City of Bothell™

July 1, 2019

Jerome Cruz, Ecology Site Manager
Department of Ecology,
Northwest Regional Office Toxic Cleanup Program
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Re: Quarterly Progress Report for period ending June 2019

Site Name:	**BOTHELL SERVICE CENTER/ SIMON & SON**
Site Address:	18107 Bothell Way NE, Bothell WA 98011
Parcel Numbers:	237420-0065
Facility/Site No.:	33215922
Consent Decree No.:	18-2-02852-3 SEA (Effective date February 2, 2018)

Reporting Period: April 1 – June 30, 2019

Summary:

City of Bothell (PLP) continues to make progress on work being performed for the Bothell Service Center site (BSC), in accordance with the Consent Decree (CD) with the Department of Ecology.

Per the requirements of Section XI of the Consent Decree "Progress Reports", the attached quarterly progress report has been prepared for the three-month period preceding this submittal to satisfy the terms described in the Consent Decree.

During this period much of the work has been geared towards operation of the bio-remediation system, monitoring well sampling, performing localized soil excavation and demobilizing the ERH equipment.

The attached progress report provides an update on work accomplished during the period ending June 30, 2019 for the Site. Please contact me if you have any questions.

Sincerely,

Nduta Mbuthia

Nduta Mbuthia
Project Coordinator, City of Bothell

Public Works Department
18415 101st Ave NE
Bothell, WA 98011
425.806.6800
www.bothellwa.gov

City of Bothell™

Reporting Period:	April 1 – June 30, 2019
Date submitted (electronically):	July 1, 2019
Date mailed (certified w/return receipt):	July 2019
Prepared by:	Nduta Mbuthia, Project Coordinator City of Bothell, Public Works Department Phone: 425.806.6829. Email: nduta.mbuthia@bothellwa.gov

CONTENTS

A. A list of on-site activities that have taken place during this quarter

The following activities have occurred this quarter –

- Installation of additional injection/extraction well pairs for the bio-remediation system was completed and the system was fully operational by April 2019. City's consultant met with Ecology site manager on April 4th to discuss operational issues, and specifically the plan to recirculate/inject the groundwater after extraction & treatment
- Groundwater sampling was conducted in May; sampling data was analyzed and tabulated.
- Soil excavation in the former ERH area; see Attached work plan dated June 7, 2019
- Demobilization of the Electrical Resistance Heating equipment and decommissioning of the electrodes. The system operated from May 29, 2018 until shut-down on November 20, 2018. Some of the ERH wells were repurposed and utilized for the bioremediation's extraction/injection system

B. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests:

This quarter there was a deviation from the CAP regarding recirculation of groundwater after extraction/treatment/injection. The City's consultant met with Ecology site manager on April 4th to discuss, and they reached concurrence that a technical memo will be prepared to document the change.

C. Description of all deviations from the CAP (Exhibit C) and Schedule (Exhibit D) during the current quarter and any planned deviations in the upcoming quarter:

This quarter there was a deviation from the schedule related to the ERH-hot spot soil excavation – the work was postponed due to several factors as documented in the consultant's April 19 email and excavation work plan (both attached.) There was a deviation from the CAP related to recirculation of groundwater - extraction/treatment/injection; the consultant met with Ecology site manager on April 4th to discuss.

D. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the schedule:

The localized soil excavation was performed in late June 2019 although the CD schedule (Exhibit D) originally anticipated that soil excavation would occur 6 – 9 months after the CD's effective date i.e. around fall 2018. The consultant described the reasons for this delay in schedule in an April 19 email; and in late April, Ecology's site manager indicated that the excavation could proceed only after the collection of post-ERH groundwater monitoring data from approximately 60 wells. This well sampling activity was completed in early June.

E. All raw data (including laboratory analyses) received by Defendants during the past quarter and an identification of the source of the sample:

- For soil analytical data, see attached "Vadose soil excavation work plan" (June 7, 2019)
- GW monitoring Spring 2019 quarter, May 20 - June 3, 2019 – attached

F. A list of deliverables for the upcoming quarter if different from the schedule:

Same as the schedule

Attachments

Pertinent email correspondence
Groundwater sampling maps, tables and data analysis
Vadose soil excavation work plan" (June 7, 2019)
Documentation compliance list, updated
Exhibit D from the CD

From:	Cruz, Jerome (ECY)
To:	Nduta Mbuthia; John Kane
Cc:	John Kane; Wang, Ching-Pi (ECY)
Subject:	RE: [EXTERNAL] RE: QPR# March 2019 - RE: schedule of deliverable spreadsheet (Landing, Paint & Hertz)
Date:	Friday, April 5, 2019 8:49:15 AM
Attachments:	GW Temperatures ERH wells March 2019.pdf

HI Nduta and john,
After meeting with John yesterday, we learned that the groundwater injections were initially not to be recirculated. It was to consist of pulsed injection bioremediation injections expected to operate for a few years (I believe John mentioned two). However, after some discussion, I believe there will be some recirculation and treatment of HVOC and osing of bioremediation agent (same as described in the CAP for plume remediation).

John will be submitting a technical memorandum to explain and document the proposal. The proposal is not exactly in the scope of work in the CAP and EDR, but as long as it's properly documented and explained such that it will not interfere with the previous ERH thermal remediation (which in my notes we were told would have enough residual heat to still remediate the source area for a few more months). However, John explained that the temperatures appear to have dropped faster than expected. John said they would go out and take temperatures again to establish this condition, we could mean we formally declare the thermal remediation stage over and start the proposed bioremediation proposal.

However, the temperatures reported in the attached sheet (which believe is a handout John provided) are low - from around 12 to 46 degrees celcius. This makes me wonder why a round of temperatures measurements is still needed as it is well below the target range for thermal remediation (either under active heating or residual heat). Please let me know why additional temperatures measurements are still needed. I may have been proceeding under the assumption that temperatures were much higher (in the operating range for thermal remediation), but it's as low as the attached table, maybe the proposed measurements are not needed.

Thanks,

Jerome

DEPARTMENT OF ECOLOGY
State of Washington

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Jerome.Cruz@ecy.wa.gov
http://www.ecy.wa.gov/programs/tcp/cleanup.html

From: Nduta Mbuthia [mailto:Nduta.Mbuthia@bothellwa.gov]
Sent: Tuesday, April 2, 2019 8:45 AM

From: Cruz, Jerome (ECY)
To: Nduta Mbuthia
Cc: Wang, Ching-Pi (ECY); John Kane
Subject: RE: [EXTERNAL] Kane Environmental - ERH temperatures - Microbial sampling
Date: Thursday, May 30, 2019 8:13:28 AM

Hi Nduta,

- John has the green light to proceed with source area bioremediation/recirculation after the site-wide synoptic groundwater monitoring is accomplished.
- John only mentioned to me in a site visit that based on some soil sampling he did, he proposed focused soil excavations. I have not seen the soil testing results or a work plan showing where the targeted excavations will occur (John, please correct me if I'm wrong on this). The soil excavations are on a separate track. I don't believe we can give the green light without seeing the soil data and the work plan.

Thanks,
Jerome

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State of Washington

Jerome B. Cruz, Ph.D.
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Jerome.Cruz@ecy.wa.gov
http://www.ecy.wa.gov/programs/tcp/cleanup.html

From: Nduta Mbuthia [mailto:Nduta.Mbuthia@bothellwa.gov]
Sent: Thursday, May 30, 2019 8:02 AM
To: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Cc: Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>; John Kane <jkane@kane-environmental.com>
Subject: RE: [EXTERNAL] Kane Environmental - ERH temperatures - Microbial sampling

Jerome,

Thanks for the detailed response. I'm glad that we are back on track, and it sounds like Kane Env. is about two weeks away from compiling the post-ERH data into a technical memorandum.

My read is that after you receive/review that memo and analyze the data, Ecology will provide the greenlight for Kane to proceed with the focused soil excavations? Or are the excavations proceeding on a different track (schedule-wise)? Thanks

Nduta

From: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Sent: Thursday, May 30, 2019 7:45 AM
To: Nduta Mbuthia <Nduta.Mbuthia@bothellwa.gov>; John Kane <jkane@kane-environmental.com>
Cc: Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>
Subject: RE: [EXTERNAL] Kane Environmental - ERH temperatures - Microbial sampling

Hi Nduta,

We should be OK now. Initially, when John requested to use the ERH area wells to start injecting carbstrate in order to take advantage of remaining high temperatures, I identified this as a deviation to the cleanup action plan and requested more discussion. This was a while back and since then we've had planning discussions that addressed my concerns on this issue and also on adequate characterization of the "post-ERH" the plume without influence from source area bioremediation injections. Due to the expense and objectives of the CAP, I wanted to understand the performance and effect of the ERH treatment. I did not want to have to assess the thermal if bioremediation of the source were to be applied at the same time. I also wanted to do the follow up microbial testing to establish if the groundwater conditions were conducive to bioremediation (initial results were not, in our opinion).

John agreed to sample all the wells at the site for contaminants to produce a contaminant distribution map. Coverage should be better than early rounds and will give us the snapshot of the plume we are requesting. The agreement is that he can proceed with using ERH wells for injecting and recirculation afterwards (as is being done in the downgradient plume). At the same time, we will use the sampling information to identify what wells we can decommission and what we shall retain for compliance monitoring.

The rest of the cleanup plan can then be followed, hopefully without further deviation. This would include focused excavations.

Let me know if this answers your questions…I'm hoping (along with the Wexler remediation and CD amendment), we will be in more of an "autopilot" mode after these tasks are completed.

Thanks,

Jerome

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State of Washington

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From: Nduta Mbuthia [mailto:Nduta.Mbuthia@bothellwa.gov]
Sent: Wednesday, May 29, 2019 4:54 PM
To: John Kane <jkane@kane-environmental.com>
Cc: Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>; Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Subject: Re: [EXTERNAL] Kane Environmental - ERH temperatures - Microbial sampling

John
Please clarify... does your response address the concern that Jerome raises in paragraph 1 highlighted below?
.....we learned that the groundwater injections were initially not to be recirculated. It was to consist of pulsed injection bioremediation injections....

I thought that this is what the tech memo was meant to address i.e. a deviation from the CAP? Perhaps I'm reading it wrong... Jerome please provide your input?

Nduta

From: John Kane <jkane@kane-environmental.com>
Sent: Wednesday, May 29, 2019 4:08:21 PM
To: Nduta Mbuthia
Cc: Wang, Ching-Pi (ECY); Cruz, Jerome (ECY); John Kane
Subject: [EXTERNAL] Kane Environmental - ERH temperatures - Microbial sampling

"
Nduta, Jerome and Ching Pi:

The result of our discussions between John Kane, Jerome Cruz, and Ching Pi Wang in April 2019 regarding the ERH well temperatures was to complete a second round of Microbial sampling at the Bothell site. We completed the microbial sampling on May 6, 2019 and received the results on May 20, 2019. Kane Environmental is completing an updated memorandum comparing the recent post-ERH microbial results with pre-ERH microbial results from February 2018. We need another one to two weeks to get the memo completed.

Thank you.

John

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www.kane-environmental.com

From:	John Kane
To:	Cruz, Jerome (ECY)
Cc:	Wang, Ching-Pi (ECY); Warren, Bob (ECY); Nduta Mbuthia; John Kane
Subject:	[EXTERNAL] Kane Environmental - Bothell Service Center Simon & Sons hot spot soil removal schedule
Date:	Friday, April 19, 2019 3:34:38 PM

"

Jerome:

Per our conversation this afternoon April 19, 2019 regarding the limited "hot spot" soil excavation at the Bothell Service Center Simon & Sons (BSCSS) site, the schedule for the soil excavation has been delayed due to the following factors:

- The Electrical Resistance Heating (ERH) system continued through mid-November 2018, and having the high voltage equipment on full-scale made limited soil excavation not practicable and a health and safety concern.

- As agreed upon between Ecology and the City of Bothell, the ERH Soil Vapor Extraction (SVE) system was extended through the end of February 2019. This resulted in leaving the ERH equipment on the BSCSS site for additional 3 months.
- Inclement weather in February for 2-3 weeks caused overall project delays.
- At this time, we believe that the soil temperatures in the "hot spot" areas have decreased to an extent that does not require hot soil excavation procedures, and scheduling the “hot spot” soil removal is now reasonable.

Thank you and I will keep you informed as we proceed with scheduling the “hot spot” soil removal.

Regards,

John

John Kane, CEO/President
Kane Environmental, Inc.
Environmental Issues. Business Solutions.
4015 13th Avenue West
Seattle, WA 98119

Tel 206-691-0476 Cell 206-715-2779

From: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Sent: Tuesday, April 9, 2019 3:01 PM
To: Nduta Mbuthia <Nduta.Mbuthia@bothellwa.gov>
Cc: John Kane <jkane@kane-environmental.com>; Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>
Subject: [EXTERNAL] BSCSS soil excavation source area

"
Hi Nduta,

I was reviewing the BSCSS progress report for the January 1 to March 31, 2019 reporting period and noticed another deviation in schedule from the CAP and schedule not mentioned. Deliverable C7 Contingent soil excavation in ERH treatment area was due 6-9 months from the effective date of the CD (2-2-2018), but it has been about 14 months now. The hot soil sampling results (attached) indicate excavation should occur in accordance with the CAP.

Could we get a schedule (and work plan) when the soil removal will be implemented?

Thanks,

Jerome

DEPARTMENT OF ECOLOGY
State of Washington

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http://www.ecy.wa.gov/programs/tcp/cleanup.html

From: Cruz, Jerome (ECY)
To: Nduta Mbuthia
Cc: John Kane; Wang, Ching-Pi (ECY)
Subject: RE: [EXTERNAL] BSCSS soil excavation source area
Date: Wednesday, April 24, 2019 12:06:51 PM

Hi Nduta,
I think the only concern would be if the excavation proceeds without the contaminant groundwater information/data I am requesting for post-ERH performance monitoring/analysis. I will be discussing this with John tomorrow…whether we can improve well control and the groundwater monitoring network for creation of plume maps.

Possibly John will make the case that the latest plume maps are sufficient, or we could work on well control and sampling for adequate groundwater contaminant maps. I think we'd need to accomplish this before the excavation, otherwise it's another remedial action overlaying that could interfere with the objective to understand how effective the ERH treatment was before we allow the bioremediation injections.
Jerome

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From: Nduta Mbuthia [mailto:Nduta.Mbuthia@bothellwa.gov]
Sent: Wednesday, April 24, 2019 11:51 AM
To: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Cc: John Kane <jkane@kane-environmental.com>; Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>
Subject: RE: [EXTERNAL] BSCSS soil excavation source area

Hi Jerome,

I wanted to close the loop with you on this discussion and to respond to your question regarding excavation delay and upcoming schedule. Please see the correspondence attached for reference – looks like BSC hot spot excavation is tentatively slated for late May/early June, barring unforeseen circumstances. Please let me know if you any questions or concerns regarding this?

John, please would you prepare and provide with a cc to all on this email, a copy of your work plan? And perhaps you could attach the PDF/correspondence (attached herein) as an Exhibit to your work plan, so that we have all the documentation in one place.

Thanks

Nduta

From: Cruz, Jerome (ECY)
To: Jeff Jensen; John Kane
Cc: Nduta Mbuthia; Wang, Ching-Pi (ECY)
Subject: [EXTERNAL] RE: Kane Environmental Compliance Sampling Schedule for Hertz-Landing -Paint
Date: Thursday, April 4, 2019 7:57:32 AM

"

Jeff and John,

Let's proceed with your revised schedule below. The CMP calls for 8 quarters, but let's analyze the results and discuss if additional monitoring is necessary, if the City is willing to accept institutional controls with periodic reviews as the final remedy.

Let me know if you all agree.

Thanks,

Jerome

- **Winter 2019**: March 5, 2019 – March 15, 2019
- **Spring 2019**: May 20, 2019 – June 3, 2019
- **Summer 2019**: July 15, 2019 - August 5, 2019
- **Fall 2019**: October 7, 2019 – October 25, 2019
- **Winter 2020**: January 6, 2020 – January 20, 2020

DEPARTMENT OF ECOLOGY
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Jerome.Cruz@ecy.wa.gov
http://www.ecy.wa.gov/programs/tcp/cleanup.html

From: Jeff Jensen [mailto:Jeff@kane-environmental.com]
Sent: Monday, April 1, 2019 4:28 PM
To: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>; John Kane <jkane@kane-environmental.com>
Cc: Nduta Mbuthia <Nduta.Mbuthia@bothellwa.gov>; Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>
Subject: RE: Kane Environmental Compliance Sampling Schedule for Hertz-Landing -Paint

Jerome,

Just to clarify, the ranges of dates listed for the proposed groundwater sampling events are hard start and stop dates, not a range of dates when sampling will begin. The compliance monitoring for Hertz, Paint, and Landing, as well as the performance monitoring for BSCSS, is anticipated to take a total of three weeks combined. That is why there is the three week range listed for each

RE: BSCSS - PROPOSED Groundwater wells for performance and compliance sampling

Cruz, Jerome (ECY)

Tue 5/14/2019 7:35 AM

To:John Kane <jkane@kane-environmental.com>; Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>;

Cc:Nduta Mbuthia <Nduta.Mbuthia@bothellwa.gov>; Jeff Jensen <Jeff@kane-environmental.com>;

Hi John,
Before Ecology decides on the proposed network, I have a counter proposal: can you do one round of monitoring of all the wells in the figures (not just the ones in gold rectangles), that way we can understand the current plume footprint and concentrations, then we can evaluate the proposed network (gold rectangles), maybe even reduce it further if the plume is smaller than we thought.
Thanks,
Jerome

DEPARTMENT OF ECOLOGY State of Washington

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http://www.ecy.wa.gov/programs/tcp/cleanup.html

From: John Kane [mailto:jkane@kane-environmental.com]
Sent: Monday, May 13, 2019 4:28 PM
To: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>; Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>
Cc: John Kane <jkane@kane-environmental.com>; Nduta Mbuthia <Nduta.Mbuthia@bothellwa.gov>; Jeff Jensen <Jeff@kane-environmental.com>
Subject: BSCSS - PROPOSED Groundwater wells for performance and compliance sampling

Jerome and Ching Pi:

There are three figures attached with this email with shallow, intermediate and deep wells, that show our proposed wells in gold rectangles for performance and compliance groundwater sampling. This is for the meeting on Wednesday, or if you prefer, to discuss prior to Wednesday.

