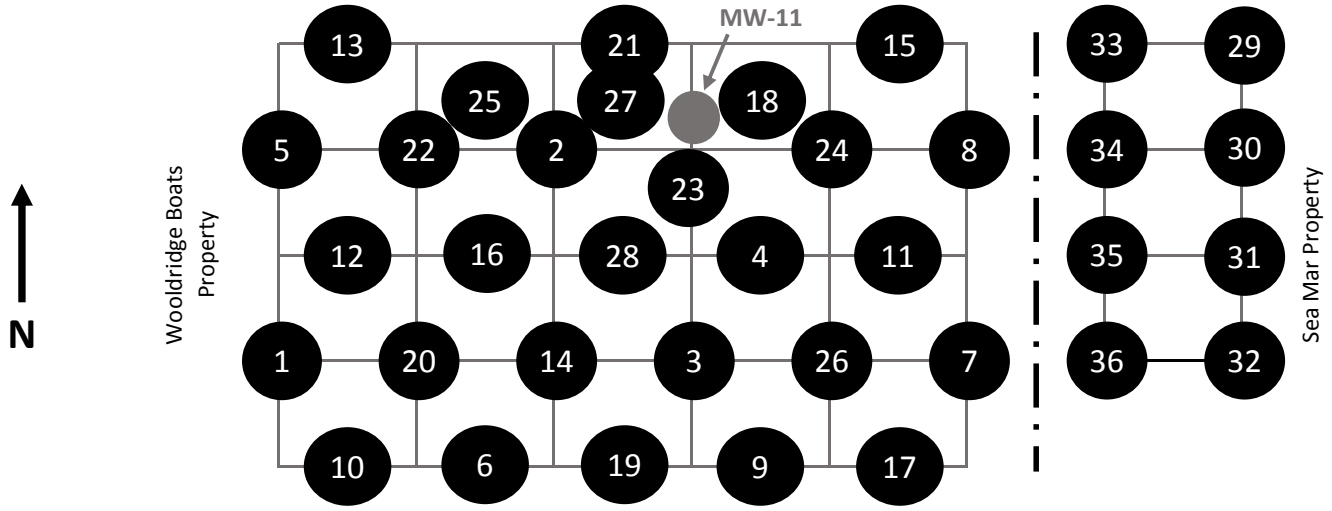
Figure
5

Table 1
EHC Injection Summary
Beckwith & Kuffel, Inc.
Seattle, Washington



Boring	Date	Depth (ft bgs)		Treatment Length (ft)	EHC Reagent				LactOil
		Bottom	Top		Bags	Mass (lbs)	Volume (gal)	Dose (lb/ft)	Volume (gal)
1	10/5/2020	25	8	17	8.5	425	153	25	9
2	10/5/2020	25	8	17	8.5	425	153	25	9
3	10/5/2020	25	8	17	8	400	144	24	9
4	10/6/2020	25	8	17	8	400	144	24	9
5	10/6/2020	25	8	17	8	400	144	24	9
6	10/6/2020	25	8	17	8	400	144	24	8
7	10/7/2020	25	8	17	8	400	144	24	8
8	10/7/2020	25	8	17	8	400	144	24	8
9	10/7/2020	25	8	17	8.5	425	153	25	9
10	10/7/2020	25	8	17	8	400	144	24	8
11	10/7/2020	25	8	17	8.5	425	153	25	9
12	10/8/2020	25	8	17	8	400	144	24	8
13	10/8/2020	25	8	17	8	400	144	24	8
14	10/8/2020	25	8	17	8	400	144	24	8
15	10/8/2020	25	8	17	8	400	144	24	8
16	10/9/2020	25	8	17	8	400	144	24	8
17	10/9/2020	25	8	17	8	400	144	24	8
18	10/9/2020	25	8	17	8	400	144	24	8
19	10/9/2020	25	8	17	8	400	144	24	8
20	10/9/2020	25	8	17	8	400	144	24	8
21	10/12/2020	25	8	17	8	400	144	24	8
22	10/12/2020	25	8	17	8	400	144	24	8
23	10/12/2020	25	8	17	8	400	144	24	8
24	10/12/2020	25	8	17	8	400	153	24	8
25	10/12/2020	25	8	17	8	400	153	24	8

Table 1
EHC Injection Summary
Beckwith & Kuffel, Inc.
Seattle, Washington



Boring	Date	Depth (ft bgs)		Treatment Length (ft)	EHC Reagent				LactOil
		Bottom	Top		Bags	Mass (lbs)	Volume (gal)	Dose (lb/ft)	Volume (gal)
26	10/13/2020	25	8	17	8	400	144	24	8
27	10/13/2020	25	8	17	7	350	138	21	7
28	10/13/2020	25	8	17	5	250	114	15	6
29	10/14/2020	25	15	10	5	250	90	25	6
30	10/14/2020	25	15	10	5	250	90	25	6
31	10/14/2020	25	15	10	5	250	90	25	5
32	10/15/2020	25	15	10	5	250	90	25	5
33	10/14/2020	25	12	13	6.5	325	117	25	0
34	10/14/2020	25	12	13	6.5	325	117	25	0
35	10/14/2020	25	12	13	6.5	325	117	25	0
36	10/15/2020	25	12	13	6.5	325	117	25	0
				Total:	**268**	**13,400**	**4,878**	**--**	**250**
				Average:	**--**	**--**	**--**	**24**	**--**

Acronyms & Abbreviations:

bgs = below ground surface
ft = feet
gal = gallons
lbs = pounds

Table 2
Groundwater Sampling Matrix
Beckwith & Kuffel, Inc.
Seattle, Washington

Well ID	Analysis (a)						Notes
	TCE, cDCE, VC (8260)	Sulfate (300.0)	Nitrate (300.0)	TOC (SM5310)	AMEE (RSK-175)	DO, ORP, pH, Ferrous iron (b)	
Beckwith & Kuffel Property							
MW-1							(c)
MW-2							(c)
MW-6	x	x	x	x	x	x	
MW-7	x	x	x	x	x	x	
MW-8	x	x	x	x	x	x	
MW-9	x	x	x	x	x	x	
MW-10	x	x	x	x	x	x	
Wooldridge Property							
MW-11	x	x	x	x	x	x	
MW-12	x	x	x	x	x	x	
MW-13	x	x	x	x	x	x	
Sea Mar Property							
SM-MW-8	x				x	x	(d)
SM-MW-11							(c)
SM-MW-17A	x	x	x	x	x	x	
SM-MW-18	x	x	x	x	x	x	
SM-MW-19							(c)
SM-MW-20							(c)
SM-MW-21	x	x	x	x	x	x	

Notes:

(a) Field QC samples will include one duplicate and one MS/MSD. Locations of the field QC samples will be varied each event to reduce bias and confirm results.

(b) Field measurement; ferrous iron from Hach field test kit

(c) Water level measurement only. All wells listed are included in the groundwater elevation survey survey performed prior to sampling.

(d) Limited analytes due to very slow recharge. Well only produces enough water to purge and fill containers for the 8260 and RSK-175 analysis.

Abbreviations & Acronyms:

AMEE = acetylene, methane, ethene, ethane
cDCE = *cis* -1,2-dichloroethene
DO = dissolved oxygen
MS/MSD = matrix spike/matrix spike duplicate
ORP = oxidation reduction potential
QC = quality control
TCE = trichloroethene
TOC = total organic carbon
VC = vinyl chloride

Table 3
Groundwater Data Summary
Beckwith Kuffel, Inc.
Seattle, Washington

Sampling Location	Date Sampled	Elapsed Time (days)		Volatile Organic Compounds						Aquifer Redox Conditions						Treatment Indicators		
		Source Zone Electron Donor Injection	EHC Direct-Push Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	DO (mg/L)	ORP (mV)	Methane (mg/L)	Nitrate-N (mg/L)	Sulfate (mg/L)	Iron II (mg/L)	TOC (mg/L)	Acetylene (µg/L)	pH
MTCA Method C Cleanup Level or ARAR[a]				5	5/31[b]	35	2	--	--	--	--	--	--	--	0.3[c]	--	--	--
MW-12	11/7/2017	-77		--	**73.0**	**18.0**	ND	ND	ND	0.69	47.1	ND	1	53	NA	3.6	ND	6.74
	3/22/2018	58		--	**78.0**	**16.0**	ND	ND	ND	0.58	92.9	ND	1.1	48	ND	4.1	ND	6.39
	7/2/2018	160		--	**62.0**	**17.0**	ND	ND	ND	--	--	ND	1.1	51	--	3.8	ND	--
	8/28/2019	582	-414	--	**35.6**	**7.55**	ND	ND	ND	0.49	18	0.00279	0.607	46.8	ND	2.69	ND	6.88
	3/9/2021	1141	145	--	**42.6**	**8.74**	ND	ND	ND	2.09	154.7	0.0035	ND	31.3	0.0	2.72	ND	6.44
MW-13	11/7/2017	-77		--	ND	ND	ND	ND	ND	1.77	51.8	ND	ND	130	--	2.8	ND	6.46
	3/22/2018	58		--	ND	ND	ND	ND	ND	0.36	85.0	ND	ND	93	ND	3.6	ND	6.34
	7/2/2018	160		--	ND	ND	ND	ND	ND	0.36	84.5	0.020	ND	120	ND	4.3	ND	--
	8/28/2019	582	-414	--	ND	ND	ND	ND	ND	5.34	48.0	0.0163	ND	106	ND	3.55	ND	6.31
	3/9/2021	1141	145	--	ND	**0.14**	ND	ND	ND	3.98	-23.9	0.017	ND	68.2	0.0	3.35	ND	6.34
SM-MW-19	9/12/2016			--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--
	11/7/2017	-77		--	ND	ND	ND	ND	ND	0.69	35.6	ND	17	220	--	1.5	ND	6.41
	3/22/2018	58		--	ND	ND	ND	ND	ND	0.39	104	ND	12	160	ND	1.9	ND	6.36
	7/2/2018	160	-836	--	ND	ND	ND	ND	ND	0.39	104	ND	18	180	ND	6.1	ND	--
MW-11	11/7/2017	-77		--	**1,100**	**250**	**0.53**	ND	ND	--	--	ND	0.5	140	--	5.4	ND	--
	3/22/2018	58		--	**930**	**140**	**0.47**	ND	ND	0.64	65.2	ND	0.7	110	ND	3.2	ND	6.32
	7/2/2018	160		--	**760**	**160**	**0.57**	ND	ND	0.64	65.2	0.050	0.87	84	ND	3.1	ND	--
	8/28/2019	582	-414	--	**423**	**75.5**	**0.55**	ND	ND	4.30	52.7	0.019	1.07	207	ND	3.46	ND	6.42
	3/9/2021	1141	145	--	**14.6**	**374**	**0.51**	**3.70**	**19.2**	0.86	-86.2	9.920	ND	4.95	1.4	157.4	ND	6.49
MW-10	11/7/2017	-77		ND	ND	ND	ND	ND	ND	0.72	43.4	ND	ND	74	--	6.9	ND	6.66
	3/22/2018	58		ND	ND	ND	ND	ND	ND	1.73	124	ND	ND	49	1.5	5	ND	6.69
	7/2/2018	160		ND	ND	ND	ND	ND	ND	1.73	124	0.020	ND	65	1.5	5.4	ND	--
	8/28/2019	582	-414	--	ND	ND	ND	ND	ND	4.54	91.1	0.00224	ND	65.3	ND	2.46	ND	6.60
	3/9/2021	1141	145	--	ND	**0.08**	ND	ND	ND	0.86	-31.5	ND	ND	45.2	0.0	2.07	ND	6.70
MW-6	2/20/2014			--	**85**	**2.17**	ND	--	--	--	--	--	--	--	--	--	--	--
	5/21/2014			--	**18.9**	ND	ND	--	--	--	--	--	--	--	--	--	--	--
	8/22/2014			--	**88.6**	**2.99**	ND	--	--	--	--	--	--	--	--	--	--	--
	9/30/2016			--	**16**	ND	ND	--	--	--	--	--	--	--	--	--	--	--
	11/7/2017	-77		--	**9.4**	ND	ND	ND	ND	--	--	ND	ND	29	--	2.4	ND	--
	3/22/2018	58		--	**21**	ND	ND	ND	ND	2.95	124	ND	0.5	31	ND	4	ND	6.35
	7/2/2018	160		--	**11**	ND	ND	ND	ND	2.95	124	ND	0.26	35	ND	3.2	ND	--
	8/27/2019	581	-415	--	**20.3**	**0.93**	ND	ND	ND	1.76	79.1	0.00425	ND	34.7	ND	2.79	ND	6.53
	3/9/2021	1141	145	--	**15.9**	**1.35**	ND	ND	ND	0.38	-15.9	ND	ND	22.4	0.0	2.61	ND	6.60

Table 3
Groundwater Data Summary
Beckwith Kuffel, Inc.
Seattle, Washington

Sampling Location	Date Sampled	Elapsed Time (days)		Volatile Organic Compounds						Aquifer Redox Conditions						Treatment Indicators		
		Source Zone Electron Donor Injection	EHC Direct-Push Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	DO (mg/L)	ORP (mV)	Methane (mg/L)	Nitrate-N (mg/L)	Sulfate (mg/L)	Iron II (mg/L)	TOC (mg/L)	Acetylene (µg/L)	pH
SM-MW-18	11/18/2017	-66		--	**2.9**	ND	ND	ND	ND	3.69	100	ND	14	310	--	1.8	ND	--
	3/22/2018	58		--	**2.4**	ND	ND	ND	ND	1.16	122	ND	12	330	0.5	1.6	ND	6.88
	7/2/2018	160		--	**9.3**	ND	ND	ND	ND	1.16	122	ND	9.1	360	0.5	1.8	ND	--
	8/27/2019	581	-415	--	**0.94**	**0.18**	ND	ND	ND	1.65	41.3	ND	1.7	307	ND	2.31	ND	6.83
	3/9/2021	1141	145	--	**15.9**	**2.05**	ND	**1.92**	**5.64**	0.51	-9.6	0.00891	0.100	156	0.0	1.69	ND	6.99
MW-7	2/14/2014			--	**1.94**	**297**	**95.8**	--	--	--	--	--	--	--	--	--	--	--
	5/21/2014			--	ND	**143**	**34.5**	--	--	--	--	--	--	--	--	--	--	--
	8/22/2014			--	ND	**30.0**	**8.19**	--	--	--	--	--	--	--	--	--	--	--
	9/30/2016			--	**300**	**50.0**	**3.30**	--	--	--	--	--	--	--	--	--	--	--
	11/7/2017	-77		--	ND	**4.50**	**3.70**	ND	ND	--	--	4.000	6.1	53	--	9.8	ND	--
	3/22/2018	58		--	**24.0**	**74.0**	**15.0**	ND	ND	1.78	160	1.700	1.4	18	3.0	10000	ND	5.25
	7/2/2018	160		--	**16.0**	**56.0**	**8.20**	ND	ND	1.78	159	2.000	ND	20	3.0	180	ND	--
	8/27/2019	581	-415	--	**0.15**	**0.55**	**0.24**	ND	ND	9.07	3505	4.810	ND	ND	5.5	251.3	ND	6.75
	3/9/2021	1141	145	--	**3.88**	**97.2**	**33.0**	**18.7**	**14.4**	0.34	-60.4	2.330	ND	25.7	3.0	9.07	ND	6.75
SM-MW-8	3/7/2016			--	**20.0**	**5.50**	ND	--	--	--	--	--	--	--	--	--	--	--
	6/30/2016			--	**33.0**	**7.00**	ND	--	--	--	--	--	--	--	--	--	--	--
	11/28/2017	-56		--	**36.0**	**8.10**	ND	ND	ND	3.12	113	ND	1.4	120	--	1.6	ND	--
	3/22/2018	58		--	**39.0**	**6.60**	ND	ND	ND	--	--	ND	1.9	130	3.5	2.4	ND	--
	7/2/2018	160		--	**27.0**	**6.80**	ND	ND	ND	3.72	96.6	ND	1.5	120	3.5	1.6	ND	--
	8/27/2019	581	-415	--	**25.6**	**6.09**	ND	ND	ND	2.67	24.6	1.310	--	--	ND	--	ND	6.78
	3/9/2021	1141	145	--	**28.2**	**5.88**	ND	ND	ND	1.35	-3.4	0.598	--	--	0.0	--	ND	6.90
MW-8	11/7/2017	-77		--	**440**	**31.0**	**0.82**	ND	ND	0.44	17.1	0.020	ND	78	--	3.1	ND	6.98
	8/28/2019	582	-414	--	**340**	**82.0**	**4.43**	ND	ND	2.19	-36.7	0.453	ND	86.9	ND	3.92	ND	6.91
	3/9/2021	1141	145	--	**261**	**69.3**	**4.03**	ND	ND	0.28	-30.8	0.423	ND	60.0	1.8	3.24	ND	6.86
MW-9	11/29/2016			--	**78.0**	**12.0**	ND	--	--	0.28	-41.4	--	--	--	3.45	--	--	6.87
	11/7/2017	-77		--	**6.60**	**30.0**	**0.29**	ND	ND	1.03	-30.3	0.250	ND	40	NA	6.60	ND	6.66
	3/22/2018	58		--	**12.0**	**17.0**	ND	ND	ND	1.43	132	0.120	ND	45	3.5	6.40	ND	6.71
	7/2/2018	160		--	**34.0**	**11.0**	**0.24**	ND	ND	1.43	132	0.070	ND	42	3.5	2.00	ND	--
	8/28/2019	582	-414	--	**2.35**	**19.4**	**0.18**	ND	ND	4.95	-54.1	0.671	0.11	32.5	3.5	7.70	ND	6.60
	3/9/2021	1141	145	--	**2.50**	**10.2**	**0.16**	ND	ND	0.55	-19.1	0.768	ND	24.5	2.5	5.70	ND	6.62
SM-MW-21	11/18/2017	-66		--	**490**	**74.0**	**19.0**	ND	ND	1.78	-320	0.050	ND	48	--	2.6	ND	--
	3/23/2018	59		--	**550**	**55.0**	**9.10**	ND	ND	0.15	47.5	0.070	ND	54	ND	2.6	ND	6.71
	7/2/2018	160		--	**440**	**50.0**	**8.30**	ND	ND	0.15	47.5	0.070	0.19	65	ND	2.6	ND	--
	8/27/2019	581	-415	--	**161**	**257**	**31.0**	ND	**2.92**	8.35	18.1	2.540	ND	16.5	1.0	3.87	ND	6.55
	3/9/2021	1141	145	--	**114**	**38.3**	**14.3**	**3.81**	**8.18**	0.35	28.4	0.795	ND	37.8	0.0	2.82	ND	6.72