Thank you.

John

From:	John Kane
To:	Cruz, Jerome (ECY); Wang, Ching-Pi (ECY)
Cc:	John Kane; Nduta Mbuthia; Jeff Jensen
Subject:	[EXTERNAL] BSCSS - PROPOSED Groundwater wells for performance and compliance sampling
Date:	Monday, May 13, 2019 4:28:21 PM
Attachments:	82302 - BSCSS - Proposed GW Compliance Monitoring Wells - Shallow.pdf 82302 - BSCSS - Proposed GW Compliance Monitoring Wells - Intermediate.pdf 82302 - BSCSS - Proposed GW Compliance Monitoring Wells - Deep.pdf

---

"

Jerome and Ching Pi:

There are three figures attached with this email with shallow, intermediate and deep wells, that show our proposed wells in gold rectangles for performance and compliance groundwater sampling. This is for the meeting on Wednesday, or if you prefer, to discuss prior to Wednesday.

Thank you.

John

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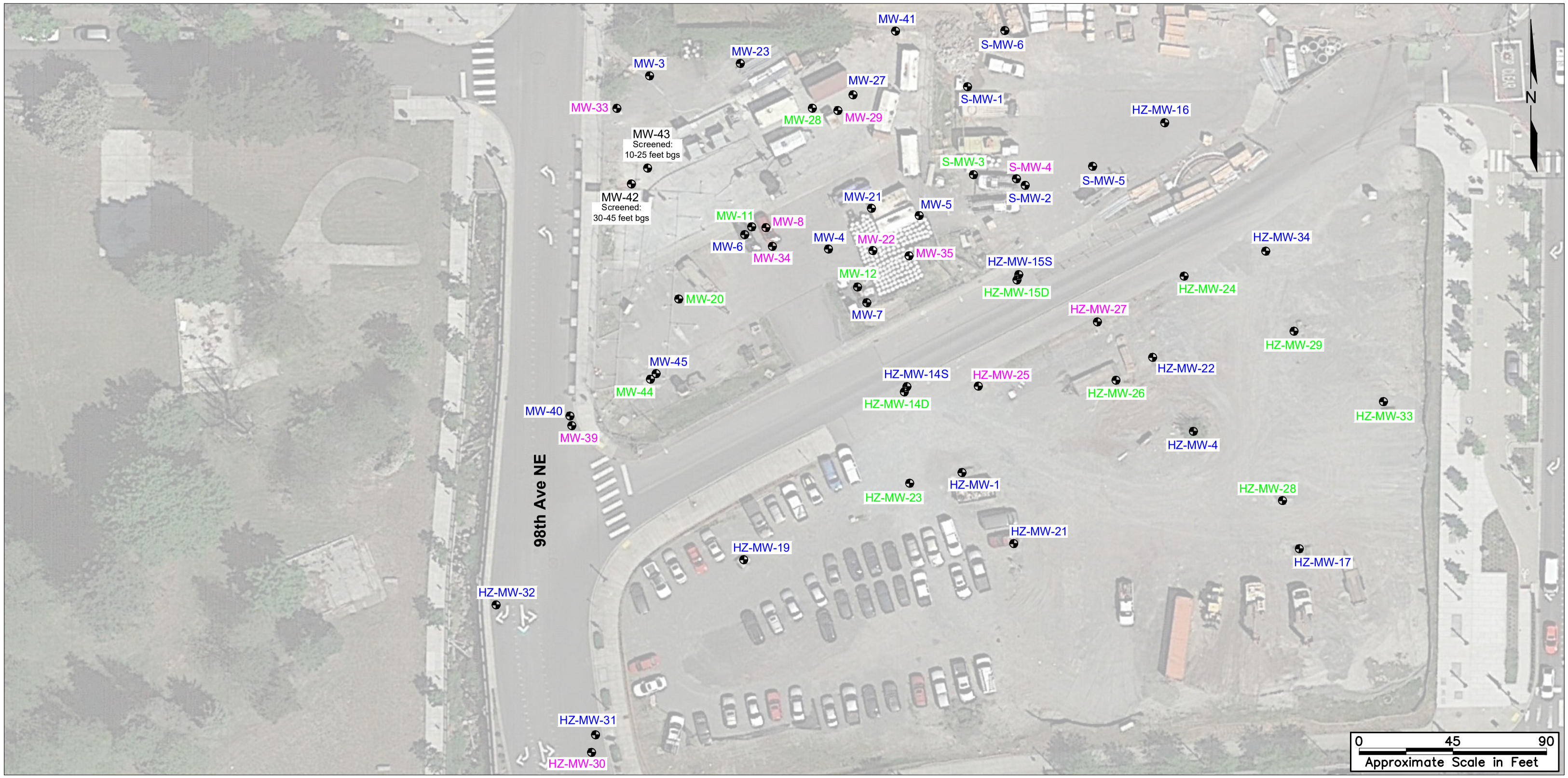


LEGEND

MW-1 — Location of shallow monitoring well (screened 5-25 ft bgs)

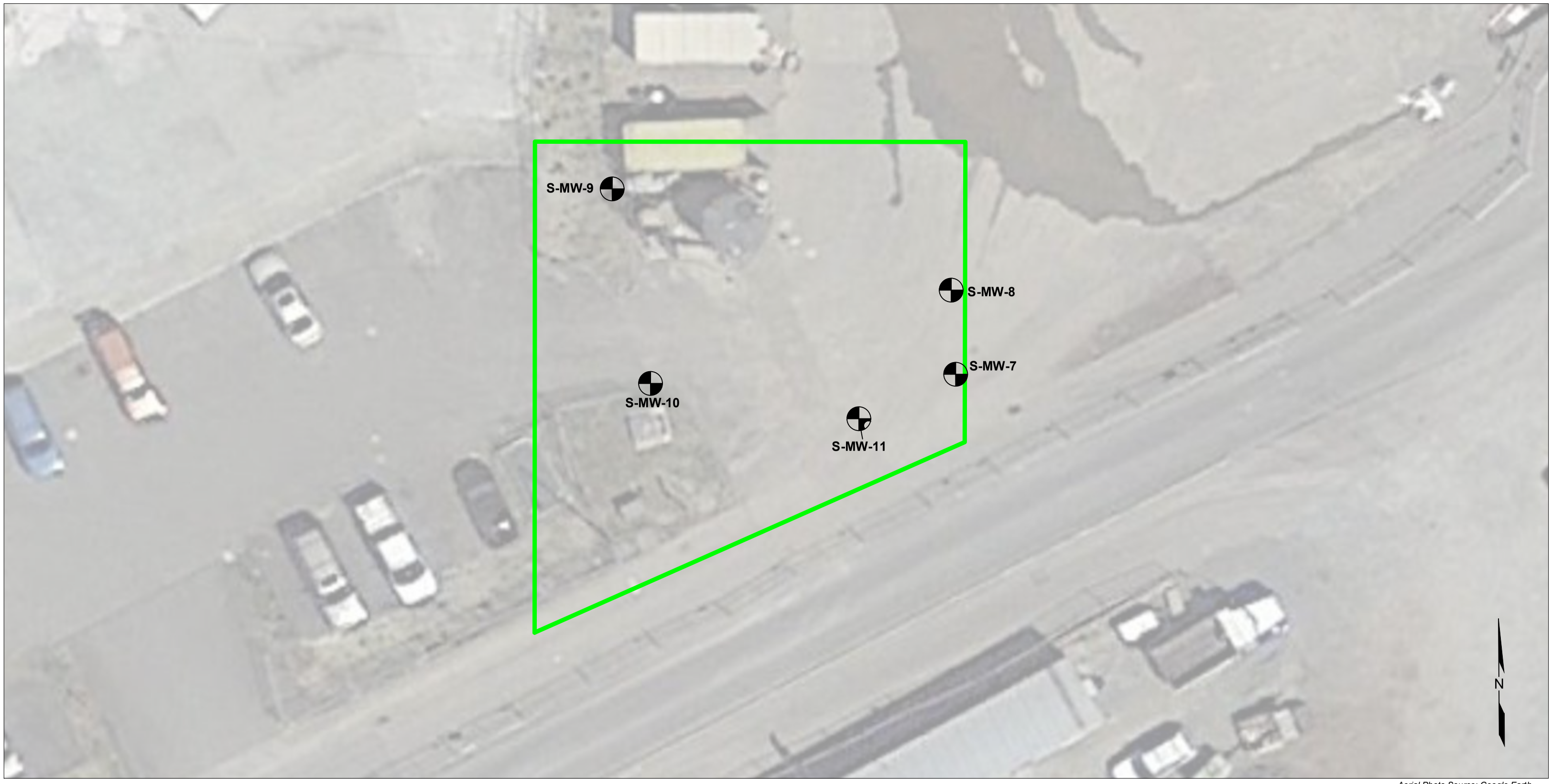
MW-2 — Location of intermediate monitoring well (screened 25-35 ft bgs)

MW-3 — Location of deep monitoring well (screened 35-55 ft bgs)

KANE ENVIRONMENTAL INC

Bothell Service Center Simon & Son
18107 Bothell Way NE
Bothell, Washington

Figure 1
Site Plan



Aerial Photo Source: Google Earth
Aerial Photo Date: May 22, 2017

LEGEND

Wexler Settlement Area

Location of groundwater monitoring well

0 15 30
Approximate Scale in Feet

KANE ENVIRONMENTAL INC

Project No. 82305

Wexler Settlement Area
Bothell, Washington 98011

Figure 1
Location of Groundwater Monitoring Wells

LEGEND

- Monitoring Well, Shallow (5-25 ft)
- Well location to be included in groundwater compliance monitoring

KANE ENVIRONMENTAL INC

Bothell Service Center Simon & Son
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Bothell, Washington

Figure 1
Proposed Groundwater Compliance Monitoring Wells - Shallow

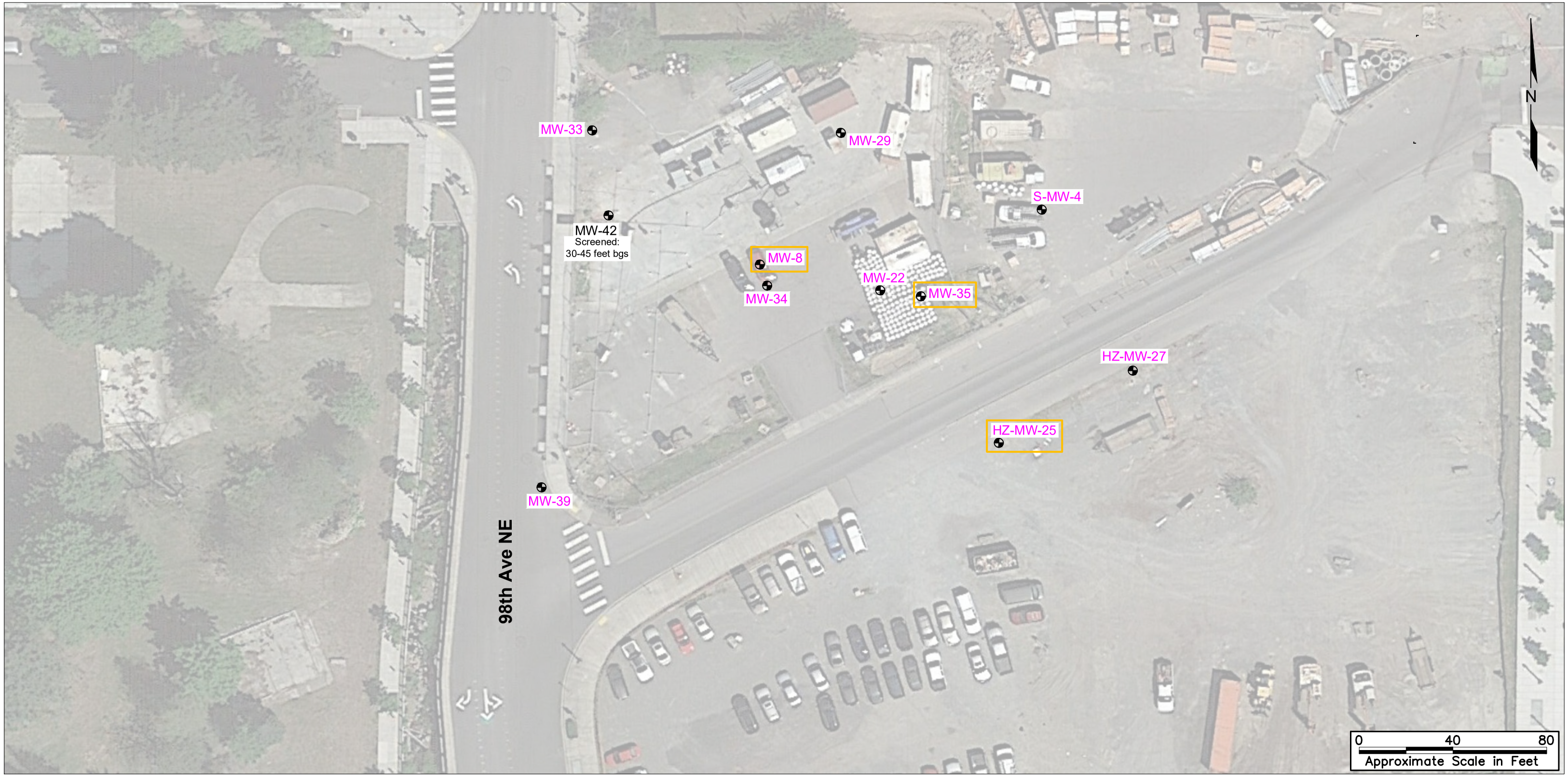
LEGEND

- Monitoring Well, Intermediate (25-35 ft)
- Well location to be included in groundwater compliance monitoring

KANE ENVIRONMENTAL INC

Bothell Service Center Simon & Son
18107 Bothell Way NE
Bothell, Washington

Figure 2
Proposed Groundwater Compliance Monitoring Wells - Intermediate



LEGEND

- Monitoring Well, Deep (35-55 ft)
- Well location to be included in groundwater compliance monitoring

KANE ENVIRONMENTAL INC

Bothell Service Center Simon & Son
18107 Bothell Way NE
Bothell, Washington

Figure 3
Proposed Groundwater Compliance Monitoring Wells - Deep

From:	Cruz, Jerome (ECY)
To:	Nduta Mbuthia
Cc:	John Kane; Wang, Ching-Pi (ECY); Jeff Jensen
Subject:	RE: [EXTERNAL] BSCSS soil excavation source area
Date:	Wednesday, April 24, 2019 12:15:54 PM

HI Nduta,
Absolutely agree with you. We will document and chart out next steps, including performance monitoring and remediation schedule.
Jerome

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From: Nduta Mbuthia [mailto:Nduta.Mbuthia@bothellwa.gov]
Sent: Wednesday, April 24, 2019 12:10 PM
To: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Cc: John Kane <jkane@kane-environmental.com>; Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>; Jeff Jensen <Jeff@kane-environmental.com>
Subject: RE: [EXTERNAL] BSCSS soil excavation source area

Hi Jerome

Thanks for the feedback. I agree… that is a reasonable approach. After your discussion with John, I would request that we document what is agreed upon by replying all to this email thread, so that we can have a record of the plan going forward? Please let me know your thoughts. Thanks

Nduta

From: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Sent: Wednesday, April 24, 2019 12:07 PM
To: Nduta Mbuthia <Nduta.Mbuthia@bothellwa.gov>
Cc: John Kane <jkane@kane-environmental.com>; Wang, Ching-Pi (ECY) <CWAN461@ECY.WA.GOV>
Subject: RE: [EXTERNAL] BSCSS soil excavation source area

Hi Nduta,
I think the only concern would be if the excavation proceeds without the contaminant groundwater information/data I am requesting for post-ERH performance monitoring/analysis. I will be discussing this with John tomorrow…whether we can improve well control and the groundwater monitoring network for creation of plume maps.

Possibly John will make the case that the latest plume maps are sufficient, or we could work on well

ETEC Advanced Bioremediation Solutions

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Washougal, WA 98671
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www.etecllc.com

June 28, 2019

Mr. John Kane
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4015 13th Avenue West
Seattle, WA 98119

RE: BOTHELL SERVICE CENTER DATA ANALYSIS, 2ND QUARTER 2019

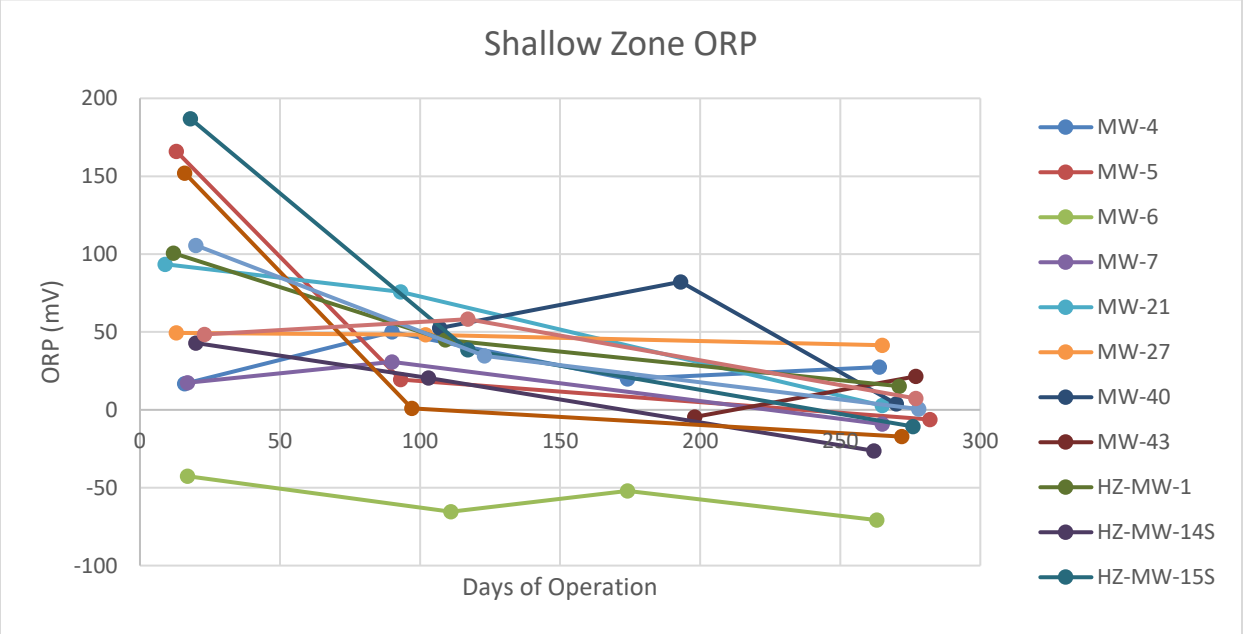
Mr. Kane:

Thank you for providing the collected data from the Bothell Service Center site. Below is an analysis of the results from the 2nd quarter sampling event.