Table 3
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Beckwith Kuffel, Inc.
Seattle, Washington

Sampling Location	Date Sampled	Elapsed Time (days)		Volatile Organic Compounds						Aquifer Redox Conditions						Treatment Indicators		
		Source Zone Electron Donor Injection	EHC Direct-Push Injection	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	VC (µg/L)	Ethene (µg/L)	Ethane (µg/L)	DO (mg/L)	ORP (mV)	Methane (mg/L)	Nitrate-N (mg/L)	Sulfate (mg/L)	Iron II (mg/L)	TOC (mg/L)	Acetylene (µg/L)	pH
SM-MW-14	5/6/2016			--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--
	6/30/2016			--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--
	9/12/2016	-498		--	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--
	11/7/2017	-77		--	ND	**5.10**	**4.00**	ND	ND	--	--	3.50	6	54	--	9.9	ND	--
	3/23/2018	59		--	ND	ND	ND	ND	ND	0.52	66.4	ND	ND	74	ND	2.9	ND	6.90
	7/2/2018	160	-836	--	ND	ND	ND	ND	ND	0.52	66.4	ND	ND	65	ND	2.2	ND	--
SM-MW-17A	3/23/2018	59		--	ND	ND	**0.27**	ND	ND	0.46	63.2	0.780	ND	14	1.6	2.8	ND	6.48
	7/2/2018	160		--	ND	**4.80**	**6.80**	ND	ND	0.46	63.2	0.900	ND	13	1.6	3.0	ND	--
	8/27/2019	581	-415	--	ND	ND	ND	ND	ND	0.41	-51.8	0.121	ND	13.1	ND	3.28	ND	7.55
	3/9/2021	1141	145	--	**0.13**	**0.52**	**1.39**	ND	**11.0**	0.32	-71.3	3.140	ND	5.14	0.0	3.53	ND	7.71

Abbreviations & Acronyms:

ARAR = applicable or relevant and appropriate requirement
cDCE = *cis* -1,2-dichloroethene
DO = dissolved oxygen
ISCR = *in situ* chemical reduction
ORP = oxidation-reduction potential
PCE = perchloroethene
TCE = trichloroethene
TOC = total organic carbon
UIC = Underground Injection Control program
VC = vinyl chloride

Notes:

[a]Lowest applicable cleanup level was selected.
[b]The lowest of the MTCA Method C cleanup levels and ARARs is 5 µg/L. The acute vapor intrusion screening level for TCE is 31 µg/L.
[c]Washington State Water Quality Criteria (WAC 173-200-040). Must be met per UIC Registration, February 25, 2020 (Site No. 33669).
-- = not analyzed or not measured
ND = not detected
bold = detection
= exceeds the acute vapor intrusion screening level for TCE (see note b).
= exceeds applicable cleanup criteria
= highest molar fraction

ATTACHMENT 1

Laboratory Analytical Data Report

Analytical Resources, Incorporated
Analytical Chemists and Consultants

16 April 2021

Evelyn Ives
Landau Associates, Inc.
130 2nd Avenue S.
Edmonds, WA 98020

RE: Beckwith and Kuffle

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
21C0140	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

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21C0140

LANDAU ASSOCIATES

Chain-of-Custody Record

[X] Seattle/Edmonds (425) 778-0907 [ ] Spokane (509) 327-9737
[ ] Tacoma (253) 926-2493 [ ] Portland (503) 542-1080
[ ]

Date 3/9/21
Page 1 of 1

Turnaround Time:
Standard X
Accelerated

Project Name Beckwith / Kuffel
Project No. 164501.030.033
Project Location/Event Seattle WA / March 2021
Sampler's Name Sam Bartlett, Armando Hoerter-Avila
Project Contact Evelyn Ives
Send Results To E Ives, J Green

Special Handling Requirements:

Shipment Method: Drop off
Stored on ice: (Yes) / No
1.7°C 2.9°C

Sample I.D.	Date	Time	Matrix	No. of Containers	TCE, cDCE, VC (8260)	TOC (SM5310)	Nitrate/Sulfate (300.0)*	AMFE (RSK-175)*	MS/MSD	Observations/Comments
DUP1-210309	3/9/21	800	GW	7	X	X	X	X		
MW-13-210309		915		7	X	X	X	X		
MW-12-210309		916		7	X	X	X	X		
MW-11-210309		1011		7	X	X	X	X		
MW-7-210309		1136		7	X	X	X	X		
MW-6-210309		1230		7	X	X	X	X		
MW-10-210309		1130		21	X	X	X	X	X	
MW-8-210309		1256		7	X	X	X	X		
MW-9-210309		1300		7	X	X	X	X		
SM-MW-18-210309		1400		7	X	X	X	X		
SM-MW-21-210309		1406		7	X	X	X	X		
SM-MW-8-210309		1430		5	X			X		
SM-MW-17A-210309		1456		7	X	X	X	X		
Trip Blank	-	-		4	X					

Testing Parameters

___ Allow water samples to settle, collect aliquot from clear portion ☐

___ NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

___ Dissolved metal samples were field filtered

Other *48 hr hold time on Nitrate

*Acetylene, methane, ethene, ethane

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Armando Hoerter-Avila	Printed Name Jacob Latter	Printed Name	Printed Name
Company LAI	Company ANZ	Company	Company
Date 3-9-21 Time 1528	Date 03/09/2021 Time 1528	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DUP1-210309	21C0140-01	Water	09-Mar-2021 08:00	09-Mar-2021 15:28
MW-13-210309	21C0140-02	Water	09-Mar-2021 09:15	09-Mar-2021 15:28
MW-12-210309	21C0140-03	Water	09-Mar-2021 09:16	09-Mar-2021 15:28
MW-11-210309	21C0140-04	Water	09-Mar-2021 10:11	09-Mar-2021 15:28
MW-7-210309	21C0140-05	Water	09-Mar-2021 11:36	09-Mar-2021 15:28
MW-6-210309	21C0140-06	Water	09-Mar-2021 12:30	09-Mar-2021 15:28
MW-10-210309	21C0140-07	Water	09-Mar-2021 11:30	09-Mar-2021 15:28
MW-8-210309	21C0140-08	Water	09-Mar-2021 12:56	09-Mar-2021 15:28
MW-9-210309	21C0140-09	Water	09-Mar-2021 13:00	09-Mar-2021 15:28
SM-MW-18-210309	21C0140-10	Water	09-Mar-2021 14:00	09-Mar-2021 15:28
SM-MW-21-210309	21C0140-11	Water	09-Mar-2021 14:06	09-Mar-2021 15:28
SM-MW-8-210309	21C0140-12	Water	09-Mar-2021 14:30	09-Mar-2021 15:28
SM-MW-17A-210309	21C0140-13	Water	09-Mar-2021 14:56	09-Mar-2021 15:28
Trip Blanks	21C0140-14	Water	09-Mar-2021 14:56	09-Mar-2021 15:28

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Work Order Case Narrative

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatile Gases - MEE by RSK175

The sample(s) were analyzed within the recommended holding times with the exception of sample 21C0140-12 which was missed during sample login and has been flagged with a "H" qualifer.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits with the exception of the surrogates flagged on the associated forms. The sample was re-analyzed with the same matrix effects.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits with the exception of analytes flagged on the associated forms.

Wet Chemistry

The sample(s) were prepared and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

The blank spike (BS/LCS) percent recoveries were within control limits.

The reference material (SRM) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits with the exception of analytes flagged on the associated forms.

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WORK ORDER

21C0140

Client: Landau Associates, Inc.	**Project Manager:** Kelly Bottem
Project: Beckwith and Kuffle	**Project Number:** Beckwith and Kuffle

Preservation Confirmation

Container ID	Container Type	pH
21C0140-01 A	Small OJ, 500 mL	
21C0140-01 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-01 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-01 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-01 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-01 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-01 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-02 A	Small OJ, 500 mL	
21C0140-02 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-02 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-02 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-02 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-02 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-02 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-03 A	Small OJ, 500 mL	
21C0140-03 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-03 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-03 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-03 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-03 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-03 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-04 A	Small OJ, 500 mL	
21C0140-04 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-04 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-04 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-04 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-04 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-04 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-05 A	Small OJ, 500 mL	
21C0140-05 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-05 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-05 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-05 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-05 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-05 G	VOA Vial, Amber, 40 mL, HCL	

Reviewed By

Date

WORK ORDER

21C0140

Client: Landau Associates, Inc. **Project Manager:** Kelly Bottem

Project: Beckwith and Kuffle **Project Number:** Beckwith and Kuffle

21C0140-06 A	Small OJ, 500 mL	
21C0140-06 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-06 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-06 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-06 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-06 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-06 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-07 A	Small OJ, 500 mL	
21C0140-07 B	Small OJ, 500 mL	
21C0140-07 C	Small OJ, 500 mL	
21C0140-07 D	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-07 E	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-07 F	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-07 G	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 H	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 I	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 J	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 K	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 L	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 M	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 N	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 O	VOA Vial, Clear, 40 mL, HCL	
21C0140-07 P	VOA Vial, Amber, 40 mL, HCL	
21C0140-07 Q	VOA Vial, Amber, 40 mL, HCL	
21C0140-07 R	VOA Vial, Amber, 40 mL, HCL	
21C0140-07 S	VOA Vial, Amber, 40 mL, HCL	
21C0140-07 T	VOA Vial, Amber, 40 mL, HCL	
21C0140-07 U	VOA Vial, Amber, 40 mL, HCL	
21C0140-08 A	Small OJ, 500 mL	
21C0140-08 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-08 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-08 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-08 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-08 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-08 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-09 A	Small OJ, 500 mL	
21C0140-09 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass

Reviewed By

Date

WORK ORDER

21C0140

Client: Landau Associates, Inc. **Project Manager:** Kelly Bottem

Project: Beckwith and Kuffle **Project Number:** Beckwith and Kuffle

21C0140-09 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-09 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-09 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-09 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-09 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-10 A	Small OJ, 500 mL	
21C0140-10 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-10 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-10 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-10 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-10 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-10 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-11 A	Small OJ, 500 mL	
21C0140-11 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-11 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-11 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-11 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-11 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-11 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-12 A	VOA Vial, Clear, 40 mL, HCL	
21C0140-12 B	VOA Vial, Clear, 40 mL, HCL	
21C0140-12 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-12 D	VOA Vial, Amber, 40 mL, HCL	
21C0140-12 E	VOA Vial, Amber, 40 mL, HCL	
21C0140-13 A	Small OJ, 500 mL	
21C0140-13 B	Glass NM, Amber, 250 mL, 9N H2SO4	<2 Pass
21C0140-13 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-13 D	VOA Vial, Clear, 40 mL, HCL	
21C0140-13 E	VOA Vial, Clear, 40 mL, HCL	
21C0140-13 F	VOA Vial, Amber, 40 mL, HCL	
21C0140-13 G	VOA Vial, Amber, 40 mL, HCL	
21C0140-14 A	VOA Vial, Clear, 40 mL, HCL	
21C0140-14 B	VOA Vial, Clear, 40 mL, HCL	
21C0140-14 C	VOA Vial, Clear, 40 mL, HCL	
21C0140-14 D	VOA Vial, Clear, 40 mL, HCL	

KO
Preservation Confirmed By

3/10/21
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau/Boeing
Project Name: Beckwith & Kuffel
COC No(s): NA
Delivered by: Fed-Ex UPS Courier Hand Delivered Other:
Assigned ARI Job No: 21C0140
Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler?	YES	NO
Were custody papers included with the cooler?	YES	NO
Were custody papers properly filled out (ink, signed, etc.)	YES	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1528 — 1.7 2.9 ___ ___ ___ ___

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: D006

Cooler Accepted by: JG Date: 03/04/2021 Time: 1528

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	NO
What kind of packing material was used?	Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	YES	NO
How were bottles sealed in plastic bags?	Individually	Grouped	Not
Did all bottles arrive in good condition (unbroken)?		YES	NO
Were all bottle labels complete and legible?		YES	NO
Did the number of containers listed on COC match with the number of containers received?		YES	NO
Did all bottle labels and tags agree with custody papers?		YES	NO
Were all bottles used correct for the requested analyses?		YES	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	YES	NO
Were all VOC vials free of air bubbles?	NA	YES	NO
Was sufficient amount of sample sent in each bottle?		YES	NO
Date VOC Trip Blank was made at ARI	NA	2/20/21	

Were the sample(s) split by ARI? NA YES Date/Time: ___ Equipment: ___ Split by: ___

Samples Logged by: KD Date: 3/10/21 Time: 0901 Labels checked by: KP

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date:

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

DUP1-210309

21C0140-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 08:00
Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 16:00

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-01 C
Preparation Batch: BJC0293 — Sample Size: 10 mL
Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	34.7	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	73.6	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	3.95	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*88.0*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*101*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

DUP1-210309

21C0140-01 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 08:00
Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 09:10

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-01 E
Preparation Batch: BJC0447 — Sample Size: 10 mL
Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	2510	ug/L	
Ethane	74-84-0	1	1.23	14.5	ug/L	
Ethene	74-85-1	1	1.14	20.1	ug/L	
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*74.6*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

DUP1-210309

21C0140-01 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 08:00
Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 14:39

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-01 A
Preparation Batch: BJC0249 — Sample Size: 10 mL
Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

DUP1-210309

21C0140-01 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 08:00

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 15:17

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-01 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	8.48	mg/L	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

DUP1-210309

21C0140-01RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 08:00
Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 15:33

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-01RE2 A
Preparation Batch: BJC0249 — Sample Size: 10 mL
Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	25.9	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-13-210309

21C0140-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 09:15

Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 16:25

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-02 D

Preparation Batch: BJC0293 — Sample Size: 10 mL

Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	0.14	ug/L	J
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*94.4*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*97.9*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-13-210309

21C0140-02 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 09:15

Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 09:24

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-02 E

Preparation Batch: BJC0447 — Sample Size: 10 mL

Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	17.2	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*72.9*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-13-210309