Nutrients & Electron Acceptors

Ammonia-nitrogen is the preferred form of nitrogen for building microbial amino acids and proteins. All sampled wells at startup contained low concentrations of ammonia-nitrogen. Sampling in all wells continued to be low with the highest detection being 1.8 mg/L in MW-5. Ideally, ammonia-nitrogen concentration would be in the 2-10 mg/L range or more to ensure nitrogen limiting conditions were not present.

Redox conditions are important for determining the state and efficiency of the reductive dechlorination process. As CarBstrate™ is added as a food source to the subsurface, bacteria will begin to respire with the available electron acceptors and consume the substrate. At most sites with low amounts of organic carbon present, the ORP is positive and electron acceptors like dissolved oxygen are detectable. As bacteria begin to utilize the added food, depletion of the more oxidized electron acceptors occurs, reducing the ORP of the site. Ideal ORP conditions for reductive dechlorination is -50 mV or less, although reductive dechlorination can occur during positive redox conditions. Wells within the shallow zone with decreasing ORP have been MW-5, MW-6, MW-7, MW-21, MW-40, HZ-MW-1, HZ-MW-14S, HZ-MW-15S, HZ-MW-34, MW-2 and S-MW-5. In the intermediate zone, wells MW-11, MW-12 HZ-MW-15D, HZ-MW-24, HZ-MW-26 and HZ-MW-29 have had excellent decreases in ORP. In the deep zone, both MW-8 and HZ-MW-14D have decreased to negative redox conditions.



Soluble iron concentrations can also be used to determine redox conditions. Increases in soluble iron can be indicative of more reductive conditions as oxygen, nitrate-nitrogen and manganese are depleted. In the shallow zone, the wells MW-4, MW-5, MW-6, MW-7, MW-40, HZ-MW-14S, and HZ-MW-34 have shown increases in soluble iron as the treatment has progressed. The intermediate zone and deep zone wells HZ-MW-24 and HZ-MW-29 have had notable increases in soluble iron.

Sulfate is naturally occurring or may be added to the subsurface by onsite activities. Sampling for sulfate can be used as an indicator of reductive conditions. As more reductive conditions are achieved and more preferred electron acceptors depleted, sulfate concentrations should decline. The shallow wells MW-5, MW-6 and HZ-MW-34 had declining sulfate concentrations. Intermediate wells MW-11 and HZ-MW-29 have shown decreasing sulfate concentrations.

The reductive dechlorination treatment has been adding 400 lb. of CarBstrate™ per month since the initial application. The CarBstrate™ is the carbon source for supporting the reductive dechlorination process. Total Organic Carbon (TOC) is useful for tracking distribution of the CarBstrate™ by the ISD™ equipment. Technical guidance has previously stated that TOC distribution of 20 mg/L is adequate for the reductive dechlorination process. It has been ETEC's experience that 50-100 mg/L TOC is a more efficient goal. In the shallow zone, MW-6, MW-45 and HZ-MW-34 have shown notable increases in TOC. Within the intermediate zone, MW-11, MW-20 and HZ-MW-29 have had adequate concentrations of TOC present in the sampling since startup.

In summary, all of the sampled areas are exhibiting reduced redox conditions results during the first few months of treatment. Indicators of reductive activity, increasing soluble iron and overall decreasing sulfate concentrations, are present. The TOC sampling has indicated that most areas of the site are in need to additional substrate to create ideal conditions.

Chlorinated Ethenes

During the reductive dechlorination process, more oxidized compounds like PCE and TCE, will be reduced to less oxidized compounds (cis-DCE, vinyl chloride, ethene). In the first few months of treatment, PCE and TCE have had reductions and concentrations have been reduced in most wells. This is an excellent result for less than 12 months of treatment.

As PCE and TCE are reduced, 1,2-cis-DCE and vinyl chloride is produced. 1,2-cis-DCE has increased in some wells throughout the treatment. MW-40 has had the 1,2-cis-DCE concentration increase from 9.5 µg/L to 4,300 µg/L. This increase should be expected as more preferred compounds are utilized for metabolism of the supplied carbon food source. It is expected in coming months that 1,2-cis-DCE concentrations decrease in all areas as the parent compounds are depleted, leaving 1,2-csi-DCE left to support metabolism of the CarBstrate™ present.

Vinyl chloride is produced as 1,2-cis-DCE is utilized for metabolism. Vinyl chloride is conspicuously low in many wells. This may be caused by a quick conversion to ethene or oxidative cometabolism of vinyl chloride as it is produced from 1,2-cis-DCE. As the treatment progresses, fluctuations in vinyl chloride can be expected as the parent compounds are transformed and as vinyl chloride is utilized.

There is some debate among remediation professionals about 1,2-cis-DCE, vinyl chloride and ethene ratios and a reductive dechlorination treatment's effectiveness. A "cis-DCE" stall has been suggested as an indication of a treatment failing to fully convert the parent compounds to ethene, or a lack of the particular microbe capable of the transformation. It has been our experience, backed by literature, that vinyl chloride actually provides more free energy than 1,2-cis-DCE making it more preferred as an electron acceptor. Therefore, there is a production/usage cycle where 1,2-cis-DCE is converted to vinyl chloride, then vinyl chloride is utilized preferentially before more 1,2-cis-DCE is transformed.

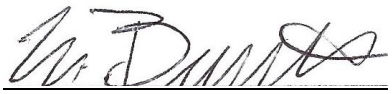
Conclusion

Overall, the treatment is progressing well. For the majority of the site, electron acceptors are being depleted, redox conditions are close to or below zero and the reductive dechlorination transformation is progressing as expected. Modification to the injection programming and setup to increase influence over wells with higher ORP conditions or less TOC should be considered. We look forward to seeing data from the coming months.

I am available for any future discussions on the project. Please feel free to contact me at 971-222-3616 x104.

Respectfully,

ETEC, LLC



Eric Bueltel, P.E.
Technical Director

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
MW-1	Shallow *Decomissioned*	5 to 20	46.952	3/16/01			ERM	**113**	**38.3**	**28.1**	*<1.0*												
				7/13/01			ERM	**23.7**	**10.3**	**4.82**	*<1.0*												
				10/26/01			ERM	**8.71**	**2.84**	**1.29**	*<1.0*												
				12/2/02			ERM	**239**	**380**	**1,200**	*<1.0*												
				10/1/02			Farallon	**6.8**	**6.4**	**17**		6.5	196.0	1.14	13.8								
				4/27/05			Farallon	**2,600**	**80**	**53**		6.7	201.0	3.02	97.6								
				8/15/05			Farallon	**12,000**	*<50*	*<50*													
				8/14/06			Farallon	**18,000**	*<200*	*<200*		5.9	284.0	0.9	499								
				5/14/07			Farallon	**12,000**	*<50*	**63**		6.1	249.0	2.27	448								
				11/27/07			Farallon	**11,000**	*<100*	*<100*		6.6	233.0	4.87	135								
				8/26/08			Farallon	**23,000**	*<200*	*<200*		6.3	189.0	1.87	175		22			13.1	<1.2	<1.1	3.25
				1/9/09			Farallon	**450**	**10**	**6.6**		6.3	88.0	10.5	120		8.8			<0.5	<0.5	<0.5	2.95
				6/11/09			Farallon	**17,000**	*<100*	*<100*		6.1	242.0	2.32	80.1		18			8.6	<0.5	<0.5	2.2
				9/14/09			Farallon	**31,000**	*<200*	*<200*		6.3	328.0	0.74	158		21			28	<2.5	<2.5	3.7
				5/27/10			Farallon	**23,000**	*<100*	*<100*	*<100*	6.4	200.0	2.26	58.4								
				9/9/10			Farallon	**24,000**	*<200*	*<200*	*<200*	6.8	249.0	0.38	0.3		20			14	<1.0	<1.0	2.6
				6/10/11			Farallon	**1,900**	**42**	**52**	*<10*	6	141.0	5.6	39.3		13			1.1	<0.5	<0.5	4.3
				3/21/13			DOF	**8,000**	**56**	**81**	<0.2	6.7	203.0	5.5	68.4					4.5	<1.2	<1.1	11.8
				4/4/14			DOF	**270**	**16**	**49**	<0.02	7.1	117.0	5.5	-14					<0.7	<1.2	<1.1	8.28
				10/10/14			DOF	**28,000**	**160**	**140**	*<2.0 U*	6.3	348.0	0.3	18.6					36.8	<1.2 U	<1.1 U	3.15
				11/11/15	10.07	36.92	HWA	**14,000**	**92**	**87**	*<50*	6.06	341.0	3.89	80.4		19			0.76	<0.50	<0.50	2.9
				9/21/16	9.14	37.81	Kane	**6,700**	**170**	**610**	**160**	6.29	325.0										
				10/25/16	7.72	39.23	Kane	**160**	**6.6**	**16**	*<2.0*	6.33	202.0										
MW-2	Shallow *Decomissioned*	5 to 20	48.897	3/16/01			ERM	**13,800**	**834**	**106 ES**	*<1.0*												
				7/13/01			ERM	**419**	**16.4**	<1.0	*<1.0*												
				10/26/01			ERM	**532**	*<20.0*	*<20.0*	*<20.0*												
				2/12/02			ERM	**81.5**	**8.08**	<1.0	*<1.0*												
				10/1/02			Farallon	**18**	**0.65**	<0.2		6.4	319.0	0.89	-30								
				4/27/05			Farallon	**2,600**	**44**	<10		5.8	319.0	0.42	149.2								
				8/15/05			Farallon	**29,000**	*<200*	*<200*													
				8/14/06			Farallon	**32,000**	**300**	**240**		5.8	317.0	0.97	478.5								
				5/14/07			Farallon	**6,100**	**40**	**38**		6	264.0	0.7	479.8								
				11/27/07			Farallon	**38,000**	*<200*	*<200*		6.5	300.0	1.18	117.8								
				8/26/08			Farallon	**500**	**200**	**2,300**		6.4	286.0	2.26	-69.2		5.3			1330	<1.2	<1.1	25.9
				1/8/09			Farallon	**270**	**550**	**290**		6.5	296.0	0.56	24.7		7.3			500	<50	<50	6.36
				6/11/09			Farallon	**1,100**	**1,400**	**1,700**		6.3	294.0	0.73	60.9		8.5			4400	<500	<500	6.4
				9/14/09			Farallon	**1,700**	**2,200**	**7,800**		6.3	323.0	0.68	147.5		12			3800	<500	<500	13
				5/27/10			Farallon	**240**	*<60*	**12,000**	**70**	6.1	512.0	0.31	-15.9								
				9/9/10			Farallon	*<200*	*<200*	**6,400**	*<200*	6.5	420.0	0.21	-49.3		<5			9700	<500	<500	39
				6/10/11			Farallon	**150**	**1,100**	**11,000**	**3,200**	6.2	809.0	0.34	-101.4		<10			5200	<380	680	71
				3/20/13			DOF	**540**	**690**	**14,000**	830 ES	7.4	561.0	0.31	-111					15900	<1.2	1240	27
				4/7/14			DOF	**390**	**630**	**5,300**	**850**	7.2	320.0	0.3	-352					14500	<1.2	388	8.26
				10/10/14			DOF	**320**	**93**	**8,900**	**1,900**	6.2	382.0	0.2	-117					9760	<1.2 U	349	7.49
				11/11/15	10.17	38.74	HWA	**2,400**	**4,100**	**15,000**	**1,200**	5.78	463.0	0.00	-85.9		39			5900	<380	580	11
				9/23/16	9.89	39.01	Kane	**8**	**6.6**	**8.1**	**6.6**	6.59	241.0										
				11/1/16	8.31	40.59	Kane	**8.3**	**6.1**	**10**	**11**	6.31	244.0										
MW-3	Shallow	5 to 20	47.957	3/16/01			ERM	<1.0	<1.0	<1.0	*<1.0*												
				10/26/01			ERM	<1.0	<1.0	<1.0	*<1.0*												
				2/12/02			ERM	<1.0	<1.0	<1.0	*<1.0*												
				10/1/02			Farallon	**0.37**	<0.2	<0.2		5.9	284.0	1.12	30.8								
				4/27/05			Farallon	<0.2	<0.2	<0.2		5.5	275.0	0.96	132								
				8/14/06			Farallon	<0.2	<0.2	<0.2		5.8	307.0	1.95	456								
				5/14/07			Farallon	<1.0	<0.2	<0.2		5.7	264.0	1.75	408								
				11/27/07			Farallon	<1.0	<0.2	<0.2		6.2	330.0	0.76	78								2.47
				8/25/08			Farallon	<0.2	<0.2	<0.2		5.9	172.0	2.88	374		18			<1	<1.2	<1.1	2.58
				4/7/14			DOF	<0.2	<0.2	<0.2	<0.02	6.4	192.0	0.7	-71					2960	<1.2	<1.1	4.17
				10/10/14			DOF	**0.39**	<0.2 U	<0.2 U	<0.02 U	5.7	339.0	0.3	-0.9					1570	<1.2 U	<1.1 U	9.82
				9/23/16	8.26	39.70	Kane	**0.22**	<0.20	<0.20	<0.20	6.10	243.0										
				11/1/16	6.87	41.09	Kane	<0.20	<0.20	<0.20	<0.20	6.00	305.0										
				7/17/18	7.95	40.01	Kane	<1.00	<0.50	<1.00	<0.20	6.30	144.0	11.37									
				9/11/18	8.69	39.27	Kane	<1.00	<0.50	<1.00	<0.20	6.20	118.0	6.23	116.9	<100	19	2.94	<0.100	<0.00863	<0.0162	<0.0151	2.37

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Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
				12/5/18	7.93	40.03	Kane	<1.00	<0.50	<1.00	<0.20	5.90	62.5	38.7	6.94	<100	3.18	2.79	<0.100	<0.00863	<0.0162	<0.0151	2.7
				2/12/19	7.79	40.167	Kane	<1.0	<0.50	<1.0	<0.20	6.03	57.5	8.2	141.5	<100	4.16	3	<0.10	<0.00863	<0.0162	<0.0151	2.36
				6/4/19	7.96	39.997	Kane	**0.72**	<0.20	<0.20	<0.20	6.35	62.1	9.97	3.6	<56	<5.0	3.4	<0.05	<0.001	<0.0005	<0.0005	2.1
MW-4	Shallow	10 to 25	45.717	7/13/01			ERM	**9,390**	**58.8 ES**	**86ES**	*<1.0*												
				10/26/01			ERM	**8,960**	**74.7 ES**	**103 ES**	*<1.0*												
				2/12/02			ERM	**11,000**	**93.4 ES**	**133 ES**	*<1.0*		.										
				10/1/02			Farallon	**21,000**	**230**	**400**		6.6	282.0	0.98	101								
				4/28/05			Farallon	**6,700**	**160**	**110**		6.6	305.0	0.83	97.4								
				8/15/06			Farallon	**8,500**	**210**	**250**		5.7	311.0	0.79	504								
				5/14/07			Farallon	**8,600**	**370**	**160**		6.1	319.0	0.64	449								
				11/27/07			Farallon	**5,400**	**220**	**120**		6.8	299.0	1.09	114								
				8/26/08			Farallon	**11,000**	**790**	**270**		6.2	248.0	2.91	159		26			5.5	<1.2	<1.1	1.59
				1/9/09			Farallon	**5,200**	**250**	**180**		6.7	289.0	0.57	25.6		24			51	<5	<5	2.47
				6/11/09			Farallon	**1,600**	**2,000**	**240**		6.3	285.0	0.63	61.7		15			310	<25	<25	2.1
				9/14/09			Farallon	**10,000**	**890**	**510**		6.1	290.0	0.59	167		17			5400	<500	<500	1.8
				5/27/10			Farallon	**5,800**	**310**	**1,200**	*<50*	6.7	255.0	0.32	-32.1								
				9/10/10			Farallon	**4,700**	**310**	**620**	*<20*	7	239.0	0.33	-10.2		19			4200	<500	<500	1.4
				6/10/11			Farallon	**3,300**	**160**	**970**	*<20*	6.8	287.0	0.34	-30.3		19			4100	<500	<500	1.7
				3/21/13			DOF	**1,400**	**140**	**530**	**0.85**	6.8	337.0	1.1	45.6					16400	<1.2	<1.1	5.68
				4/4/14			DOF	**1,500**	**160**	**1,900**	**5.6**	6.8	290.0	0.5	-53					15200	<1.2	<1.1	1.63
				10/10/14			DOF	**2,000**	**140**	**240**	*<1.0 U*	6	306.0	0.1	4.8					14400	<1.2 U	<1.1 U	1.75
				11/11/15	9.28	36.46	HWA	**960**	**120**	**1,100**	*<10*	6.12	342.0	0.00	-54.4		15			3300	<250	<16	1.4
				9/22/16	8.51	37.21	Kane	**380**	**71**	**1,300**	*<10*	6.28	433.0										
				10/31/16	6.91	38.81	Kane	**3,800**	**900**	**7,400**	*<50*	6.52	364.0										
				9/17/18	8.89	36.83	Kane	**4,060**	**360**	**1,740**	**11.9**	6.59	312.0	0.09	16.8	977	16.3	15.4	<0.100	3.79	<0.0162	<0.0151	3.94
				11/30/18	7.67	38.05	Kane	**4,370**	**373**	**1,720**	*<10*	6.35	347.4	0.12	50	604	18.8	16	<0.100	0.721	<0.162	<0.151	3.1
				2/22/19	7.23	38.49	Kane	**4,080**	**343**	**1790**	**9.72**	6.49	311.5	0.22	19.9	<100	16.2	16.5	<0.10	4.12	<0.0162	<0.0151	1.94
				5/23/19	7.59	38.13	Kane	**5,500**	**370**	**1,100**	**<30**	6.57	353.5	0.12	27.4	2100	17	16	<0.050	9.5	<0.50	<0.50	2.9
MW-5	Shallow	10 to 25	44.297	7/13/01			ERM	**2,650**	**14.5**	**31.1**	*<1.0*												
				10/26/01			ERM	**1,670**	*<100*	*<100*	*<100*												
				2/12/02			ERM	**1,310**	**18.2**	**38.5**	*<1.0*												
				10/1/02			Farallon	**3,900**	**72**	**170**		6.2	185.0	0.84	70.6								
				4/28/05			Farallon	**2,200**	**56**	**76**		5.6	262.0	1.25	150								
				8/15/05			Farallon	**640**	**12**	**20**													
				8/14/06			Farallon	**10,000**	**240**	**270**		5.7	259.0	0.91	470								
				5/14/07			Farallon	**650**	**16**	**23**		5.7	290.0	1.63	448								
				11/27/07			Farallon	**1,300**	**25**	**31**		6	262.0	7.09	128								.
				8/26/08			Farallon	**21,000**	**660**	**630**		6	203.0	3.29	273		32			5.7	<1.2	<1.1	1.95
				5/27/10			Farallon	**6,600**	**400**	**240**	*<50*	6	198.0	0.55	109								
				3/21/13			DOF	**3,100**	**220**	**180**	<0.2	6.4	304.0	0.4	69.8					5940	<1.2	<1.1	3.94
				4/4/14			DOF	**1,300**	**79**	**65**	**0.03**	6.7	257.0	0.1	-35					2570	<1.2	<1.1	1.59
				10/10/14			DOF	**7,600**	**220**	**140**	*<10 U*	5.8	163.0	0.1	13.7					3260	<1.2 U	<1.1 U	1.78
				11/11/15	9.04	35.30	HWA	**2,200**	**93**	**76**	*<20*	5.87	170.0	1.87	29.6		20			3200	<250	<21	<1.0
				9/21/16	8.11	36.19	Kane	**910**	**39**	**35**	*<10*	5.96	170.0										
				10/24/16	6.38	37.92	Kane	**590**	**26**	**29**	*<4.0*	6.22	291.0										
				9/14/18	8.27	36.03	Kane	**2,220**	**33.9**	**24**	<0.20	5.88	193.0	0.37	166	<100	17.7	14.6	<0.100	0.303	<0.0162	<0.0151	3.1
				12/3/18	6.29	38.01	Kane	**58.5**	**13.6**	**1.13**	<0.20	6.05	325.0	0.08	19.5	1,810	15.7	7.48	<0.100	<0.00863	<0.0162	<0.0151	3.79
				6/10/19	6.93	37.37	Kane	**140**	**81**	**280**	**4.1**	6.53	548.0	0.22	-6.2	20,000	6.6	12.0	1.8	1.6	<0.250	<0.250	3.8
MW-6	Shallow	10 to 25	47.142	7/13/01			ERM	**30,000**	**618**	**231 ES**	*<1.0*												
				10/26/01			ERM	**13,500**	*<400*	*<400*	*<400*												
				2/12/02			ERM	**21,800**	**1,110 ES**	**406 ES**	*<1.0*												
				10/1/02			Farallon	**27,000**	**1,100**	**470**		6.6	201.0	0.92	95.2								
				4/27/05			Farallon	**15,000**	**1,100**	**460**		6.2	235.0	3.14	119								
				8/15/05			Farallon	**30,000**	**1,500**	**930**													
				8/14/06			Farallon	**24,000**	**1,100**	**1,500**		5.8	335.0	1.06	483								
				5/14/07			Farallon	**17,000**	**860**	**1,300**		6	296.0	2.18	471								
				11/27/07			Farallon	**22,000**	**940**	**1,300**		6.6	285.0	2.75	149								
				8/26/08			Farallon	**25,000**	**1,200**	**1,200**		6.1	256.0	2.34	273		23			8.2	<1.2	<1.1	3.12
				1/9/09			Farallon	**12,000**	**610**	**440**		6.5	190.0	4.94	115		15			2.9	<0.5	<0.5	2.54
				6/11/09			Farallon	**20,000**	**780**	**710**		6	270.0	1.96	98		20			8	<0.5	<0.5	2.1
				9/14/09			Farallon	**23,000**	**1,200**	**870**		6.3	315.0	0.74	158		23			8.8	<0.5	<0.5	3.1

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
				2/25/10			Farallon	**17,000**	**730**	**450**	*<100*	6.4	176.0	2.49	170								
				5/27/10			Farallon	**13,000**	**480**	**320**	*<60*	6.6	250.0	0.3	38.1								
				9/10/10			Farallon	**860**	**430**	**8,300**	*<50*	6.6	492.0	0.34	-67.2		<5			64	<6.0	<6.0	19
				6/10/11			Farallon	**460**	**72**	**2,100**	*<20*	6.5	561.0	0.44	-178		<5			490	<50	<50	33
				3/20/13			DOF	**500**	**140**	**9,600**	56 ES	7.3	444.0	0	-144					5790	<1.2	2	12.3
				4/4/14			DOF	**950**	**220**	**240**	**19**	6.8	243.0	0.4	-142					1620	<1.2	<1.1	1.93
				10/10/14			DOF	**73**	**28**	**6,600**	**2,700**	6.6	623.0	0.3	-139					6220	<1.2 U	1200	12.9
				11/11/15	10.23	36.98	HWA	**26**	*<20*	**3,800**	**2,900**	6.37	749.0	0.00	-110.1		<10			3400	<250	850	11
				9/23/16	9.31	37.83	Kane	**240**	**69**	**10,000**	**2,400**	6.81	559.0										
				10/27/16	7.87	39.27	Kane	*<50*	*<50*	**9,500**	**1,900**	6.60	410.0										
				7/17/18	8.92	38.22	Kane	**27.4**	**14.3**	**4,480**	**851**	6.91	365.0	0.00									
				9/18/18	9.51	37.63	Kane	**738**	**238**	**2,620**	**472**	6.39	383.0	0.07	-42.6	6,340	20.1	14.2	0.162	0.666	<0.062	0.0596	9.01
				12/21/18	8.79	38.35	Kane	**2,670**	**1,000**	**2,560**	**25.5**	5.96	378.0	0.23	-65.4	5,260	8.68	11.2	0.413	0.0808	<0.162	<0.151	14.3
				2/22/19	7.79	39.35	Kane	**1,820**	**568**	**1040**	**14**	6.16	295.1	0.15	-52	5,800	13	7.69	<0.10	0.706	<0.0162	<0.0151	13.2
				5/22/19	8.46	38.68	Kane	**3,800**	**1,800**	**750**	*<20*	6.14	407.0	0.04	-70.8	8,800	<5.0	14	0.16	1	<0.0005	<0.0005	20
MW-7	Shallow	10 to 25	45.527	7/13/01			ERM	**10,100**	**35**	**30**	*<1.0*												
				10/26/01			ERM	**4,880**	**15**	**13.8**	*<1.0*												
				2/12/02			ERM	**3,800**	**10.5**	**9.28**	*<1.0*												
				10/1/02			Farallon	**9,600**	*<100*	*<100*		6.7	214.0	0.71	-22.6								
				4/28/05			Farallon	**1,100**	*<10*	<10		6.2	315.0	0.84	126								
				8/15/05			Farallon	**4,900**	**27**	*<20*													
				8/14/06			Farallon	**4,000**	*<40*	*<40*		6.1	303.0	0.82	386								
				5/14/07			Farailon	**320**	**2.7**	<2.0		6.2	352.0	0.54	437								
				11/27/07			Farallon	**1,200**	*<10*	<10		6.9	336.0	0.38	76.6								
				8/26/08			Farallon	**4,300**	**43**	**43**		6.5	240.0	2.74	116		25			42.6	<1.2	<1.1	2.1
				1/8/09			Farallon	**760**	**7.8**	**4.8**		6.7	330.0	0.7	84.3		27			110	<5.0	<5.0	3.6
				6/11/09			Farallon	**2,100**	**34**	**33**		6.5	340.0	0.62	62.3		25			140	<10.0	<10.0	2.3
				9/14/09			Farallon	**6,300**	**120**	**79**		6.3	318.0	0.72	170		24			23	<2.5	<2.5	1.9
				5/27/10			Farallon	**830**	**18**	**14**	*<10*	6.6	289.0	0.63	-22.6								
				9/9/10			Farallon	**5,400**	**110**	**55**	*<50*	6.8	295.0	0.31	-21.4		24			190	<25.0	<25.0	1.7
				6/10/11			Farallon	**810**	**24**	**16**	*<4.0*	6.7	346.0	0.52	-43.5		16			240	<10.0	<10.0	2.4
				3/21/13			DOF	**3,300**	**140**	**240**	**0.28**	7	385.0	0.21	-3.6					741	<1.2	<1.1	6.29
				4/4/14			DOF	**2,100**	**130**	**750**	**2.3**	7.1	329.0	0.6	-47					989	<1.2	<1.1	2.57
				10/11/14			DOF	**6,200**	**380**	**3,400**	**10**	6.3	391.0	0.1	-27					6580	<1.2 U	<1.1 U	2.44
				11/11/15	10.12	35.45	HWA	**950**	**42**	**240**	*<10*	6.32	282.0	0.00	12.5		16			290	<25	<2.0	2.5
				9/21/16	8.92	36.61	Kane	**3,800**	**160**	**1,300**	*<20*	6.32	350.0										
				10/25/16	8.21	37.32	Kane	**450**	**32**	**280**	*<4.0*	6.88	323.0										
				10/26/16	7.3	38.23	Kane					6.62	316.0				22		<0.050				2.8
				9/18/18	9.12	36.41	Kane	**1,370**	**78.1**	**673**	**5.85**	6.69	369.0	0.12	17.3	2,620	37	5.48	<0.100	1.29	<0.0162	<0.0151	3.84
				11/30/18	8.9	36.63	Kane	**2,670**	**305**	**1,440**	*<10*	6.41	411.3	0.11	30.8	1,620	35	8.5	<0.100	0.197	<0.162	<0.151	4.18
				5/24/19	7.96	37.57	Kane	**1,000**	**84**	**240**	*<10*	6.68	409.5	0.16	-9.2	3,900	37	6.1	<0.050	0.049	<0.003	<0.003	2.3
MW-8	Deep	45 to 50	47.387	10/1/02			Farallon	**51**	**0.98**	**0.88**		7	487.0	0.73	-355								
				4/28/05			Farallon	**6.4**	<0.2	<0.2		6.3	186.0	0.97	104								
				8/15/06			Farallon	**0.44**	<0.2	<0.2		6.2	167.0	2.43	447								
				5/14/07			Farallon	**4.3**	<0.2	<0.2		6.1	145.0	2.89	419								
				11/27/07			Farallon	**2.2**	<0.2	<0.2		6.7	164.0	0.54	80.7								
				5/22/08			Farallon	**79**	**7.2**	**12**		6.2	139.0	5.8	153								
				8/25/08			Farailon	**93**	**4.8**	**4.4**		6.3	118.0	2.1	391		12			<0.7	<1.2	<1.1	<1.5
				3/20/13			DOF	**33**	**1**	**2**	<0.02	6.7	218.0	0.06	10.1					649	<1.2	<1.1	6.04
				4/4/14			DOF	**130**	**37**	**41**	<0.02	6.8	181.0	1	-44					<0.7	<1.2	<1.1	1.98
				10/11/14			DOF	**150**	**37**	**140**	**0.2**	6.2	190.0	0.9	49.1					43.3	<1.2U	<1.1U	1.99
				11/11/15	10.82	36.63	HWA	**180**	**50**	**160**	<1.0	6.06	225.0	0.85	-26.8		13			19	<1.0	0.59	2.2
				9/22/16	9.71	37.68	Kane	**50**	**6.2**	**25**	<0.20	6.33	229.0										
				10/26/16	8.48	38.91	Kane	**5.8**	**1.3**	**3.1**	<0.20	6.43	246.0				12		<0.050				1.4
				7/17/18	9.7	37.69	Kane	**8.75**	**1.59**	**4.21**	<0.20	6.81	173.0	0.32									
				9/17/18	10.33	37.06	Kane	**14.8**	**2.14**	**8.25**	<0.20	6.56	187.0	0.16	70.9	<100	6.05	7.92	<0.100	0.0246	<0.0162	<0.0151	3.36
				12/20/18	10.05	37.34	Kane	**14.5**	**4.37**	**9.38**	<0.20	6.13	197.6	0.28	30	<100	4.13	6.53	<0.100	<0.00863	<0.0162	<0.0151	1.66
				2/22/19	8.75	38.64	Kane	**4.98**	**2.9**	**7.33**	<0.20	6.28	183.2	0.24	65	<100	4.95	7.14	<0.10	0.0173	<0.0162	<0.0151	1.82
				5/22/19	8.99		Kane	**3.1**	**1**	**1.3**	<0.20	6.3	212.0	0.16	-8.4	300	5.8	7.8	<0.050	0.036	<0.005	<0.005	2
MW-9	Deep	45 to 50	49.857	10/1/02			Farallon	**250**	<2.0	<2.0		7.3	373.0	0.91	-197								
	Decomissioned			4/27/05			Farallon	**53,000**	*<100*	*<100*		6.9	246.0	1.02	78.7								