21C0140-02 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 09:15

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 14:59

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-02 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-13-210309

21C0140-02 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 09:15

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 15:37

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-02 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.35	mg/L	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-13-210309

21C0140-02RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 09:15

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 15:52

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-02RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	15	1.50	1.50	68.2	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-12-210309

21C0140-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 09:16

Instrument: NT3 Analyst: PKC — Analyzed: 03/10/2021 18:42

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-03 C

Preparation Batch: BJC0257 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	8.74	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	42.6	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*97.0*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*102*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-12-210309

21C0140-03 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 09:16
Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 09:37

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-03 D
Preparation Batch: BJC0447 — Sample Size: 10 mL
Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	3.48	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*83.9*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
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MW-12-210309

21C0140-03 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 09:16

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 15:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-03 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-12-210309

21C0140-03 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 09:16

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 16:39

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-03 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.72	mg/L	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
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Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-12-210309

21C0140-03RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 09:16

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 16:12

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-03RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	31.3	mg/L	D

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130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-11-210309

21C0140-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 10:11
Instrument: NT3 Analyst: PKC — Analyzed: 03/10/2021 19:08

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-04 C
Preparation Batch: BJC0257 — Sample Size: 10 mL
Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	0.51	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	343	ug/L	E
Trichloroethene	79-01-6	1	0.07	0.20	14.6	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*97.1*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*104*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-11-210309

21C0140-04 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 10:11
Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 10:01

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-04 E
Preparation Batch: BJC0447 — Sample Size: 10 mL
Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	9130	ug/L	
Ethane	74-84-0	1	1.23	15.6	ug/L	
Ethene	74-85-1	1	1.14	3.22	ug/L	
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*58.5*	*%*	*

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-11-210309

21C0140-04 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 10:11
Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 16:39

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-04 A
Preparation Batch: BJC0249 — Sample Size: 10 mL
Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-11-210309

21C0140-04 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 10:11

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 17:03

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-04 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	157.4	mg/L	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-11-210309

21C0140-04RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 10:11

Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 16:53

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-04RE1 D

Preparation Batch: BJC0293 — Sample Size: 1 mL

Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.82	2.00	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.81	2.00	374	ug/L	
Trichloroethene	79-01-6	1	0.70	2.00	12.0	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*95.3*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*97.4*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-11-210309

21C0140-04RE1 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 10:11

Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 12:14

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-04RE1 E

Preparation Batch: BJC0447 — Sample Size: 10 mL

Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	9920	ug/L	
Ethane	74-84-0	1	1.23	19.2	ug/L	
Ethene	74-85-1	1	1.14	3.70	ug/L	
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*61.0*	*%*	*

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-11-210309

21C0140-04RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 10:11

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 17:12

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-04RE1 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	4.95	mg/L	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-7-210309

21C0140-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 11:36

Instrument: NT3 Analyst: PKC — Analyzed: 03/10/2021 19:33

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-05 C

Preparation Batch: BJC0257 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	33.0	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	83.7	ug/L	E
Trichloroethene	79-01-6	1	0.07	0.20	3.88	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*108*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*98.0*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
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MW-7-210309

21C0140-05 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 11:36

Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 10:15

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-05 E

Preparation Batch: BJC0447 — Sample Size: 10 mL

Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	2330	ug/L	
Ethane	74-84-0	1	1.23	14.4	ug/L	
Ethene	74-85-1	1	1.14	18.7	ug/L	
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*82.5*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-7-210309

21C0140-05 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 11:36

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 16:59

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-05 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-7-210309

21C0140-05 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 11:36

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 17:26

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-05 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	9.07	mg/L	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-7-210309

21C0140-05RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 11:36

Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 17:21

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-05RE1 D

Preparation Batch: BJC0293 — Sample Size: 5 mL

Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.16	0.40	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.16	0.40	97.2	ug/L	
Trichloroethene	79-01-6	1	0.14	0.40	4.60	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*97.8*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*100*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-7-210309

21C0140-05RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 11:36

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 17:32

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-05RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	25.7	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-6-210309

21C0140-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 12:30

Instrument: NT3 Analyst: PKC — Analyzed: 03/10/2021 19:59

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-06 C

Preparation Batch: BJC0257 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	1.35	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	15.9	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*97.0*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*98.2*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-6-210309

21C0140-06 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 12:30

Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 10:28

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-06 D

Preparation Batch: BJC0447 — Sample Size: 10 mL

Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*92.2*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-6-210309

21C0140-06 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 12:30

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 17:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-06 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-6-210309

21C0140-06 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 12:30

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 17:48

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-06 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.61	mg/L	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-6-210309

21C0140-06RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 12:30

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 17:52

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-06RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	22.4	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-10-210309

21C0140-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 11:30
Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 17:47

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-07 G
Preparation Batch: BJC0293 — Sample Size: 10 mL
Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	0.08	ug/L	J
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*94.0*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*99.2*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-10-210309

21C0140-07 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 11:30
Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 10:41

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-07 J
Preparation Batch: BJC0447 — Sample Size: 10 mL
Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	ND	ug/L	U
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*82.3*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-10-210309

21C0140-07 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 11:30

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 13:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-07 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-10-210309

21C0140-07 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 11:30
Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 13:45

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-07 D
Preparation Batch: BJC0253 — Sample Size: 20 mL
Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.07	mg/L	

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Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-10-210309

21C0140-07RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 11:30

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 14:13

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-07RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	45.2	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-8-210309

21C0140-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 12:56
Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 18:13

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-08 C
Preparation Batch: BJC0293 — Sample Size: 10 mL
Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	4.03	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	69.3	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	207	ug/L	E
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*99.4*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*106*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-8-210309

21C0140-08 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 12:56
Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 10:54

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-08 E
Preparation Batch: BJC0447 — Sample Size: 10 mL
Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	423	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*86.3*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-8-210309

21C0140-08 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 12:56

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 17:39

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-08 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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MW-8-210309

21C0140-08 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 12:56

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 18:08

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-08 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.24	mg/L	

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MW-8-210309

21C0140-08RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 12:56

Instrument: NT2 Analyst: PKC — Analyzed: 03/12/2021 13:32

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-08RE1 D

Preparation Batch: BJC0319 — Sample Size: 1 mL

Prepared: 03/12/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.82	2.00	4.26	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.81	2.00	86.8	ug/L	
Trichloroethene	79-01-6	1	0.70	2.00	261	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*108*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*93.7*	*%*	

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130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
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MW-8-210309

21C0140-08RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 12:56

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 18:12

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-08RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	60.0	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-9-210309

21C0140-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 13:00
Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 18:38

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-09 G
Preparation Batch: BJC0293 — Sample Size: 10 mL
Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	0.16	ug/L	J
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	10.2	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	2.50	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*97.5*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*97.6*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

MW-9-210309

21C0140-09 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 13:00
Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 11:08

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-09 E
Preparation Batch: BJC0447 — Sample Size: 10 mL
Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	768	ug/L	
Ethane	74-84-0	1	1.23	ND	ug/L	U
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*77.2*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
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MW-9-210309

21C0140-09 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 13:00
Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 17:59

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-09 A
Preparation Batch: BJC0249 — Sample Size: 10 mL
Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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MW-9-210309

21C0140-09 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 13:00

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 18:27

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-09 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	5.70	mg/L	

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MW-9-210309

21C0140-09RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 13:00

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 18:31

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-09RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	5	0.500	0.500	24.5	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
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Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-18-210309

21C0140-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 14:00

Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 19:04

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-10 D

Preparation Batch: BJC0293 — Sample Size: 10 mL

Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	2.05	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	15.9	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*85.9*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*98.3*	*%*	

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130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-18-210309

21C0140-10 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 14:00

Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 11:21

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-10 E

Preparation Batch: BJC0447 — Sample Size: 10 mL

Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	8.91	ug/L	
Ethane	74-84-0	1	1.23	5.64	ug/L	
Ethene	74-85-1	1	1.14	1.92	ug/L	
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*82.6*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-18-210309

21C0140-10 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 14:00

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 18:19

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-10 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	0.100	mg/L	

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SM-MW-18-210309

21C0140-10 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 14:00

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 18:51

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-10 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	1.69	mg/L	

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SM-MW-18-210309

21C0140-10RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 14:00

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 18:51

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-10RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	20	2.00	2.00	156	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-21-210309