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
				8/15/05			Farallon	**140,000**	*<200*	*<200*													
				11/27/07			Farallon	**13,000**	*<100*	*<100*		7.5	117.0	7.5	148								
				5/22/08			Farallon	**8,800**	*<50*	*<50*		7.4	191.0	1.1	68.9								
				8/26/08			Farallon	**6,000**	**3,400**	*<50*		7.2	166.0	1.2	102		<5			982	<1.2	<1.1	1.65
				1/9/09			Farailon	**160,000**	*<1,000*	*<1,000*		7.5	213.0	1.4	78.9		<5			530	<50	<50	1.79
				6/11/09			Farallon	**43,000**	*<300*	*<300*		6.6	98.0	7.7	83.3		<5			84	<5	<0.5	<1.0
				9/14/09			Farallon	**21,000**	*<200*	*<200*		6.7	139.0	3.01	167		<5			2.2	<0.5	<0.5	1.4
				2/25/10			Farallon	**16,000**	*<100*	*<100*	*<100*	7.5	63.0	5.97	148								
				9/10/10			Farallon	**6,500**	**36**	*<30*	*<30*	7.7	147.0	2.91	-63.7		<5			4.3	<0.5	<0.5	<1.0
				6/10/11			Farallon	**21,000**	*<200*	*<200*	*<200*	7.6	218.0	0.39	63.2		<5			1400	<100	<100	1.3
				3/20/13			DOF	**DNAPL**	**DNAPL**	**DNAPL**	**DNAPL**												
				4/7/14			DOF	**15,000**	**46**	**22**	<0.02	7	194.0	0.4	-98					2200	<1.2	<1.1	1.89
				10/11/14			DOF	**3,300**	**96**	**54**	*<2.0 U*	6.5	168.0	0.1	-38					757	<1.2 U	<1.1 U	1.63
				11/11/15	11.9	38.00	HWA	**890**	**560**	**680**	*<10*	5.90	139.0	0.00	45.6		<5.0			190	<15	6.1	<1.0
				9/22/16	11.2	38.66	Kane	**53,000**	*<500*	*<500*	*<500*	7.41	222.0										
				10/26/16	9.71	40.15	Kane	**42,000**	*<300*	*<300*	*<300*	7.54	254.0				3,300		0.44				<1.0
MW-10	Shallow *Decomissioned*	5 to 25		4/27/05			Farallon	**3**	<0.2	<0.2													
MW-10R	Shallow *Decomissioned*	15 to 25	49.392	9/19/16	9.98	39.41	Kane	**1.6**	<0.20	<0.20	<0.20	6.61	188.0										
				11/1/16	8.34	41.05	Kane	**1.3**	<0.20	<0.20	<0.20	6.78	212.0										
MW-11	Intermediate	25 to 33	47.207	11/28/07			Farallon	**28**	**0.26**	<0.2		6.6	176.0	1.26	165								
				5/22/08			Farallon	**23**	**0.24**	<0.2		6.2	174.0	0.84	132								
				8/25/08			Farallon	**27**	**0.53**	<0.2		6.3	142.0	1.46	238		18			29.8	<1.2	<1.1	1.71
				3/20/13			DOF	**5.6**	**0.2**	**0.26**	<0.02	6.6	296.0	0.1	-50.6					5770	<1.2	<1.1	6.53
				4/4/14			DOF	**5.6**	<0.2	<0.2	<0.02	6.8	298.0	0.2	-107					3500	<1.2	<1.1	2.61
				10/11/14			DOF	**4.8**	0.18 J	0.13 J	<0.02 U	6.1	371.0	0.4	16.8					2150	<1.2 U	<1.1 U	2.72
				11/11/15	10.34	36.91	HWA	**4.1**	**0.4**	<0.20	<0.20	6.28	594.0	0.67	-82.8		18			840	<50	<7.0	4.5
				9/23/16	9.42	37.79	Kane	**9.9**	<0.20	**0.42**	<0.20	6.29	408.0										
				10/26/16	7.98	39.23	Kane	**2.0**	<0.20	<0.20	<0.20	6.38	376.0				24		<0.050				4.2
				7/17/18	9.02	38.19	Kane	**11.2**	**2.12**	**3.73**	<0.20	6.58	295.0	0.16									
				9/17/18	9.82	37.39	Kane	**35.8**	**29.6**	**27.6**	<0.20	6.24	357.0	0.06	-4.5	1,140	42.5	22.9	<0.100	0.158	<0.0162	<0.0151	9.07
				12/20/18	8.56	38.65	Kane	**41**	**11.5**	**4.92**	<0.20	5.72	287.0	0.16	14.3	611	37.4	13.5	<0.100	0.109	<0.162	<0.151	8.99
				2/21/19	7.9	39.31	Kane	**16.9**	**14.6**	**9.58**	<0.20	5.96	316.3	0.16	-70	**1,240**	10.3	14.4	<0.10	0.87	<0.0162	<0.0151	23.7
				5/22/19	8.48	38.73	Kane	**75**	**69**	**14**	*<0.40*	6.13	468.0	0.04	-18	**810**	13	13	<0.050	0.49	<0.0005	<0.0005	27
MW-12	Intermediate	25 to 33	45.467	11/28/07			Farallon	**2,300**	**30**	**39**		6.9	326.0	1.48	165								
				5/22/08			Farallon	**2,800**	**53**	**61**		6.5	277.0	1.51	132								2.02
				8/26/08			Farallon	**1,600**	*<10*	<10		6.3	227.0	2.12	4.6		19			<0.7	<1.2	<1.1	5.04
				1/8/09			Farallon	**3,200**	**88**	**44**		6.5	309.0	0.77	70		22			16	<1.0	<1.0	3.11
				6/11/09			Farailon	**2,500**	**53**	**29**		6.2	293.0	0.62	75.4		22			30	<3.0	<3.0	1.7
				9/14/09			Farallon	**700**	**5.1**	<4		6.2	263.0	0.77	168		20			4.8	<0.5	<0.5	2.4
				5/27/10			Farallon	**2,800**	**240**	**80**	*<20*	6.5	265.0	0.32	8.7								
				9/9/10			Farailon	**1,500**	**22**	*<20*	*<20*	6.8	226.0	0.32	9.5		15			490	<50	<50	1.1
				6/10/11			Farallon	**5,800**	**270**	**180**	*<30*	6.5	348.0	0.49	-14.6		19			1000	<100	<100	2.5
				3/20/13			DOF	**4,800**	**210**	**920**	**1.6**	6.8	392.0	0.05	-18.8					12900	<1.2	<1.1	7.97
				4/4/14			DOF	**5,900**	**240**	**730**	**2.1**	6.9	327.0	0.1	-52					12300	<1.2	<1.1	2.88
				10/10/14			DOF	**4,100**	**390**	**150**	*<2.0 U*	6.2	360.0	0.2	-25.6					12800	<1.2 U	<1.1 U	2.82
				11/11/15	9.61	35.93	HWA	**2,900**	**180**	**1,100**	<0.20	6.26	397.0	0.00	11		16			3000	<150	<18	2.2
				9/22/16	8.89	36.58	Kane	**1,100**	**140**	**730**	*<10*	6.37	410.0										
				10/26/16	7.26	38.21	Kane	**1,300**	**230**	**1,600**	*<20*	6.56	369.0				13		<0.050				2.1
				7/20/18	8.44	37.03	Kane	**4,110**	**351**	**2,110**	**14.3**	6.45	162.0	0.66									
				9/10/18	9.14	36.33	Kane	**3,460**	**231**	**1,460**	**11.1**	6.46	343.0	0.14	71.8	834	19.9	12.5	<0.100	4.12	<0.0162	<0.0151	5.72
				11/30/18	8.59	36.88	Kane	**2,340**	**194**	**669**	*<4.0*	6.16	533.8	0.11	84.5	2,330	14	46.2	<0.100	0.727	<0.162	<0.151	3.9
				5/24/19	7.92	37.55	Kane	**5,400**	**400**	**780**	*<30*	6.25	383.9	0.30	-89.5	530	24	9.5	<0.050	3.7	<0.250	<0.250	2.5
MW-13	Deep *Damaged*	40 to 55	48.777	11/28/07			Farallon	<1.0	<0.2	<0.2		7.10	152.0	1.35	151								
MW-14	Intermediate *Decomissioned*	22 to 32	49.157	11/28/07			Farallon	<0.2	<0.2	<0.2		7.0	146.0	4.0	160								
				11/11/15	10.23	38.96	HWA	<0.20	<0.20	<0.20	<0.20	5.56	395.0	0.00	-99		<10			11000	<500	<55	13
				9/21/16	9.53	39.63	Kane	**0.91**	<0.20	<0.20	<0.20	6.08	243.0										
				11/1/16	8.29	40.87	Kane	<0.20	<0.20	<0.20	<0.20	5.96	307.0										
MW-15	Intermediate *Decomissioned*	22 to 32		11/28/07			Farallon	<0.2	<0.2	<0.2		6.8	157.0	4.0	170								

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
MW-16	Deep *Decomissioned*	40 to 55		11/28/07			Farallon	**10**	<0.2	<0.2		7.9	124.0	6.9	130								
MW-17	Deep *Damaged*	40 to 50	48.947	11/28/07			Farallon	**6.5**	<0.2	<0.2		7.7	188.0	0.49	141								
MW-18	Intermediate *Decomissioned*	22 to 30	48.747	11/28/07			Farallon	**270**	<2.0	<2.0		7.2	266.0	0.83	158								
				5/22/08			Farallon	<0.25	<0.25	<0.25													
				4/4/14			DOF	**2.4**	**1.2**	**14**	**3.3**	6.1	493.0	0.3	-111					16700	<1.2	<1.1	48.5
				10/11/14			DOF	**0.49**	<0.2 U	**3.6**	**1.3**	5.9	449.0	0.4	-6.6					13300	<1.2 U	<1.1 U	29.8
				9/23/16	9.65	39.10	Kane	**7.8**	<0.20	**1.3**	**0.26**	6.02	238.0										
				10/27/16	8.11	40.64	Kane	<0.20	<0.20	**2.0**	**0.47**	5.90	256.0										
MW-19	Shallow *Decomissioned*	9 to 19	47.517	11/16/15	9.31	38.26	HWA	**8,200**	**70**	**76**	*<50*	6.34	638.0	3.75	49.2		31			74	<15	2.2	7.9
				9/21/16	9.20	38.32	Kane	**1,800**	**84**	**490**	**34**	6.34	313.0										
				10/25/16	8.02	39.50	Kane	**5,700**	**140**	**860**	**61**	6.70	296.0										
MW-20	Intermediate	25 to 30	46.857	11/16/15	9.20	37.70	HWA	**900**	**60**	**37**	**17**	6.17	557.0	0.00	-73		22			1800	<125	9.4	2.7
				9/21/16	9.02	37.84	Kane	**190**	**45**	**120**	**9.0**	6.66	340.0										
				10/26/16	7.73	39.13	Kane	**140**	**44**	**120**	**17**	6.44	348.0				43		0.21				4.3
				12/20/18	7.5	39.36	Kane	**32**	**879**	**552**	**2.23**	5.72	263.9	0.05	-4.4	3,140	2.56	8.88	1.54	0.0446	<0.0162	<0.0151	95.4
				3/14/19	7.55	39.31	Kane	<0.841	**136**	**163**	*<2.0*	6	219.3	0.2	68.3	**1,460**	0.348	7.8	1.07	0.0463	<0.0162	<0.0151	45.3
				6/6/19	8.03	38.83	Kane	**0.43**	**51**	**31**	*<0.40*	6.45	218.1	0.08	4.4	950	<5.0	7.4	0.75	0.51	<0.05	<0.05	16
MW-21	Shallow	10 to 15	45.717	11/16/15	9.41	35.58	HWA	**21,000**	**440**	**350**	*<100*	7.38	1579.0	8.60	-18		96			310	<25	2.6	3.3
				9/22/16	9.05	36.67	Kane	**27,000**	**540**	**360**	*<200*	6.56	355.0										
				10/31/16	6.97	38.75	Kane	**8,400**	**210**	**190**	*<50*	6.32	319.0										
				9/10/18	9.31	36.41	Kane	**410**	**12**	**9**	<0.20	6.22	280.0	2.40	93.5	<100	20	11.9	<0.100	0.0299	<0.0162	<0.0151	3.78
				12/3/18	7.23	38.49	Kane	**122**	**1.67**	<1.00	<0.20	5.85	272.7	2.97	75.7	<100	12.9	4.61	<0.100	<0.00863	<0.0162	<0.0151	4.03
				5/24/19	7.69	38.03	Kane	**82**	**1.40**	**0.5**	*<0.40*	6.08	248.0	3.51	2.7	<56	12	3.7	<0.050	0.0026	<0.0005	<0.0005	<1.0
MW-22	Deep	54 to 59	44.957	11/16/15	8.91	36.84	HWA	**69**	**2.8**	**2.0**	*<0.40*	7.30	296.0	0.00	-52.2		<5.0			1400	<250	<9.0	1.5
				9/22/16	8.41	36.55	Kane	**11**	<0.20	**1.5**	<0.20	7.42	236.0										
				10/26/16	7.16	37.80	Kane	**2.1**	<0.20	**2.2**	<0.20	7.63	262.0				<5.0		0.24				1.2
				7/16/18	8.27	36.69	Kane	<1.00	<0.50	**1.6**	<0.20	7.87	214.0	0.00									
				9/19/18	8.85	36.11	Kane	<1.00	<0.50	**1.22**	<0.20	7.54	251.0	0.45	33.9	<100	0.932	6.65	0.392	0.654	<0.0162	<0.0151	2.37
				12/3/18	8.63	36.33	Kane	<1.00	<0.50	**1.11**	<0.20	7.22	267.8	0.07	-16	<100	0.533	6.66	0.291	0.0695	<0.0324	<0.0303	2.26
				6/20/19	7.91	37.05	Kane	**0.43**	<0.20	**0.87**	<0.20	7.31	233.0	0.27	-106.6	250	<5.0	3.9	0.3	1.1	<0.075	<0.075	1.3
MW-23	Shallow	6 to 16	48.027	9/20/16	8.92	39.11	Kane	**0.46**	<0.20	<0.20	<0.20	5.91	123.0										
				11/1/16	7.29	40.74	Kane	**2.2**	<0.20	<0.20	<0.20	6.19	128.0										
				9/19/18	9.04	38.99	Kane	<1.00	<0.50	<1.00	<0.20	6.16	94.0	0.87	54.7	<100	8.86	2.79	<0.100	1.04	<0.0162	<0.0151	2.74
				12/5/18	8.70	39.33	Kane	**1.05**	<0.50	<1.00	<0.20	5.65	112.4	1.24	49.8	124	10.3	2.16	<0.100	0.0854	<0.0162	<0.0151	2.4
				2/12/19	8.18	39.85	Kane	**2.11**	<0.50	<1.0	<0.20	5.34	75.1	5.16	128.7	<100	6.02	1.46	<0.10	<0.00863	<0.0162	<0.0151	1.17
				6/4/19	8.57	39.46	Kane	**0.94**	<0.20	<0.20	<0.20	6.13	113.4	0.87	19.1	720	6.7	3.3	<0.050	0.14	<0.0075	<0.0075	1.6
MW-24	Deep	44 to 54	48.962	11/1/16	8.89	40.07	Kane	**9.0**	<0.20	<0.20	<0.20	8.44	225.0										
MW-25	Shallow *Decomissioned*	7.5 to 17.5	46.207	9/20/16	9.22	36.99	Kane	**4,200**	*<20.0*	*<20.0*	*<20.0*	6.56	324.0										
				10/25/16	7.75	38.46	Kane	**99**	**7.4**	**10**	*<1.0*	6.58	184.0										
MW-26	Intermediate *Decomissioned*	25 to 35	46.047	9/20/16	9.04	37.01	Kane	**13**	**0.29**	**5.3**	<0.20	6.48	379.0										
				10/31/16	7.65	38.40	Kane	**310**	**2.6**	<2.0	*<2.0*	6.59	364.0										
MW-27	Shallow	6 to 16	48.177	9/15/16	10.43	37.75	Kane	**120**	<1.0	<1.0	*<1.0*	6.31	87.0										
				10/31/16	8.22	39.96	Kane	**120**	<0.40	<0.40	*<0.40*	5.95	63.0										
				7/19/18	10.40	37.78	Kane	**138**	<0.50	<1.00	<0.20	5.89	126.0	17.18									
				9/14/18	10.98	37.20	Kane	**106**	<0.50	<1.00	<0.20	5.64	128.0	8.48	49.4	<100	38	1.07	<0.100	<0.00863	<0.0162	<0.0151	2.15
				12/12/18	10.09	38.09	Kane	**169**	**0.712**	<1.00	<0.20	5.17	133.3	7.04	48.3	<100	34.9	2.67	<0.100	<0.00863	<0.0162	<0.0151	0.793
				5/24/19	9.65	38.53	Kane	**110**	<1.0	<1.0	*<1.0*	5.73	131.9	8.54	41.5	<56	24	4.7	<0.050	<0.001	<0.0005	<0.0005	<1.0
MW-28	Intermediate	25 to 35	48.187	9/15/16	10.39	37.80	Kane	<0.20	<0.20	<0.20	<0.20	6.22	157.0										
				11/1/16	8.8	39.39	Kane	<0.20	<0.20	<0.20	<0.20	5.97	105.0										
				7/19/18	10.48	37.71	Kane	<1.00	<0.50	<1.00	<0.20	6.32	122.0	3.12									
				9/14/18	10.6	37.59	Kane	<1.00	<0.50	<1.00	<0.20	6.12	127.0	2.01	62.4	<100	8.42	7.43	<0.100	<0.00863	<0.0162	<0.0151	2.44
				12/12/18	10.01	38.18	Kane	<1.00	<0.50	<1.00	<0.20	5.70	130.1	1.78	48.7	<100	11.8	8.06	<0.100	<0.00863	<0.0162	<0.0151	0.69
				2/19/19	9.07	39.12	Kane	<1.0	<0.50	<1.0	<0.20	5.73	108.6	2.56	202.9	<100	8.78	5.65	<0.10	<0.00863	<0.0162	<0.0151	0.618
				5/24/19	9.85	38.34	Kane	<0.20	<0.20	<0.20	<0.20	5.54	116.0	1.8	-74.6	<56	9.5	6.2	<0.050	0.0096	<0.0005	<0.0005	<1.0
MW-29	Deep	45 to 55	48.242	9/15/16	10.5	37.74	Kane	<0.20	<0.20	<0.20	<0.20	7.33	254.0										
				10/27/16	9.01	39.23	Kane	**0.44**	<0.20	<0.20	<0.20	7.06	252.0										
				7/17/18	10.32	37.92	Kane	<1.00	<0.50	<1.00	<0.20	7.57	236.0	0.00									
				9/14/18	10.73	37.51	Kane	<1.00	<0.50	<1.00	<0.20	7.31	262.0	0.08	19.3	191	8.37	7.17	0.255	0.0242	<0.0162	<0.0151	4.32
				12/12/18	10.25	37.99	Kane	**1.06**	<0.50	<1.00	<0.20	7.05	276.8	0.15	-16.7	<100	6.72	5.32	0.243	0.04	<0.0162	<0.0151	3.02