21C0140-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 14:06

Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 19:29

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-11 D

Preparation Batch: BJC0293 — Sample Size: 10 mL

Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	14.3	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	38.3	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	92.8	ug/L	E
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*93.0*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*102*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-21-210309

21C0140-11 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 14:06

Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 11:47

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-11 E

Preparation Batch: BJC0447 — Sample Size: 10 mL

Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	795	ug/L	
Ethane	74-84-0	1	1.23	8.18	ug/L	
Ethene	74-85-1	1	1.14	3.81	ug/L	
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*91.1*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-21-210309

21C0140-11 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 14:06

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 18:40

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-11 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-21-210309

21C0140-11 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 14:06

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 19:14

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-11 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	2.82	mg/L	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-21-210309

21C0140-11RE1 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 14:06

Instrument: NT2 Analyst: PKC — Analyzed: 03/12/2021 13:55

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-11RE1 C

Preparation Batch: BJC0319 — Sample Size: 5 mL

Prepared: 03/12/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.16	0.40	15.4	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.16	0.40	49.3	ug/L	
Trichloroethene	79-01-6	1	0.14	0.40	114	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*107*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*92.6*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-21-210309

21C0140-11RE2 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 14:06

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 19:11

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-11RE2 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	10	1.00	1.00	37.8	mg/L	D

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-8-210309

21C0140-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 14:30

Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 19:55

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-12 A

Preparation Batch: BJC0293 — Sample Size: 10 mL

Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	5.88	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	28.2	ug/L	
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*91.2*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*99.3*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-8-210309

21C0140-12 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 14:30

Instrument: FID6 Analyst: PB — Analyzed: 04/15/2021 15:05

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-12 B

Preparation Batch: BJD0401 — Sample Size: 10 mL

Prepared: 04/15/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	598	ug/L	H
Ethane	74-84-0	1	1.23	ND	ug/L	H, U
Ethene	74-85-1	1	1.14	ND	ug/L	H, U
Acetylene	74-86-2	1	1.06	ND	ug/L	H, U
Surrogate: Propane			*72-122 %*	*102*	*%*	H

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-17A-210309

21C0140-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 14:56
Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 20:21

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-13 D
Preparation Batch: BJC0293 — Sample Size: 10 mL
Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	1.39	ug/L	
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	0.52	ug/L	
Trichloroethene	79-01-6	1	0.07	0.20	0.13	ug/L	J
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*97.7*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*102*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-17A-210309

21C0140-13 (Water)

Dissolved Gases

Method: EPA RSK-175 — Sampled: 03/09/2021 14:56

Instrument: FID6 Analyst: LH — Analyzed: 03/17/2021 12:01

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-13 C

Preparation Batch: BJC0447 — Sample Size: 10 mL

Prepared: 03/17/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Methane	74-82-8	1	0.65	3140	ug/L	
Ethane	74-84-0	1	1.23	11.0	ug/L	
Ethene	74-85-1	1	1.14	ND	ug/L	U
Acetylene	74-86-2	1	1.06	ND	ug/L	U
Surrogate: Propane			*72-122 %*	*91.7*	*%*	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-17A-210309

21C0140-13 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 14:56

Instrument: IC930 Analyst: WCW — Analyzed: 03/10/2021 19:00

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-13 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Nitrate-N	14797-55-8	1	0.100	0.100	ND	mg/L	U

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

SM-MW-17A-210309

21C0140-13 (Water)

Wet Chemistry

Method: SM 5310 B-00 — Sampled: 03/09/2021 14:56

Instrument: TOC-LCSH Analyst: WCW — Analyzed: 03/10/2021 19:38

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-13 B

Preparation Batch: BJC0253 — Sample Size: 20 mL

Prepared: 03/10/2021 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Total Organic Carbon		1	0.50	0.50	3.53	mg/L	

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SM-MW-17A-210309

21C0140-13RE1 (Water)

Wet Chemistry

Method: EPA 300.0 — Sampled: 03/09/2021 14:56

Instrument: IC930 Analyst: WCW — Analyzed: 03/11/2021 19:31

Sample Preparation: Preparation Method: No Prep Wet Chem — Extract ID: 21C0140-13RE1 A

Preparation Batch: BJC0249 — Sample Size: 10 mL

Prepared: 03/10/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Sulfate	14808-79-8	1	0.100	0.100	5.14	mg/L	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Trip Blanks

21C0140-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D — Sampled: 03/09/2021 14:56
Instrument: NT3 Analyst: PKC — Analyzed: 03/11/2021 15:06

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) — Extract ID: 21C0140-14 C
Preparation Batch: BJC0293 — Sample Size: 10 mL
Prepared: 03/11/2021 — Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
Surrogate: 1,2-Dichloroethane-d4				*80-129 %*	*94.2*	*%*	
Surrogate: Toluene-d8				*80-120 %*	*99.6*	*%*	

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Volatile Organic Compounds - Quality Control

Batch BJC0257 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJC0257-BLK1)				Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 12:06							
Vinyl Chloride	ND	0.08	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L							U
Trichloroethene	ND	0.07	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.98			ug/L	*5.00*		*99.5*	*80-129*			
Surrogate: Toluene-d8	4.99			ug/L	*5.00*		*99.7*	*80-120*			
LCS (BJC0257-BS1)				Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 09:56							
Vinyl Chloride	10.8	0.08	0.20	ug/L	10.0		108	66-133			
cis-1,2-Dichloroethene	9.38	0.08	0.20	ug/L	10.0		93.8	80-121			
Trichloroethene	9.50	0.07	0.20	ug/L	10.0		95.0	80-120			
Surrogate: 1,2-Dichloroethane-d4	4.89			ug/L	*5.00*		*97.9*	*80-129*			
Surrogate: Toluene-d8	4.87			ug/L	*5.00*		*97.3*	*80-120*			
LCS Dup (BJC0257-BSD1)				Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 10:22							
Vinyl Chloride	11.1	0.08	0.20	ug/L	10.0		111	66-133	2.44	30	
cis-1,2-Dichloroethene	9.62	0.08	0.20	ug/L	10.0		96.2	80-121	2.48	30	
Trichloroethene	9.96	0.07	0.20	ug/L	10.0		99.6	80-120	4.67	30	
Surrogate: 1,2-Dichloroethane-d4	4.85			ug/L	*5.00*		*97.0*	*80-129*			
Surrogate: Toluene-d8	5.09			ug/L	*5.00*		*102*	*80-120*			

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Volatile Organic Compounds - Quality Control

Batch BJC0293 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJC0293-BLK1)				Prepared: 11-Mar-2021 Analyzed: 11-Mar-2021 14:40							
Vinyl Chloride	ND	0.08	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L							U
Trichloroethene	ND	0.07	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.89			ug/L	*5.00*		*97.8*	*80-129*			
Surrogate: Toluene-d8	4.99			ug/L	*5.00*		*99.7*	*80-120*			
LCS (BJC0293-BS1)				Prepared: 11-Mar-2021 Analyzed: 11-Mar-2021 12:30							
Vinyl Chloride	9.59	0.08	0.20	ug/L	10.0		95.9	66-133			
cis-1,2-Dichloroethene	8.43	0.08	0.20	ug/L	10.0		84.3	80-121			
Trichloroethene	8.14	0.07	0.20	ug/L	10.0		81.4	80-120			
Surrogate: 1,2-Dichloroethane-d4	4.83			ug/L	*5.00*		*96.7*	*80-129*			
Surrogate: Toluene-d8	4.96			ug/L	*5.00*		*99.1*	*80-120*			
Matrix Spike (BJC0293-MS1)		**Source: 21C0140-07**		Prepared: 11-Mar-2021 Analyzed: 11-Mar-2021 22:53							
Vinyl Chloride	9.82	0.08	0.20	ug/L	10.0	ND	98.2	66-133			
cis-1,2-Dichloroethene	8.49	0.08	0.20	ug/L	10.0	0.08	84.0	80-121			
Trichloroethene	8.44	0.07	0.20	ug/L	10.0	ND	84.4	80-120			
Surrogate: 1,2-Dichloroethane-d4	4.74			ug/L	*5.00*	*4.70*	*94.8*	*80-129*			
Surrogate: Toluene-d8	4.94			ug/L	*5.00*	*4.96*	*98.8*	*80-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BJC0293-MSD1)		**Source: 21C0140-07**		Prepared: 11-Mar-2021 Analyzed: 11-Mar-2021 23:19							
Vinyl Chloride	10.4	0.08	0.20	ug/L	10.0	ND	104	66-133	5.29	30	
cis-1,2-Dichloroethene	8.54	0.08	0.20	ug/L	10.0	0.08	84.6	80-121	0.64	30	
Trichloroethene	8.87	0.07	0.20	ug/L	10.0	ND	88.7	80-120	5.02	30	
Surrogate: 1,2-Dichloroethane-d4	4.85			ug/L	*5.00*	*4.70*	*96.9*	*80-129*			
Surrogate: Toluene-d8	5.11			ug/L	*5.00*	*4.96*	*102*	*80-120*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Volatile Organic Compounds - Quality Control