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
				6/4/19	10.08	38.16	Kane	**0.26**	<0.20	<0.20	<0.20	7.40	265.3	0.25	15	450	<5.0	26	0.25	0.32	<0.015	<0.015	2.2
MW-30	Shallow	9 to 19	48.142	9/20/16	8.81	39.33	Kane	**92,000**	*<500*	*<500*	*<500*	6.65	241.0										
	Decomissioned			10/26/16	7.33	40.81	Kane	**130,000**	*<1,000*	**1,300**	*<1,000*	6.40	619.0				120		**0.15**				26
MW-31	Deep	40 to 50	47.817	9/20/16	9.81	38.01	Kane	**11**	**0.25**	<0.20	<0.20	6.80	244.0										
	Decomissioned			10/28/16	8.25	39.57	Kane	**7.8**	**0.22**	<0.20	<0.20	6.79	250.0										
MW-32	Deep	45 to 55	45.952	9/19/16	8.94	37.01	Kane	**950**	**7.7**	<4.0	*<4.0*	7.57	285.0										
	Decomissioned			10/27/16	7.51	38.44	Kane	**1,200**	<10	<10	*<10*	7.65	276.0										
MW-33	Deep	40 to 50	49.547	9/16/16	10.61	38.94	Kane	<0.20	<0.20	<0.20	<0.20	6.38	258.0										
				10/27/16	9.19	40.36	Kane	**0.34**	<0.20	<0.20	<0.20	6.37	221.0										
				12/5/18	10.4	39.15	Kane	<1.00	<0.50	<1.00	<0.20	6.13	174.3	0.07	43.5	<100	10.6	6.74	<0.100	<0.00863	<0.0162	<0.0151	3.01
				2/19/19	9.17	40.38	Kane	<1.0	<0.50	<1.0	<0.20	6.35	164.3	0.18	204.8	<100	11.5	6.45	<0.10	<0.00863	<0.0162	<0.0151	1.44
				6/4/19	10.56	38.99	Kane	<0.20	<0.20	<0.20	<0.20	6.42	196.6	0.19	31.6	<56	13	6.6	<0.050	0.0012	<0.0005	<0.0005	1.5
MW-34	Deep	40 to 50	46.597	9/16/16	9.19	37.41	Kane	**20**	**1.5**	**12**	**0.29**	6.33	271.0										
				10/27/16	7.75	38.85	Kane	**6.6**	**0.54**	**2.4**	<0.20	6.21	254.0										
				7/16/18	8.82	37.78	Kane	<1.00	<0.50	<1.00	<0.20	6.53	240.0	0.00									
				9/18/18	9.45	37.15	Kane	<1.00	<0.50	<1.00	<0.20	6.37	255.0	0.18	66.2	724	11.5	30.5	<0.100	0.0497	<0.0162	<0.0151	2.92
				12/11/18	8.5	38.10	Kane	<1.00	<0.50	<1.00	<0.20	5.92	284.6	0.09	44.3	561	13.5	39	<0.100	0.0103	<0.0162	<0.0151	1.2
				2/21/19	7.59	39.01	Kane	**1.29**	<0.50	**1.52**	<0.20	5.95	255.8	0.22	91.9	367	14.6	32.7	<0.10	0.0274	<0.0162	<0.0151	10.49
				6/3/19	8.28	38.32	Kane	**1.3**	<0.20	**3.2**	<0.20	6.16	263.9	0.19	18.6	440	15	29	<0.050	0.14	<0.0075	<0.0075	1.8
MW-35	Deep	48 to 58	44.247	9/16/16	8.19	36.06	Kane	**2.1**	<0.20	<0.20	<0.20	6.92	230.0										
				10/27/16	6.65	37.60	Kane	**1.4**	<0.20	<0.20	<0.20	6.92	235.0										
				7/16/18	7.74	36.51	Kane	<1.00	<0.50	<1.00	<0.20	7.35	217.0	0.13									
				9/10/18	8.45	35.80	Kane	<1.00	<0.50	<1.00	<0.20	7.08	244.0	0.25	21.8	1,130	2.94	8.11	0.244	0.323	<0.0162	<0.0151	3.3
				12/11/18	7.53	39.07	Kane	<1.00	<0.50	<1.00	<0.20	6.66	269.9	0.10	5.6	942	7.13	13.1	0.22	0.111	<0.0162	<0.0151	2.09
				6/3/19	7.41	36.84	Kane	**0.66**	<0.20	<0.20	<0.20	6.45	221.6	1.66	19.3	1,900	5.4	12	0.15	0.15	<0.0075	<0.0075	1.6
MW-36	Intermediate	25 to 35	47.327	9/19/16	8.68	38.65	Kane	**2.5**	<0.20	<0.20	<0.20	6.56	257.0										
				11/1/16	7.31	40.02	Kane	**7.3**	<0.20	<0.20	<0.20	6.60	264.0										
MW-37	Shallow	15 to 25	47.557	9/19/16	9.81	37.75	Kane	**0.7**	<0.20	<0.20	<0.20	6.40	272.0										
				11/1/16	7.53	40.03	Kane	**0.74**	<0.20	<0.20	<0.20	6.54	247.0										
MW-38	Deep	40 to 50	47.187	9/19/16	10.44	36.75	Kane	**1.3**	<0.20	<0.20	<0.20	6.89	271.0										
				10/28/16	7.66	39.53	Kane	**0.26**	<0.20	<0.20	<0.20	6.78	266.0										
MW-39	Deep	40 to 50	44.524	10/25/16	6.20	38.32	Kane	**95**	<0.40	<0.40	*<0.40*	7.11	279.0										
				7/25/18	7.15	37.37	Kane	<1.00	<0.50	**1.03**	<0.20	7.11	190.0	0.00									
				12/17/18	6.33	38.19	Kane	**2.32**	**2.62**	**6.81**	<0.20	6.39	225.4	0.15	-3.5	4,580	2.13	3.45	0.563	0.364	<0.0162	<0.0151	3.36
				3/13/19	6.32	38.20	Kane	<1.00	<1.00	**1.99**	<0.20	6.08	63.3	1.33	82.2	4,380	<0.300	3.76	0.445	0.552	<0.0162	<0.0151	4.15
				5/29/19	6.49	38.03	Kane	**0.33**	**0.34**	<0.20	<0.20	6.61	219.2	0.14	1.8	4,500	<5.0	4.3	0.48	1.1	<0.10	<0.10	3.3
MW-40	Shallow	15 to 25	44.521	10/25/16	8.21	36.31	Kane	**25,000**	*<100*	*<100*	*<100*	6.69	321.0										
				11/2/16	6.3	38.22	Kane	**11,000**	*<100*	*<100*	*<100*	6.73	229.0										
				7/25/18	7	37.52	Kane	**5,460**	**55.6**	**9.5**	<0.20	7.24	320.0	0.13									
				12/17/18	6.28	38.24	Kane	**212**	**46**	**56.7**	<0.20	6.43	69.2	2.39	52.6	<100	1.55	0.586	<0.100	<0.00863	<0.0162	<0.0151	1.11
				3/13/19	6.29	38.23	Kane	**213**	**146**	**746**	<0.20	6.08	63.3	1.33	82.2	<100	0.819	2.08	<0.10	0.00959	<0.0162	<0.0151	2.03
				5/29/19	6.49	38.03	Kane	**560**	**600**	**4,300**	*<20*	6.41	268.1	0.23	3.8	7,600	<5.0	11	0.35	0.47	0.011	<0.025	11
MW-41	Shallow	5 to 15		1/3/17	8.31		Kane	**3.4**	<0.20	<0.20	<0.20	6.13	129.0										
				10/23/18	-	-	Kane	**2.02**	<0.50	<0.50	<0.20												
				6/7/19	8.12		Kane	**1.30**	<0.20	<0.20	<0.20	6.31	84.9	5.26	43.2	<56	6.6	4.5	<0.050	<0.001	<0.0005	<0.0005	<1.0
MW-42	Int./Deep	30 to 45		1/3/19	10.21		Kane	<1.00	<0.50	<1.0	<0.20												
				3/18/19	8.79		Kane	<1.00	<0.50	<1.0	<0.20	6.63	155.4	0.06	76.4	821	1.99	3.57	0.266	0.177	<0.0162	<0.0151	1.9
				6/5/19	9.11		Kane	<0.20	<0.20	<0.20	<0.20	6.92	216.9	0.13	5	5,500	<5.0	6.3	0.2	4.1	<0.25	<0.25	2.3
MW-43	Shallow	10 to 25		1/2/19	10.4		Kane	**225**	**31.6**	**7.16**	<0.20												
				3/18/19	8.42		Kane	**1.66**	<0.50	**1.20**	<0.20	6.61	183.6	0.10	-4.6	286	14.4	3.34	<0.10	0.0336	<0.0162	<0.0151	8.25
				6/5/19	8.68		Kane	**9.10**	**7.60**	**35.0**	<0.20	6.86	168.3	0.09	21.5	450	15	3.7	0.08	0.53	<0.038	<0.038	5.8
MW-44	Intermediate	25 to 35		6/6/19	7.49		Kane	<0.20	**1.70**	**28.0**	<0.20	6.35	229.6	0.18	-1.9	1,700	<5.0	7.6	0.49	0.24	<0.025	<0.025	19
MW-45	Shallow	7 to 17		6/6/19	7.29		Kane	<0.20	<0.20	**6.0**	<0.20	6.81	798.0	0.09	18.4	770	<5.0	38	0.36	0.11	<0.0075	<0.0075	120
HZ-MW-1	Shallow	5 to 15	41.637	9/5/08			HWA	**0.58**	<0.2	<0.2	<0.20												
				5/30/14			HWA	**21**	**0.22**	<0.20	<0.20	6.62	478.0	3.23									
				9/12/14			HWA	**33**	**0.33**	<0.20	<0.20	6.51	279.0	2.35									
				12/15/14			HWA	**15**	<0.20	<0.20	<0.20	6.3	223.0	2.02									
				3/19/15			HWA	**11**	<0.20	<0.20	<0.20	6.54	295.0	8.29									
				9/21/16	7.89	33.75	Kane	**7.2**	<0.20	<0.20	<0.20	6.42	120.0										
				10/31/16	6.23	35.41	Kane	**6.9**	<0.20	<0.20	<0.20	6.49	113.0										
				7/20/18	7.47	34.17	Kane	<1.00	<0.50	<1.00	<0.20	6.73	125.0	10.69									

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
				9/13/18	8.2	33.44	Kane	**10.8**	<0.50	<1.00	<0.20	6.59	139.0	7.20	100.6	<100	6.43	2.73	<0.100	<0.00863	<0.0162	<0.0151	1.54
				12/19/18	6.94	34.70	Kane	**7.8**	<0.50	<1.00	<0.20	6.21	159.8	5.00	45	<100	8.54	3.43	<0.100	<0.00863	<0.0162	<0.0151	1.17
				5/30/19	6.81	34.83	Kane	**11**	<0.20	<0.20	<0.20	6.55	190.5	7.81	15.2	<56	7.4	5.9	<0.050	0.0014	<0.0005	<0.0005	1.1
HZ-MW-4	Shallow	8 to 18	40.177	9/5/08			HWA	<0.2	<0.2	<0.2	<0.20												
				6/9/14			HWA	<0.20	<0.20	<0.20	<0.20	6.35	407.0	2.73									
				9/12/14			HWA	**2.6**	<0.20	<0.20	<0.20	6.42	361.0	2.12									
				12/16/14			HWA	**0.54**	<0.20	<0.20	<0.20	6.56	316.0	2.17									
				3/30/15			HWA	<0.20	<0.20	<0.20	<0.20	5.47	323.0	2.67			<50			<0.50			
				11/11/15	6.18	34.06	HWA	**0.27**	<0.20	**0.51**	**0.44**	6.22	459.0	39.20	6.5		23			1.3	<0.50	<0.50	2.3
				9/23/16	7.16	33.02	Kane	**0.31**	<0.20	<0.20	<0.20	6.23	331.0										
				10/28/16	5.22	34.96	Kane	<0.20	<0.20	<0.20	<0.20	6.36	308.0										
				7/24/18	6.95	33.23	Kane	<1.00	<0.50	<1.00	<0.20	6.75	356.0	3.35									
				9/13/18	7.59	32.59	Kane	<1.00	<0.50	<1.00	<0.20	6.52	354.0	2.25	53.6	161	40.7	13	<0.100	<0.00863	<0.0162	<0.0151	3.95
				12/21/18	6.27	33.91	Kane	<1.00	<0.50	<1.00	<0.20	6.21	420.9	0.19	10	<100	36.5	15	<0.100	<0.00863	<0.0162	<0.0151	3.1
				5/30/19	6.37	33.81	Kane	**0.41**	<0.20	<0.20	<0.20	6.38	446.1	0.30	45.3	<56	45	21	<0.050	0.0016	<0.0005	<0.0005	2.6
HZ-MW-14S	Shallow	5 to 15	42.377	2/25/13			HWA	**2,400**	**47**	**29**													
				5/29/14			HWA	**1,000**	**23**	**11**	*<10*	6.46	799.0	0.16									
				9/11/14			HWA	**4,900**	**96**	**78**	*<20*	6.51	441.0	0.54									
				12/15/14			HWA	**790**	**16**	**13**	*<4.0*	6.34	396.0	0.48									
				3/20/15			HWA	**200**	**6.5**	**3.8**	*<1.0*	6.4	482.0	13.86									
				11/11/15	7.65	34.79	HWA	**75.0**	**3.1**	**8.6**	*<0.40*	6.10	437.0	1.3	24.8		30			170	<0.50	<0.50	2.2
				9/26/16	7.52	34.86	Kane	**1,800**	**57**	**110**	*<20*	6.34	330.0										
				10/28/16	5.82	36.56	Kane	**440**	**13**	**12**	*<2.0*	6.43	309.0										
				7/20/18	7	35.38	Kane	**2,580**	**52.5**	**86.6**	**0.572**	6.87	300.0	0.70									
				9/21/18	7.36	35.02	Kane	**2,710**	**61.9**	**203**	*<2.0*	6.52	346.0	0.13	42.9	<100	27.4	7.81	<0.100	0.361	<0.0162	<0.0151	3.87
				12/13/18	6.23	36.15	Kane	**240**	**7.33**	**6.12**	<0.20	6.11	327.3	0.17	20.4	<100	22.4	7.29	<0.100	<0.00863	<0.0162	<0.0151	1.89
				5/21/19	6.43		Kane	**240**	**7.0**	**3.2**	*< 2.0*	6.47	339.2	0.11	-26.3	490	21	7.2	<0.050	0.18	<0.01	<0.01	1.7
HZ-MW-14D	Intermediate	30 to 40	42.397	2/25/13			HWA	**360**	**7.6**	**21**													
				5/29/14			HWA	**100**	**3.7**	**16**	*<1.0*	6.47	622.0	0.23									
				9/11/14			HWA	**100**	**3.2**	**17**	*<1.0*	6.45	352.0	0.28									
				12/15/14			HWA	**100**	**2.8**	**15**	*<1.0*	6.41	332.0	0.87									
				3/20/15			HWA	**62**	**2.4**	**9.8**	*<0.40*	6.69	423.0	NA									
				11/11/15	8.12	34.31	HWA	**970**	**16**	**14**	*<10*	6.08	414.0	0.00	24.9		12			69	<0.50	<0.50	1.2
				9/26/16	7.38	35.02	Kane	**37**	**1.5**	**2.9**	<0.20	6.10	434.0										
				10/28/16	5.62	36.78	Kane	**55**	**2.8**	**6.1**	<0.20	6.21	373.0										
				7/20/18	6.96	35.44	Kane	**42.9**	**2.18**	**7.55**	<0.20	6.42	220.0	0.33									
				9/19/18	7.19	35.21	Kane	**36.4**	**1.98**	**7.14**	<0.20	6.23	500.0	0.23	100.4	<100	10	100	<0.100	0.0317	<0.0162	<0.0151	4.3
				12/13/18	6.7	35.70	Kane	**44.2**	**3.3**	**13.5**	<0.20	5.87	523.1	0.07	36	<100	15.5	90.8	<0.100	0.0524	<0.0162	<0.0151	0.968
				5/21/19	6.16	36.24	Kane	**65**	**2.9**	**12**	<0.20	6.09	500.3	0.06	-40.7	<56	10	87	<0.050	0.053	<0.0050	<0.0050	<1.0
HZ-MW-15S	Shallow	10 to 15	41.747	3/25/13			HWA	**86**	**2.3**	**3.6**													
				5/29/14			HWA	**150**	**7.1**	**3.6**	*<1.0*	6.35	785.0	1.45									
				9/13/14			HWA	**400**	**19**	**12**	<0.20	6.87	575.0	0.25									
				12/15/14			HWA	**300**	**14**	**12**	*<2.0*	6.44	549.0	0.95									
				3/20/15			HWA	**140**	**6.2**	**3.5**	*<1.0*	6.32	579.0	NA									
				11/12/15	6.99	34.79	HWA	**110**	**4.9**	**4.2**	*<10*	5.9	394.0	0.13	97.4		26			3.1	<250	<12	1.1
				9/27/16	6.65	35.10	Kane	**57**	**1.6**	**1.4**	*<0.40*	6.21	280.0										
				10/28/16	4.15	37.60	Kane	**81**	**3.3**	**2.9**	*<0.40*	6.30	314.0										
				9/19/18	6.61	35.14	Kane	**29.2**	**1.2**	**1.11**	<0.20	6.30	260.0	0.47	187	<100	18.8	2.67	<0.100	<0.00863	<0.0162	<0.0151	4.16
				12/27/18	4.4	37.35	Kane	**11.8**	<0.50	<1.00	<0.20	6.07	278.8	0.68	38.5	<100	19.5	2.85	<0.100	<0.00863	<0.0162	<0.0151	1.36
				6/4/19	4.92	36.83	Kane	**8.9**	**0.34**	<0.20	<0.20	6.32	256.6	0.33	-10.7	<56	16	3	<0.050	0.019	<0.001	<0.001	1.1
HZ-MW-15D	Intermediate	20 to 30	41.787	3/25/13			HWA	**330**	**18**	**12**													
				5/29/14			HWA	**3,700**	**290**	**180**	*<20*	6.28	1000.0	0.12									
				9/13/14			HWA	**93**	**6.9**	**4.5**	*<0.40*	6.33	308.0	0.30									
				12/15/14			HWA	**130**	**9.2**	**4.3**	*<1.0*	6.34	290.0	1.87									
				3/20/15			HWA	**6,700**	**400**	**280**	*<30*	6.27	491.0	NA									
				11/11/15	7.2	34.63	HWA	**1,800**	**120**	**100**	*<10*	5.66	260.0	0.00	95.5		28			2800	<250	<12	<1.0
				9/27/16	6.69	35.10	Kane	**840**	**40**	**43**	*<4.0*	5.96	211.0										
				10/28/16	5.33	36.46	Kane	**3,300**	**210**	**200**	*<20*	6.20	266.0										
				9/19/18	6.74	35.05	Kane	**4,910**	**152**	**117**	<0.20	6.05	282.0	0.21	204	<100	22.8	16.5	<0.100	2.23	<0.0162	<0.0151	4.7
				12/27/18	4.23	37.56	Kane	**6,410**	**229**	**199**	*<10.0*	5.95	315.5	0.09	52.4	<100	19.5	2.85	<0.100	<0.00863	<0.0162	<0.0151	1.36
				6/4/19	6.11	35.68	Kane	**10,000**	**390**	**260**	*<100*	6.25	337.4	0.12	20.9	<56	23	14	<0.05	5	<0.25	<0.25	1.50

Table 1
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Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
HZ-MW-16	Shallow	15 to 25		5/28/14			HWA	**0.32**	<0.20	**0.30**	<0.20	6.52	451.0	0.16									
				9/12/14			HWA	**4.2**	<0.20	<0.20	<0.20	7.08	207.0	1.23									
				12/15/14			HWA	**0.4**	<0.20	<0.20	<0.20	7.01	235.0	0.57									
				3/19/15			HWA	**0.35**	<0.20	**0.24**	<0.20	6.59	326.0	NA						<0.50			
				11/28/16	4.53		Kane	**0.34**	<0.20	<0.20	<0.20	6.78	167.0										
				9/24/18	6.23		Kane	<1.00	<0.50	<1.00	<0.20	6.62	131.0	1.85	83.4	<100	9.78	2.83	<0.100	<0.00863	<0.0162	<0.0151	1.58
				1/3/19	5.56		Kane	**1.39**	<0.50	<1.00	<0.20	6.09	220.2	0.66	63.5	<100	15.2	8.5	<0.100	<0.00863	<0.0162	<0.0151	0.645
				6/5/19	5.8		Kane	**2.00**	**0.30**	**0.61**	<0.20	6.46	222.3	0.29	26.7	<56	16	7.6	<0.050	<0.001	<0.0005	<0.0005	<1.0
HZ-MW-17	Shallow	10 to 20	38.567	6/9/14			HWA	<0.20	<0.20	<0.20	<0.20	6.61	594.0	0.15									
				9/12/14			HWA	**2.0**	<0.20	<0.20	<0.20	6.94	345.0	0.89									
				12/16/14			HWA	**0.5**	<0.20	<0.20	<0.20	6.71	309.0	1.55									
				3/19/15			HWA	<0.20	<0.20	<0.20	<0.20	6.96	434.0	NA									
				9/26/16	8.90	29.67	Kane	<0.20	<0.20	<0.20	<0.20	6.73	230.0										
				10/27/16	6.61	31.96	Kane	<0.20	<0.20	<0.20	<0.20	6.89	238.0										
				7/24/18	7.45	31.12	Kane	<1.00	<0.50	<1.00	<0.20	7.17	250.0	0.41									
				9/12/18	7.90	30.67	Kane	<1.00	<0.50	<1.00	<0.20	6.97	267.0	0.09	39.9	**2,540**	16.9	7	<0.100	<0.00863	<0.0162	<0.0151	2.54
				12/6/18	7.68	30.89	Kane	<1.00	<0.50	<1.00	<0.20	6.65	297.5	0.32	29.1	**2,060**	23.7	9.1	<0.100	<0.00863	<0.0162	<0.0151	2.28
				5/31/19	7.08	31.49	Kane	<0.20	<0.20	<0.20	<0.20	6.91	312.3	0.11	-30.1	3,600	16	9	0.081	0.25	<0.015	<0.015	1.1
HZ-MW-18	Shallow	7.5 to 17.5		6/10/14			HWA	<0.20	<0.20	<0.20	<0.20	6.38	1901.0	0.14									
HZ-MW-19	Shallow	5 to 15	42.177	5/30/14			HWA	**0.97**	**0.94**	**0.40**	<0.20	6.38	1210.0	0.10									
				6/9/14			HWA	**0.28**	**0.67**	**1.1**	<0.20	6.26	1213.0	0.13									
				9/12/14			HWA	**3.3**	**0.76**	**0.67**	<0.20	6.37	675.0	0.50									
				12/16/14			HWA	**1.0**	<0.20	<0.20	<0.20	6.75	301.0	0.42									
				3/19/15			HWA	<0.20	<0.20	<0.20	<0.20	6.33	376.0	NA						100			
				8/6/15			HWA					6.18	513.0	0.00									
				11/11/15	7.01	35.22	HWA	**0.6**	**0.77**	**1.1**	<0.20	6.03	623.0	0.00	-13.9		25			11	<0.50	<0.50	8.4
				9/26/16	7.73	34.45	Kane	**0.59**	**0.54**	**0.48**	<0.20	6.29	438.0										
				10/31/16	4.78	37.40	Kane	<0.20	<0.20	<0.20	<0.20	6.11	174.0										
				7/24/18	7.17	35.01	Kane	<1.00	<0.50	<1.00	<0.20	6.56	335.0	0.00									
				9/7/18	7.72	34.46	Kane	<1.00	**0.574**	<1.00	<0.20	6.34	504.0	1.16	102.7	1,460	61.5	5.2	<0.100	<0.00863	<0.0162	<0.0151	8.59
				12/7/18	6.32	35.86	Kane	<1.00	<0.50	<1.00	<0.20	5.99	376.6	0.12	64.7	2,500	24.5	2.44	<0.100	0.0158	<0.0162	<0.0151	6.15
				5/30/19	6.25	35.93	Kane	**0.21**	**0.25**	<0.20	<0.20	6.25	424.6	0.15	34.5	240	28	3.9	<0.050	0.019	<0.001	<0.001	3.5
HZ-MW-20	Shallow	5 to 15		6/9/14			HWA	<0.20	<0.20	<0.20	<0.20	6.79	1914.0	0.28									
				9/13/14			HWA	**1.3**	<0.20	<0.20	<0.20	7.09	1018.0	0.72									
				12/16/14			HWA	**0.41**	<0.20	<0.20	<0.20	6.72	851.0	0.44									
				3/19/15			HWA	<0.20	<0.20	<0.20	<0.20	6.91	1139.0	NA									
HZ-MW-21	Shallow	6 to 16	39.517	9/13/16	7.14	32.38	Kane	<0.20	<0.20	<0.20	<0.20	6.55	509.0										
				10/31/16	5.90	33.62	Kane	<0.20	<0.20	<0.20	<0.20	6.31	528.0										
				7/23/18	6.90	32.62	Kane	<1.00	<0.50	<1.00	<0.20	6.77	576.0	0.19									
				9/13/18	7.37	32.15	Kane	<1.00	<0.50	<1.00	<0.20	6.65	700.0	0.12	71.6	739	35.6	7.12	0.169	0.0386	<0.0162	<0.0151	18.3
				12/10/18	6.69	32.83	Kane	<1.00	<0.50	<1.00	<0.20	6.43	120.9	0.71	71.7	<100	8.51	1.4	0.125	<0.00863	<0.0162	<0.0151	1.94
				5/23/19	6.55	32.97	Kane	<0.20	<0.20	<0.20	<0.20	6.60	500.7	0.11	-0.1	550	21	8.1	0.29	0.14	0.0009	<0.0005	14
HZ-MW-22	Shallow	5 to 15	40.827	9/14/16	6.77	34.06	Kane	**0.67**	**0.62**	**0.24**	<0.20	6.13	303.0										
				10/28/16	4.85	35.98	Kane	**0.46**	<0.20	<0.20	<0.20	6.52	318.0										
				7/23/18	6.45	34.38	Kane	**1.52**	**0.849**	<1.00	<0.20	6.47	316.0	0.68									
				9/7/18	7.10	33.73	Kane	**1.44**	**1.33**	**1.07**	<0.20	6.25	338.0	0.51	98.7	<100	20.3	14.1	<0.100	<0.00863	<0.0162	<0.0151	5.38
				12/21/18	5.35	35.48	Kane	**1.46**	**0.956**	<1.00	<0.20	6.16	392.0	0.98	32.7	<100	25.5	10.2	<0.100	<0.00863	<0.0162	<0.0151	2.52
				5/21/19	5.72	35.11	Kane	**1.2**	**0.66**	**0.51**	<0.20	6.37	413.6	0.50	-19.1	<56	31	8.1	<0.050	0.0004	<0.0005	<0.0005	2.3
HZ-MW-23	Intermediate	28 to 38	41.677	9/14/16	8.21	33.47	Kane	**2.4**	<0.20	**0.41**	<0.20	6.55	378.0										
				10/31/16	6.80	34.88	Kane	**2.3**	<0.20	**0.33**	<0.20	6.77	345.0										
				9/7/18	8.26	33.42	Kane	<1.00	<0.500	<1.00	<0.20	6.84	401.0	0.07	24.8	3,800	13.2	11.1	<0.100	0.527	<0.0162	<0.0151	6.14
				12/19/18	7.40	34.28	Kane	<1.00	<0.50	<1.00	<0.20	6.53	416.2	0.06	7.5	1,200	16.6	11.3	<0.100	0.273	<0.0162	<0.0151	3.14
				5/30/19	7.17	34.51	Kane	<0.20	<0.20	<0.20	<0.20	6.74	358.2	0.20	11.5	7,500	13	11	<0.050	0.75	<0.05	<0.05	3.4
HZ-MW-24	Intermediate	25 to 35	40.997	9/14/16	7.20	33.80	Kane	**4.9**	**2.4**	**21**	**0.8**	6.47	356.0										
				10/27/16	5.66	35.34	Kane	**6.7**	**0.8**	**12**	**0.6**	6.69	316.0										
				9/18/18	6.92	34.08	Kane	**4.48**	**2.3**	**14.8**	**0.577**	6.31	286.0	0.22	99.2	<100	26.1	8.28	<0.100	0.0181	<0.0162	<0.0151	3.98
				12/10/18	6.04	34.96	Kane	**2.79**	**0.908**	**5.38**	<0.20	6.26	273.7	0.08	-1.4	828	10.3	7.18	<0.100	<0.00863	<0.0162	<0.0151	7.02
				5/31/19	6.06	34.94	Kane	**2.0**	**0.92**	**21**	**0.77**	6.61	533.7	0.13	-11.7	8,500	<5.0	13	0.19	5.4	<0.25	<0.25	3.5
HZ-MW-25	Deep	44.33 to 54.33	41.907	9/14/16	8.17	33.74	Kane	**6.4**	<0.20	<0.20	<0.20	6.71	254.0										
				10/28/16	7.02	34.89	Kane	**1.2**	<0.20	<0.20	<0.20	6.46	237.0										

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
				7/19/18	8.00	33.91	Kane	<1.00	<0.50	<1.00	<0.20	6.67	248.0	0.45									
				9/11/18	8.41	33.50	Kane	<1.00	<0.50	<1.00	<0.20	6.38	273.0	0.08	102.8	201	9.38	25.8	<0.100	0.00931	<0.0162	<0.0151	2.72
				12/4/18	7.35	34.56	Kane	**3.67**	**1.36**	<1.00	<0.20	6.11	299.6	0.07	48.7	5,900	14.5	21.1	<0.100	<0.00863	<0.0162	<0.0151	4.34
				5/30/19	7.60	34.31	Kane	<0.20	<0.20	<0.20	<0.20	6.36	259.6	0.32	21.3	330	12	22	<0.050	0.056	<0.005	<0.005	<1.0
HZ-MW-26	Intermediate	25 to 35	40.692	9/14/16	7.55	33.14	Kane	**99**	**3.5**	**4.7**	*<0.40*	6.71	267.0										
				10/28/16	6.26	34.43	Kane	**3.3**	<0.20	**0.25**	<0.20	6.74	265.0										
				7/23/18	7.36	33.33	Kane	**11.9**	<0.50	**2.01**	<0.20	6.98	284.0	0.31									
				9/17/18	6.83	33.86	Kane	**7.12**	<0.50	**1.3**	<0.20	6.55	316.0	0.37	187	<100	24.9	7.46	<0.100	<0.00863	<0.0162	<0.0151	3.54
				12/4/18	7.23	33.46	Kane	**6.21**	<0.50	**1.03**	<0.20	6.38	334.2	0.10	75.6	<100	25.3	8.08	<0.100	<0.00863	<0.0162	<0.0151	2.3
				5/30/19	6.85	33.84	Kane	**9.7**	<0.20	**1.4**	<0.20	6.70	329.9	0.18	17	<56	28	9.3	<0.050	0.0042	<0.0005	<0.0005	<1.0
HZ-MW-27	Deep	45 to 55	41.597	9/14/16	8.00	33.60	Kane	**1.6**	<0.20	**0.34**	<0.20	6.80	227.0										
				10/28/16	6.55	35.05	Kane	**0.84**	<0.20	<0.20	<0.20	6.51	208.0										
				7/13/18	7.35	34.25	Kane	**2.24**	<0.50	**1.07**	<0.20	6.77	215.0	0.40									
				9/18/18	7.73	33.87	Kane	**1.75**	<0.50	<1.00	<0.20	6.24	222.0	0.34	62.8	<100	15.3	8.08	<0.100	0.0449	<0.0162	<0.0151	4.12
				12/7/18	8.18	33.42	Kane	<1.00	<0.50	<1.00	<0.20	6.12	229.6	0.13	49.8	835	21.1	8.36	<0.100	0.0636	<0.0162	<0.0151	1.28
				5/30/19	7.30	34.30	Kane	<0.20	<0.20	<0.20	<0.20	6.51	223.5	0.22	18.6	1,200	18	8.7	<0.050	0.093	<0.005	<0.005	1.4
HZ-MW-28	Intermediate	25 to 35	38.744	10/27/16	5.90	32.84	Kane	**0.96**	<0.20	<0.20	<0.20	6.87	343.0										
				7/24/18	6.65	32.09	Kane	<1.00	<0.50	<1.00	<0.20	7.08	333.0	0.42									
				9/13/18	7.00	31.74	Kane	<1.00	<0.50	<1.00	<0.20	6.86	368.0	0.13	35.8	420	17.6	16	<0.100	0.0191	<0.0162	<0.0151	2.29
				12/6/18	6.40	32.34	Kane	<1.00	<0.50	<1.00	<0.20	6.58	429.8	0.28	56.7	<100	37.6	14	<0.100	0.0101	<0.0162	<0.0151	2.77
				5/31/19	6.35	32.39	Kane	<0.20	<0.20	<0.20	<0.20	6.75	416.1	0.14	-7.1	<56	45	16	<0.050	0.053	<0.003	<0.003	1.4
HZ-MW-29	Intermediate	25 to 35	40.309	10/27/16	6.03	34.28	Kane	**85**	**9.0**	**100**	**6.6**	6.60	271.0										
				7/23/18	6.75	33.56	Kane	**54.8**	**4.2**	**33.2**	**1.31**	6.66	241.0	0.07									
				9/11/18	7.11	33.20	Kane	**36.6**	**3.48**	**23.7**	<0.20	6.47	254.0	0.15	95.2	<100	16	10.9	<0.100	<0.00863	<0.0162	<0.0151	2.73
				12/10/18	5.68	34.63	Kane	**13.6**	**4.06**	**11.4**	<0.20	6.18	330.7	0.07	3.5	2,140	17.9	17.2	<0.100	<0.00863	<0.0162	<0.0151	2.68
				5/31/19	6.29	34.02	Kane	**1.4**	**0.6**	**32**	**0.26**	6.52	705.0	0.35	-2.3	10,000	<5.0	18	0.65	3.9	<0.25	<0.25	52
HZ-MW-30	Deep	40 to 50		11/28/16	7.08		Kane	<0.20	<0.20	<0.20	<0.20	8.01	418.0										
				8/27/18	8.60		Kane	<1.00	<0.50	<1.00	<0.20	7.71	235.0										
				9/20/18	9.54		Kane	<1.00	<0.50	<1.00	<0.20	7.71	273.0	0.25	-140	162	0.506	3.51	0.937	0.426	<0.0162	<0.0151	2.1
				12/18/18	7.71		Kane	<1.00	<0.50	<1.00	<0.20	7.60	281.5	0.05	-2.4	247	<0.300	3.62	0.956	0.307	<0.0162	<0.0151	2.15
				5/19/19	7.88		Kane	<0.20	<0.20	<0.20	<0.20	7.68	260.5	0.17	22.8	170	<5.0	4.8	0.61	0.91	<0.50	<0.50	1.8
HZ-MW-31	Shallow	15 to 25		11/28/16	8.42		Kane	<0.20	<0.20	<0.20	<0.20	6.80	325.0										
				8/27/18	9.55		Kane	<1.00	<0.50	<1.00	<0.20	6.52	294.0										
				9/20/18	9.63		Kane	<1.00	<0.50	<1.00	<0.20	6.46	321.0	0.43	-45.4	8,800	7.69	9.3	0.33	0.0618	<0.0162	<0.0151	5.41
				12/18/18	9.40		Kane	<1.00	<0.50	<1.00	<0.20	6.33	331.1	0.07	2	1,880	8.74	8.76	0.297	0.151	<0.0162	<0.0151	4.99
				5/29/19	9.34		Kane	**0.78**	<0.20	<0.20	<0.20	6.58	320.7	0.23	19.8	20,000	<5.0	8.7	0.26	0.34	<0.025	<0.025	4.6
HZ-MW-32	Shallow	15 to 25		11/28/16	7.68		Kane	<0.20	<0.20	<0.20	<0.20	6.78	331.0										
				9/20/18	9.46		Kane	<1.00	<0.50	<1.00	<0.20	6.50	355.0	0.20	-68.3	13,500	3.07	13.3	0.402	0.147	<0.0162	<0.0151	6.79
				12/19/18	8.70		Kane	<1.00	<0.50	<1.00	<0.20	6.28	377.0	0.14	-5	234	5.93	13.6	0.356	0.121	<0.0162	<0.0151	6.56
				5/29/19	8.25		Kane	<0.20	<0.20	<0.20	<0.20	6.56	377.1	0.46	25.6	27,000	<5.0	13	0.39	0.27	<0.15	<0.15	5.9
HZ-MW-33	Intermediate	25 to 35		11/28/16	6.33		Kane	<0.20	<0.20	**0.48**	<0.20	7.39	242.0										
				7/24/18	6.87		Kane	<1.00	<0.20	<1.00	<0.20	7.02	214.0	0.00									
				9/12/18	7.35		Kane	<1.00	<0.50	**1.11**	<0.20	6.84	237.0	0.25	103.4	<100	14.2	6.54	<0.100	<0.00863	<0.0162	<0.0151	2.08
				12/6/18	7.19		Kane	<1.00	<0.50	**2.06**	**0.303**	6.55	259.5	0.21	48.1	<100	19.1	7.87	<0.100	<0.00863	<0.0162	<0.0151	2.36
				5/31/19	6.82		Kane	**0.51**	<0.20	**1.7**	<0.20	6.77	271.0	0.14	-12.5	<56	16	7.3	<0.050	0.0027	<0.0005	<0.0005	<1.0
HZ-MW-34	Shallow	15 to 25		11/28/16	4.81		Kane	**7.2**	**14**	**44**	**3.1**	6.64	272.0										
				9/17/18	6.68		Kane	**8.05**	**16.5**	**40.6**	**2.97**	6.12	265.0	0.32	152	<100	17.7	10.4	<0.100	0.0191	<0.0162	<0.0151	3.87
				12/7/18	5.77		Kane	**4.63**	**12.7**	**32.6**	<0.20	6.18	383.7	0.10	0.9	5,750	7.8	14.2	<0.100	<0.00863	<0.0162	<0.0151	3.96
				5/31/19	5.88		Kane	**0.83**	**3.3**	**24**	**0.26**	6.46	550.0	0.16	-17.2	10,000	5.7	13	<0.050	1.1	<0.05	<0.05	42
S-MW-1	Shallow	5.5 to 15.5	43.527	9/20/16	6.96	36.57	Kane	**150**	<1.0	<1.0	*<1.0*	6.48	303.0										
				10/24/16	4.64	38.89	Kane	**17**	<0.20	<0.20	<0.20	6.74	140.0										
				10/23/18	6.80	36.73	Kane	**9.1**	<0.50	<1.0	<0.20	6.59	161.0										
				6/6/19	6.00	37.53	Kane	**8.9**	<0.20	<0.20	<0.20	6.25	256.6	3.46	5	<56	50	4.6	<0.050	<0.001	<0.0005	<0.0005	1.4
S-MW-2	Shallow	5 to 15	42.297	9/20/16	6.21	36.09	Kane	**47**	**7**	**26**	*<0.40*	6.41	339.0										
				10/24/16	3.95	38.35	Kane	**35**	**20**	**69**	**5.1**	6.83	349.0										
				9/21/18	6.03	36.27	Kane	**10.3**	**4.74**	**3.66**	<0.20	6.80	246.0	0.12	105.6	<100	19.3	4.29	<0.100	<0.00863	<0.0162	<0.0151	2.25
				1/2/19	4.40	37.90	Kane	**7.55**	**4.2**	**5.02**	<0.20	6.45	278.4	0.11	34.7	<100	19	4.74	<0.100	<0.00863	<0.0162	<0.0151	1.02
				6/6/19	5.14	37.16	Kane	**5.8**	**3.8**	**3.2**	<0.20	6.68	363.7	0.25	0.5	<56	35	6.6	<0.050	0.033	<0.0025	<0.0025	1.6
S-MW-3	Intermediate	25 to 35	42.807	9/16/16	6.62	36.19	Kane	**0.44**	<0.20	<0.20	<0.20	5.79	116.0										
				10/31/16	4.93	37.88	Kane	**1.7**	<0.20	<0.20	<0.20	6.04	116.0										
				9/21/18	6.51	36.30	Kane	**3.8**	<0.50	<1.00	<0.20	5.95	95.0	0.24	80.3	<100	13.7	2.82	<0.100	0.0652	<0.0162	<0.0151	1.24