Batch BJC0319 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJC0319-BLK1)				Prepared: 12-Mar-2021 Analyzed: 12-Mar-2021 12:26							
Vinyl Chloride	ND	0.08	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L							U
Trichloroethene	ND	0.07	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.16			ug/L	*5.00*		*103*	*80-129*			
Surrogate: Toluene-d8	4.83			ug/L	*5.00*		*96.6*	*80-120*			
LCS (BJC0319-BS1)				Prepared: 12-Mar-2021 Analyzed: 12-Mar-2021 10:56							
Vinyl Chloride	10.1	0.08	0.20	ug/L	10.0		101	66-133			
cis-1,2-Dichloroethene	10.5	0.08	0.20	ug/L	10.0		105	80-121			
Trichloroethene	10.1	0.07	0.20	ug/L	10.0		101	80-120			
Surrogate: 1,2-Dichloroethane-d4	5.13			ug/L	*5.00*		*103*	*80-129*			
Surrogate: Toluene-d8	4.99			ug/L	*5.00*		*99.8*	*80-120*			
LCS Dup (BJC0319-BSD1)				Prepared: 12-Mar-2021 Analyzed: 12-Mar-2021 11:17							
Vinyl Chloride	9.94	0.08	0.20	ug/L	10.0		99.4	66-133	1.25	30	
cis-1,2-Dichloroethene	10.2	0.08	0.20	ug/L	10.0		102	80-121	2.44	30	
Trichloroethene	9.72	0.07	0.20	ug/L	10.0		97.2	80-120	3.53	30	
Surrogate: 1,2-Dichloroethane-d4	5.04			ug/L	*5.00*		*101*	*80-129*			
Surrogate: Toluene-d8	4.99			ug/L	*5.00*		*99.8*	*80-120*			

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Dissolved Gases - Quality Control

Batch BJC0447 - EPA 5030C (Purge and Trap)

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJC0447-BLK1)				Prepared: 17-Mar-2021 Analyzed: 17-Mar-2021 08:28						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Acetylene	ND	1.06	ug/L							U
Surrogate: Propane	1590		ug/L	*1800*		*88.1*	*72-122*			
LCS (BJC0447-BS1)				Prepared: 17-Mar-2021 Analyzed: 17-Mar-2021 07:13						
Methane	644	0.65	ug/L	656		98.2	80-120			
Ethane	1310	1.23	ug/L	1230		106	80-120			
Ethene	1020	1.14	ug/L	1150		88.6	80-120			
Acetylene	888	1.06	ug/L	1060		83.8	73-123			
Surrogate: Propane	1730		ug/L	*1800*		*96.2*	*62-122*			
LCS Dup (BJC0447-BSD1)				Prepared: 17-Mar-2021 Analyzed: 17-Mar-2021 08:02						
Methane	602	0.65	ug/L	656		91.8	80-120	6.70	30	
Ethane	1270	1.23	ug/L	1230		104	80-120	2.68	30	
Ethene	987	1.14	ug/L	1150		85.8	80-120	3.20	30	
Acetylene	863	1.06	ug/L	1060		81.5	73-123	2.80	30	
Surrogate: Propane	1480		ug/L	*1800*		*82.3*	*62-122*			
Duplicate (BJC0447-DUP1)	**Source: 21C0140-03**			Prepared: 17-Mar-2021 Analyzed: 17-Mar-2021 12:27						
Methane	ND	0.65	ug/L		3.48					U
Ethane	ND	1.23	ug/L		ND					U
Ethene	ND	1.14	ug/L		ND					U
Acetylene	ND	1.06	ug/L		ND					U
Surrogate: Propane	1740		ug/L	*1800*	*1510*	*96.8*	*72-122*			
Duplicate (BJC0447-DUP2)	**Source: 21C0140-07**			Prepared: 17-Mar-2021 Analyzed: 17-Mar-2021 12:40						
Methane	ND	0.65	ug/L		ND					U
Ethane	ND	1.23	ug/L		ND					U
Ethene	ND	1.14	ug/L		ND					U
Acetylene	ND	1.06	ug/L		ND					U
Surrogate: Propane	1650		ug/L	*1800*	*1480*	*91.5*	*72-122*			

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Dissolved Gases - Quality Control

Batch BJC0447 - EPA 5030C (Purge and Trap)

Instrument: FID6 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BJC0447-MS1)	**Source: 21C0140-07**		Prepared: 17-Mar-2021	Analyzed: 17-Mar-2021 12:54						
Methane	464	0.65	ug/L	656	ND	70.7	80-120			*
Ethane	956	1.23	ug/L	1230	ND	77.8	80-120			*
Ethene	738	1.14	ug/L	1150	ND	64.2	80-120			*
Acetylene	629	1.06	ug/L	1060	ND	59.3	73-123			*
Surrogate: Propane	1620		ug/L	*1800*	*1480*	*90.0*	*62-122*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BJC0447-MSD1)	**Source: 21C0140-07**		Prepared: 17-Mar-2021	Analyzed: 17-Mar-2021 13:07						
Methane	562	0.65	ug/L	656	ND	85.7	80-120	19.20	30	
Ethane	1110	1.23	ug/L	1230	ND	90.3	80-120	14.90	30	
Ethene	843	1.14	ug/L	1150	ND	73.3	80-120	13.30	30	*
Acetylene	714	1.06	ug/L	1060	ND	67.3	73-123	12.70	30	*
Surrogate: Propane	1650		ug/L	*1800*	*1480*	*91.9*	*62-122*			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Dissolved Gases - Quality Control

Batch BJD0401 - EPA 5030C (Purge and Trap)

Instrument: FID6 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJD0401-BLK1)				Prepared: 15-Apr-2021 Analyzed: 15-Apr-2021 14:18						
Methane	ND	0.65	ug/L							U
Ethane	ND	1.23	ug/L							U
Ethene	ND	1.14	ug/L							U
Acetylene	ND	1.06	ug/L							U
Surrogate: Propane	2120		ug/L	*1800*		*118*	*72-122*			
LCS (BJD0401-BS1)				Prepared: 15-Apr-2021 Analyzed: 15-Apr-2021 13:01						
Methane	679	0.65	ug/L	656		104	80-120			
Ethane	1380	1.23	ug/L	1230		112	80-120			
Ethene	1080	1.14	ug/L	1150		94.2	80-120			
Acetylene	984	1.06	ug/L	1060		92.8	73-123			
Surrogate: Propane	1790		ug/L	*1800*		*99.7*	*62-122*			
LCS Dup (BJD0401-BSD1)				Prepared: 15-Apr-2021 Analyzed: 15-Apr-2021 13:15						
Methane	655	0.65	ug/L	656		99.9	80-120	3.62	30	
Ethane	1330	1.23	ug/L	1230		108	80-120	3.87	30	
Ethene	1040	1.14	ug/L	1150		90.1	80-120	4.46	30	
Acetylene	909	1.06	ug/L	1060		85.7	73-123	7.98	30	
Surrogate: Propane	2130		ug/L	*1800*		*118*	*62-122*			
Duplicate (BJD0401-DUP1)	**Source: 21C0140-12**			Prepared: 15-Apr-2021 Analyzed: 15-Apr-2021 15:18						
Methane	566	0.65	ug/L		598			5.43	30	H
Ethane	ND	1.23	ug/L		ND					H, U
Ethene	ND	1.14	ug/L		ND					H, U
Acetylene	ND	1.06	ug/L		ND					H, U
Surrogate: Propane	1780		ug/L	*1800*	*1840*	*98.7*	*72-122*			*H*