Table 1
Bothell Service Center Simon Son
Groundwater Analytical Results

Well	Well Type and Water Bearing Zone	Screened Depth, (ft bgs)	Top of Casing (TOC) Elevation (feet)*	Date Sampled	Depth to Water (ft below TOC)	GW Elevation (feet)	Sampled By	PCE (µg/L)	TCE (µg/L)	(cis) 1,2-DCE (µg/L)	Vinyl Chloride (µg/L)	pH (units)	Conductivity (µS)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Dissolved Iron (ug/L)	Sulfate (mg/L)	Chloride (mg/L)	Ammonia as N (mg/L)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Total Organic Carbon (mg/L)
				1/3/19	5.17	37.64	Kane	**2.28**	<0.50	<1.00	<0.20	5.57	103.2	0.14	49	<100	15	3.63	<0.100	0.0994	<0.0162	<0.0151	0.723
				6/5/19	6.05	36.76	Kane	**2.2**	<0.20	<0.20	<0.20	5.88	113.8	0.19	-9.3	<56	13	3.6	<0.050	0.49	<0.025	<0.025	<1.0
S-MW-4	Deep	40 to 50	42.367	9/14/16	6.32	36.05	Kane	<0.20	<0.20	<0.20	<0.20	6.74	206.0										
				10/28/16	4.93	37.44	Kane	**0.66**	<0.20	<0.20	<0.20	6.44	191.0										
				7/19/18	6.23	36.14	Kane	**1.25**	<0.50	<1.00	<0.20	6.85	183.0	0.46									
				9/21/18	6.37	36.00	Kane	<1.00	<0.50	<1.00	<0.20	6.58	200.0	0.08	95.8	621	15	6.13	0.133	0.0092	<0.0162	<0.0151	2.37
				1/2/19	5.90	36.47	Kane	<1.00	<0.50	<1.00	<0.20	6.15	202.9	0.09	56.9	449	14.5	6.18	<0.100	0.0132	<0.0162	<0.0151	1.52
				6/5/19	6.04	36.33	Kane	**0.56**	<0.20	<0.20	<0.20	6.17	153.2	0.15	-4.6	410	15	4.5	<0.050	0.084	<0.005	<0.005	<1.0
S-MW-5	Shallow	15 to 25	41.357	10/28/16	4.56	36.80	Kane	**340**	<4.0	<4.0	*<4.0*	6.68	259.0										
				9/24/18	6.07	35.29	Kane	**530**	<5.0	<10	*<2.0*	6.38	164.0	2.17	48.5	<100	12.6	6.05	<0.100	<0.00863	<0.0162	<0.0151	1.36
				12/27/18	3.90	37.46	Kane	**1,690**	**6.03**	**16.7**	<0.20	6.31	235.5	0.98	58.2	<100	21.6	6.56	<0.100	<0.00863	<0.0162	<0.0151	0.506
				6/5/19	5.20	36.16	Kane	**880**	*<10*	<10	*<10*	6.57	205.1	1.81	7.3	<56	19	5.9	<0.050	<0.001	<0005	<0.0005	<1.0
S-MW-6	Shallow	4 to 14		1/3/17	5.51		Kane	<0.20	<0.20	<0.20	<0.20	6.23	155.0										
				1/11/19	5.54		Kane	<1.00	<0.50	<1.00	<0.20	6.11	129.0										
				6/7/19	7.57		Kane	<0.20	<0.20	<0.20	<0.20	6.1	182.8	4.90	8.7	<56	29	7.3	<0.050	0.0016	<0.0005	<0.0005	<1.0
KSB-46	Intermediate	25 to 30		6/28/17	9.60		Kane	<0.20	<0.20	<0.20	<0.20	6.57	133.7	2.07									
MTCA Method A Cleanup Level[1]								5.0	5.0		0.2												
MTCA Method B Cleanup Level[2]										16						11,200							

Notes:
PCE – Tetrachloroethene
TCE – Trichloroethene
1,1-DCE - 1,1-Dichloroethene
(cis) 1,2-DCE - (cis) 1,2-Dichloroethene
(trans) 1,2-DCE - (trans) 1,2-Dichloroethene
Blank – Not analyzed or not available
Bold – Analyte detected
Bold / highlighted – Analyte exceeds MTCA A/B cleanup level
Italicized - Detection limit exceeds respective cleanup level
< – Analyte not detected at listed reporting limit
mg/L – micrograms per liter
MV – Millivolts
ES – Estimated concentration because analyte concentration was outside of lab instrument calibration range
DNAPL – Dense Non-Aqueous Phase Liquid
1 – Table 720-1, WAC 173-340-900
2 – WA Dept. of Ecology CLARC ground water data table (https://fortress.wa.gov/ecy/clarc/FocusSheets/Groundwater%20Methods%20B%20and%20A%20and%20ARARs.pdf)
NA – Not Applicable
- Well was not sampled by Kane
* HWA TOC elevation was used to calculate GW elevation during HWA sampling events.

FINANCIAL OBLIGATIONS (A. Administrative)		
Provide a cost estimate to Ecology for the implementation of the CD requirements, including operation, maintenance, and compliance monitoring	*Feb 12, 2018 BSCSS grant submitted through Ecology EAGL with all cost estimates attached*	A4
Provide Ecology with proof of financial assurances in a form acceptable to Ecology	*Provided in CFP sheet*	A5
Adjust the cost estimated to reflect inflation and changes in cost estimates and provide updated financial assurances	Ongoing with EAGL, spending updated each quarter	-
Pay outstanding Ecology oversight costs of $13,108.83	*Confirmed; All Ecology invoices have been processed*	-
Pay Ecology's future oversight costs	Within 30 days of receiving Ecology's invoice; On-going	-
PRE-CLEANUP OBLIGATIONS (B. Design)		
Notify Ecology of selected contractor name and qualifications	*Completed, March 13, 2018*	A2
Submit written monthly Progress Reports	*Submitted 4/10/18 (QPR1); 7/9/18 (QPR2); 10/1/18 (QPR3)*	A3
Submit draft Pre-Remedial Design Project Plans (PRDI)[2]	*Completed (included in draft EDR report)*	B1
Submit draft PRDI Data Report and draft Engineering Design Report (EDR)[3]	*Completed, Feb 8, 2018(v1); March 15, 2018(v2)*	B2
Submit final PRDI Data Report and EDR	*Completed, April 24, 2018(v1); July 2018 (v2, addressing ECY's 6/5/18 comments). Approved EDR - August 28, 2018*	B3
Submit 90% plans and specs (per WAC 173-340-400(4)(b)	*Completed, same time as above*	B4
Submit 100% plans and specs	*Completed, same time as above*	B5
FIELD CONSTRUCTION (C)		**EXH D ref**
Complete construction procurement	*Completed; Feb 13, 2018 through March 2018*	C1
ERH System Installation	*Completed; Feb 13 through May 14, 2018*	C2
ERH Operation	*Completed; November 20, 2018*	
Start install and begin operation of bioremediation-groundwater recirculation /SVE systems	Ongoing; Started well installation in May 2018. Bio system operational since August 2018. SVE installed in March 2019; operation ongoing. Additional wells were installed and sampled in the ERH area	C3
Install compliance well monitoring network	*Completed; July 2018*	C4
Complete construction	*Completed; May 2019*	C5
Conduct ERH soil performance sampling	*Completed; Nov/Dec 2018*	C6
Contingent soil excavation in ERH treatment area	Completed; June 2019 per 6/7/19 work plan *(schedule change due to several factors)*	C7
Decommission ERH ~~and SVE~~ system	Within 4 to 6 weeks of ERH final system shutdown*. ERH system was shut down on Nov 20, 2018. The SVE system was left in place to continue treatment during ground cool down (6 months). The ERH wells were then repurposed and tied in to the bio-remediation system*	C8

Submit Cleanup Action Report and As-Built Drawings and Report; draft Institutional Control (IC) Plan; draft Environmental Covenants (s); and an updated Title Report	Within 60 days of decommission of ERH and SVE systems	C9
POST-CONSTRUCTION (D)		
Submit final IC Plan and final Environmental Covenants(s)	Within 30 days of Ecology's comments on draft IC Plan & draft Environmental Covenant	D1
Record the restrictive covenant with the office of the King County Auditor	Within 5 days after the later of Ecology's approval of the Final IC Plan or Ecology's signature on the Final Environmental Covenant	D2
Provide the original recorded restrictive covenant to Ecology	Within 30 days of the covenant recording date	-
Indoor Air Sampling of all occupied buildings on the site	May-July 2019, 2020, 2021	D3
Performance Groundwater Monitoring	June 2018 to June 2020 - Event#1 – Sep 2018; Event#2 – Dec 2018, Event#3 – Mar 2019; Event#4 – May 2019	D4
Quarterly Performance Monitoring	June 2018 to June 2019 - Event#1 – Sep 2018; Event#2 – Dec 2018, Event#3 – Mar 2019; Event#4 – May 2019	
Biannual Performance Monitoring	June 2019 to June 2020	
Decommission Bioremediation/Groundwater Recirculation system and monitoring wells	2020 to 2022 (if operation of bioremediation system is extended)	D5
Soil vapor sampling	2020	D6
Groundwater Confirmation Monitoring	2020-2024	D7
Quarterly Compliance Monitoring	June 2020 to June 2022	
As-Built Drawings and Report of vapor intrusion mitigation measures (vapor barrier and passive venting systems). And other engineering and institutional controls (if any)	Within 30 days of the City's receipt from the developer	D8
PERIODIC REVIEWS		
Meet with Ecology to discuss the status of the Site	Every 5 years after initiation of cleanup action (until 10 years after termination of the CD)	D9
Five Year Compliance Monitoring and Periodic Review reports	To follow Groundwater compliance monitoring (D.7). Groundwater monitoring required once every five years for the duration of the institutional controls on groundwater (if present) under the environmental covenant.	
Submit periodic review reports to Ecology documenting whether human health and the environment are being protected	At least 90 days prior to each periodic review meeting with Ecology (until 10 years after termination of the CD)	

1) Schedule is in calendar days. Deliverable due date may be modified with Ecology concurrence without amendment to the Consent Decree.

2) Project Plans include the following: Work Plan, Sampling and Analysis Plan, Quality Assurance Project Plan, and Health and Safety Plan, to be submitted for Ecology review and approval. All plans will include a schedule for implementation as applicable.

3) *The Engineering Design Report includes: a Construction Quality Assurance Project Plan, a Compliance Monitoring and Contingency Response Plan, Proposed Best Management Practices, Water Quality Monitoring Plan, and Substantive Requirements of Procedural*

Exhibit D

Site Schedule of Work and Deliverables

	Deliverables	Due (Calendar Days)[1]
	A. Administrative	
A.1	Consent Decree entered by the King County Superior Court (Effective Date of the CD)	Within 5 days of the execution by the Parties
A.2	Notification of selected contractor name and qualifications	Within 5 days of the effective date of Consent Decree (A.1)
A.3	Progress Reports	Quarterly on the 10th of the month beginning after the effective date of the Consent Decree (A.1)
A.4	Financial Assurances – submit cost estimate for Ecology review and approval	Within 60 days of the effective date of Consent Decree
A.5	Financial Assurances - provide proof of financial assurances	Within 60 days after Ecology approves cost estimate (A.4)
	B. Design	
B.1	Draft Pre-Remedial Design (PRDI) Project Plans[2]	Within 5 days of the effective date of Consent Decree (A.1)
B.2	Draft PRDI Data Report and Draft Engineering Design Report (EDR)[3]	Within 5 days of Ecology approval of Final PRDI Project Plans (B.1)
B.3	Final PRDI Data Report and EDR Report	Within 5 days of receipt of Ecology's comments on the Draft PRDI Data and EDR Reports (B.2)
B.4	90 % Plans and Specs [per WAC 173-340-400(4)(b)]	Within 5 days of receipt of Ecology comments on Final EDR Report (B.3)
B.5	100 % Plans and Specs	Within 5 days of receipt of Ecology comments on 90 % plans and specifications (B.4)
	C. Field Construction	
C.1	Complete Construction Procurement	Within 5 days of completion of the 100% plans and specifications (B.1)
C.2	ERH System installation	Within 2 months of the effective date of Consent Decree
	ERH Operation	Within 6 to 8 months of the effective date of Consent Decree
C.3	Start install and begin operation of bioremediation-groundwater recirculation/SVE systems	Within 2 months of the effective date of Consent Decree
C.4	Install compliance monitoring well network	Within 2 months of the effective date of Consent Decree
C.5	Complete Construction	Within 2 months of the effective date of Consent Decree
C.6	ERH soil performance sampling	Within 6 to 8 months of the effective date of Consent Decree
C.7	Contingent soil excavation in ERH treatment area	Within 6 to 9 months of the effective date of Consent Decree

C.8	Decommission ERH and SVE system	Within 4 to 6 weeks of ERH system final shutdown
C.9	Cleanup Action Report and As-Built Drawings and Report; Draft Institutional Control (IC) Plan; Draft Environmental Covenant(s); and an updated Title Report	Within 60 days of decommission of ERH and SVE systems (C.8)
D. Post Construction Work		
D.1	Final IC Plan and Final Environmental Covenant(s)	Within 30 days of receipt of Ecology comments on the Draft IC Plan and Draft Environmental Covenant(s).
D.2	Record Final Environmental Covenant(s) with King County Auditor	Within 5 days after Ecology's approval of the Final IC Plan or Ecology's signature as grantee of the Final Environmental Covenant(s), whichever occurs last.
D.3	Indoor Air Sampling of all occupied buildings on the site	May-July 2019, 2020,2021
D.4	Performance Groundwater Monitoring Quarterly Performance Monitoring Biannual Performance Monitoring	June 2018 to June 2020 June 2018 to June 2019 June 2019 to June 2020
D.5	Decommission Bioremediation/Groundwater Recirculation system and monitoring wells	2020 to 2022 (if operation of bioremediation system is extended)
D.6	Soil Vapor Sampling	2020
D.7	Groundwater Confirmation Monitoring Quarterly Compliance Monitoring	2020-2024 June 2020 to June 2022
D.8	As Built Drawings and Report of vapor intrusion mitigation measures (vapor barrier and passive venting systems), and other engineering and institutional controls (if any).	Within 30 days of the City's receipt from the developer
D.9	Five Year Compliance Monitoring and Periodic Review reports	To follow Groundwater compliance monitoring (D.7). Groundwater monitoring required once every five years for the duration of the institutional controls on groundwater (if present) under the environmental covenant.

1) *Schedule is in calendar days. Deliverable due date may be modified with Ecology concurrence without amendment to the Consent Decree.*
2) *Project Plans include the following: Work Plan, Sampling and Analysis Plan, Quality Assurance Project Plan, and Health and Safety Plan, to be submitted for Ecology review and approval. All plans will include a schedule for implementation as applicable.*
3) *The Engineering Design Report includes: a Construction Quality Assurance Project Plan, a Compliance Monitoring and Contingency Response Plan, Proposed Best Management Practices, Water Quality Monitoring Plan, and Substantive Requirements of Procedurally Exempt Permits. Ecology will not approve the Final EDR until the required permits have been obtained.*