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Wet Chemistry - Quality Control

Batch BJC0249 - No Prep Wet Chem

Instrument: IC930 Analyst: WCW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJC0249-BLK1)				Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 12:39							
Nitrate-N	ND	0.100	0.100	mg/L							U
Blank (BJC0249-BLK2)				Prepared: 10-Mar-2021 Analyzed: 11-Mar-2021 13:33							
Sulfate	ND	0.100	0.100	mg/L							U
LCS (BJC0249-BS1)				Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 12:59							
Nitrate-N	5.23	0.100	0.100	mg/L	5.00		105	90-110			
LCS (BJC0249-BS2)				Prepared: 10-Mar-2021 Analyzed: 11-Mar-2021 13:53							
Sulfate	4.70	0.100	0.100	mg/L	5.00		94.1	90-110			
Duplicate (BJC0249-DUP1)		**Source: 21C0140-07**		Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 13:39							
Nitrate-N	ND	0.100	0.100	mg/L		ND					U
Duplicate (BJC0249-DUP3)		**Source: 21C0140-07RE2**		Prepared: 10-Mar-2021 Analyzed: 11-Mar-2021 14:33							
Sulfate	45.3	1.00	1.00	mg/L		45.2			0.24	20	D
Matrix Spike (BJC0249-MS1)		**Source: 21C0140-07**		Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 13:59							
Nitrate-N	1.98	0.100	0.100	mg/L	2.00	ND	98.8	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BJC0249-MS3)		**Source: 21C0140-07RE2**		Prepared: 10-Mar-2021 Analyzed: 11-Mar-2021 14:53							
Sulfate	76.4	1.00	1.00	mg/L	45.0	45.2	69.3	75-125			*, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BJC0249-MSD1)		**Source: 21C0140-07**		Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 14:19							
Nitrate-N	2.02	0.100	0.100	mg/L	2.00	ND	101	75-125	2.30	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BJC0249-MSD3)		**Source: 21C0140-07RE2**		Prepared: 10-Mar-2021 Analyzed: 11-Mar-2021 15:13							
Sulfate	76.9	1.00	1.00	mg/L	45.0	45.2	70.5	75-125	0.68	20	*, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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Wet Chemistry - Quality Control

Batch BJC0253 - No Prep Wet Chem

Instrument: TOC-LCSH Analyst: WCW

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJC0253-BLK1)				Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 13:07							
Total Organic Carbon	ND	0.50	0.50	mg/L							U
LCS (BJC0253-BS1)				Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 13:26							
Total Organic Carbon	19.04	0.50	0.50	mg/L	20.00		95.2	90-110			
Duplicate (BJC0253-DUP1)		**Source: 21C0140-07**		Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 14:16							
Total Organic Carbon	2.00	0.50	0.50	mg/L		2.07			3.59	20	
Matrix Spike (BJC0253-MS1)		**Source: 21C0140-07**		Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 14:39							
Total Organic Carbon	20.69	0.50	0.50	mg/L	20.00	2.07	93.1	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BJC0253-MSD1)		**Source: 21C0140-07**		Prepared: 10-Mar-2021 Analyzed: 10-Mar-2021 14:58							
Total Organic Carbon	20.34	0.50	0.50	mg/L	20.00	2.07	91.4	75-125	1.71	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

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Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
Edmonds WA, 98020	Project Manager: Evelyn Ives	16-Apr-2021 12:53

Certified Analyses included in this Report

Analyte	Certifications
EPA 300.0 in Water	
Nitrate-N	DoD-ELAP,WADOE,NELAP
Nitrate-N	DoD-ELAP,WADOE,WA-DW,NELAP
Nitrate-N	DoD-ELAP,WADOE,WA-DW
Nitrate-N	DoD-ELAP,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW
Sulfate	DoD-ELAP,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,WA-DW,NELAP
Sulfate	DoD-ELAP,WADOE,NELAP
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP
Chloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloromethane	DoD-ELAP,ADEC,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,CALAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,CALAP
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,CALAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,CALAP
Trichlorofluoromethane	DoD-ELAP,ADEC,CALAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP
Acrolein	DoD-ELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,CALAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,CALAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,CALAP
Acetone	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,CALAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,CALAP
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,CALAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,CALAP,WADOE
Iodomethane	DoD-ELAP,NELAP,CALAP
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,CALAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP
Methylene Chloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,CALAP
Acrylonitrile	DoD-ELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,CALAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,CALAP
Carbon Disulfide	DoD-ELAP,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,CALAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,CALAP
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP
1,1-Dichloroethane	DoD-ELAP,ADEC,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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2-Butanone	DoD-ELAP,CALAP,WADOE
2-Butanone	DoD-ELAP,NELAP,CALAP
2-Butanone	DoD-ELAP,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,CALAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,CALAP
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,CALAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP
Chloroform	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP
Bromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP
1,1-Dichloropropene	DoD-ELAP,ADEC,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,CALAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,CALAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,CALAP
Trichloroethene	DoD-ELAP,ADEC,CALAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,CALAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP
Bromodichloromethane	DoD-ELAP,ADEC,CALAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,CALAP
Dibromomethane	DoD-ELAP,ADEC,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,CALAP
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,CALAP
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,CALAP
Toluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP
2-Hexanone	DoD-ELAP,CALAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,CALAP,WADOE

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,CALAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP
1,3-Dichloropropane	DoD-ELAP,ADEC,CALAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,CALAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,CALAP
Dibromochloromethane	DoD-ELAP,ADEC,CALAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP
1,2-Dibromoethane	DoD-ELAP,CALAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP
Chlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,CALAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,CALAP
Ethylbenzene	DoD-ELAP,ADEC,CALAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,CALAP
m,p-Xylene	DoD-ELAP,ADEC,CALAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,CALAP,WADOE

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP
o-Xylene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Styrene	DoD-ELAP,CALAP,WADOE
Styrene	DoD-ELAP,NELAP,CALAP
Bromoform	DoD-ELAP,NELAP,CALAP
Bromoform	DoD-ELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,CALAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,CALAP
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,CALAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,CALAP
n-Propylbenzene	DoD-ELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,CALAP
n-Propylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP
Bromobenzene	DoD-ELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,CALAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,CALAP
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP
2-Chlorotoluene	DoD-ELAP,ADEC,CALAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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4-Chlorotoluene	DoD-ELAP,ADEC,CALAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,CALAP
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,CALAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,CALAP
t-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,CALAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,CALAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,CALAP
s-Butylbenzene	DoD-ELAP,NELAP,CALAP
s-Butylbenzene	DoD-ELAP,CALAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,CALAP
4-Isopropyl Toluene	DoD-ELAP,CALAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP
1,3-Dichlorobenzene	DoD-ELAP,ADEC,CALAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,CALAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,CALAP
n-Butylbenzene	DoD-ELAP,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP
1,2-Dichlorobenzene	DoD-ELAP,ADEC,CALAP,WADOE

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,CALAP
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,CALAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,CALAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,CALAP
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,CALAP
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,CALAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,CALAP
n-Hexane	WADOE
n-Hexane	WADOE
n-Hexane	
n-Hexane	WADOE
2-Pentanone	WADOE
2-Pentanone	WADOE
2-Pentanone	
2-Pentanone	WADOE

EPA RSK-175 in Water

Methane	NELAP
Methane	

Landau Associates, Inc.	Project: Beckwith and Kuffle	
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Methane	NELAP
Methane	NELAP
Ethane	NELAP
Ethane	
Ethane	NELAP
Ethane	NELAP
Ethene	
Ethene	NELAP
Ethene	NELAP
Ethene	NELAP
Acetylene	NELAP
Acetylene	NELAP
Acetylene	NELAP
Acetylene	

SM 5310 B-00 in Water

Total Organic Carbon	WADOE,NELAP
Total Organic Carbon	WA-DW,NELAP
Total Organic Carbon	WA-DW,WADOE
Total Organic Carbon	WA-DW,WADOE,NELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2022

Landau Associates, Inc.	Project: Beckwith and Kuffle	
130 2nd Avenue S.	Project Number: Beckwith and Kuffle	**Reported:**
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Notes and Definitions

*	Flagged value is not within established control limits.
D	The reported value is from a dilution
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
H	Hold time violation - Hold time was exceeded.
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.