

TO: Ms. Maureen Sanchez, Washington State Department of Ecology
FROM: Meg Strong, LG, LHG *MJS*
DATE: April 15, 2020
PROJECT: Jorgensen Forge Corporation Property
PROJ. #: 21-1-12596-013
SUBJECT: Response to Comments on the Draft RI Work Plan

On December 20, 2019, the Washington State Department of Ecology (Ecology) provided comments on the draft Remedial Investigation (RI) work plan (WP) (dated January 31, 2019). The RI WP is being prepared under Agreed Order Number DE14143, issued by Ecology and dated July 28, 2017, for the uplands portion of the Jorgensen Forge Corporation property located at 8531 East Marginal Way South, Tukwila, Washington (the Site).

Shannon & Wilson and Ecology staff met at Ecology's Bellevue office on January 23 and February 18, 2020, to discuss the comments (email acceptance of discussed comments received from Ecology on February 11, and 25, 2020, respectively), and provided memorandums (memos) dated March 13 and 17, 2020, after the second meeting (emailed responses by Ecology received on March 27 and April 9, 2020). The comments and conclusions from the discussions and memos were implemented within the final RI WP (dated April 15, 2020). This memo has been prepared to provide our responses to each comment.

The Ecology comments included general and specific text comments, additional data gaps/required sampling (provided directly in Table 3 of the draft RI WP), and comments pertaining to the figures, tables, the Sampling and Analysis Plan, and the Quality Assurance Project Plan.

Responses to general comments, specific text comments, and comments pertaining to the figures, tables, the Sampling and Analysis Plan, and the Quality Assurance Project Plan are provided in Table 1, below. Responses to comments pertaining to additional data gaps/required sampling (which Ecology applied directly to Table 3 of the draft RI WP) are provided in Table 2, which follows Table 1.

Table 1: Response to Ecology Comments Dated December 20, 2019

Comment	Response
General Comments:	
<p>Present all data used during the COPC identification process. Include GeoProbe groundwater samples currently eliminated from the COPC process. Groundwater monitoring wells are not always present to supercede geoprobe samples, therefore the geoprobe samples must be included. GeoProbe data may be eliminated during the RI once it can be shown that adequate and reliable groundwater monitoring well data exists [sic] at appropriate locations.</p>	<p>The geoprobe data have been added to the COPC evaluation tables. Figures depicting grab groundwater sample results for COPCs have been added to Appendix B.</p>
<p>Please provide another subsection in Section 9 to address site-wide contaminants. There are contaminants that cross "area" boundaries. Two examples are vinyl chloride and diesel in groundwater. COPCs like these must be reviewed and evaluated Site-wide. Suggested borings and approximate monitoring well locations have been suggested in Table 3 to help address this and other data gaps; please add additional borings or wells as needed to delineate these potentially large plumes.</p>	<p>Section 9.10 has been added to discuss the Sitewide contaminants and additional borings/wells have been added to provide the requested delineation.</p>
<p>Please be clear whenever discussing a plume whether you are referring to light nonaqueous phase liquid (LNAPL) or residual contamination. The term "plume" is used interchangeably for LNAPL and the associated residual soil and groundwater contamination. Please note that the extent of LNAPL, the extent of soil contamination, and the dissolved plumes in groundwater must be delineated and may require additional sampling locations be proposed.</p>	<p>The text has been revised to provide clarity regarding the use of the term plume. Our intention is to delineate LNAPL, associated soil contamination, and dissolved-phase groundwater contamination as reflected within the data gap descriptions presented in Sections 9.1 and 9.2 and within the first paragraph of Section 10.</p>
<p>Polynuclear aromatic hydrocarbons (PAHs) or SVOCs must remain as site-wide COPCS, not area-specific. These compounds of concern are located in several areas of the site, not just one. Ecology concurs that cobalt and MTBE are area-specific because these compounds were only found in one area of the Site.</p>	<p>With the exception of 1,2-dichlorobenzene, 1,4-dichlorobenzene, and 2,4-dimethylphenol, PAHs and SVOCs identified as COPCs have been retained as Sitewide COPCs. The three compounds listed above have been retained only in the northwest corner of the Site because historical data (including groundwater sampling data collected in 2017 and 2018) demonstrate that the compounds are not COPCs in other portions of the Site (Ecology approved this on February 18 and confirmed approval on February 25, 2020).</p>
<p>Two COPCs must be added, iron and trans-1,2-dichloroethylene (1,2-DCE). Iron is added because it is not clear why it was eliminated in the January 2019 RIWP. Trans-1,2-DCE is retained because it is also a common daughter product of tetrachloroethylene (PCE) and trichloroethylene (TCE) breakdown. The following compounds can be eliminated from the current COPC list: 1-methylnaphthalene, 2-methylnaphthalene, acenaphthylene, benzo(g,h,i)perylene, dibenzofuran, and phenanthrene. Note that all SVOC compounds will still have to be analyzed where COPC eliminations were based on limited data sets to confirm or revise the COPC list, as appropriate.</p>	<p>Iron has been added as a groundwater COPC. We have not added trans-1,2-DCE to the COPC list because it was eliminated during the COPC evaluation for both soil and groundwater; however, we have included trans-1,2-DCE within the HVOC analytical suite for both media. As discussed and agreed with Ecology on January 23 and February 18, 2020 (with confirmed approval on February 11 and 25, 2020), analysis for full list SVOCs (rather than the COPC SVOCs) has been included at select locations across the Site to provide additional data. Specifically, up to two soil samples per location and groundwater samples from the first two</p>

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	groundwater samplings events at the following locations will be analyzed for full list SVOCs: MW-47 (groundwater only since this is an existing well), MW-63, MW-67, MW-68, MW-72, MW-75, and MW-76.
<p>The Department of Archaeology and Historic Preservation (DAHP) database at https://wisaard.dahp.wa.gov/Map indicates that the site is in an area designated as "Survey Highly Advised: Very High Risk". As a result, we highly recommend that you retain the services of a cultural resource management professional to support compliance with state cultural resource protection laws (https://dahp.wa.gov/projectreview/preservation-laws).</p> <p>At a minimum, prepare for the possible discovery of cultural resources during field activities by developing an Inadvertent Discovery Plan (IDP, Ecology can supply an example upon request. Solicit IDP review and concurrence from DAHP and potentially affected tribes (including, but not limited to the Duwamish, Muckleshoot, and Suquamish Tribes). Provide Ecology with a copy of the final IDP and any DAHP or tribal correspondence related to concurrence prior to initiating fieldwork.</p>	An archaeologist (Stell) was subcontracted to prepare an IDP (provided as an appendix to the SAP). DAHP works with the tribes. Stell will obtain DAHP concurrence with the plan prior to the field activities.
Please provide the Ecology Toxics Cleanup Program (TCP) a copy of the closure report prepared for the Hazardous Waste Program, when it becomes available. TCP will review the report and may require additional sampling to address concerns that may arise based on those data and activities.	The report will be provided to the TCP when it is available.
Proposed soil sampling must be extended to depths beyond 15 feet below ground surface (bgs). Sampling is proposed for soil in many locations to the "direct contact" depth of 15 bgs. However, because leaching is a complete pathway, the goal of the remedial investigation (RI) should be to collect soil samples vertically to the extent they are present at concentrations greater than screening levels.	We have removed the direct contact discussion from the work plan. We have included a sequenced approach to soil sampling that will include completion of deeper borings and analysis of samples taken from the borings prior to completion of shallower borings. This will allow the boring depths to be adjusted, if needed. In addition, borings may be extended to greater depths than proposed if contamination is apparent at the bottom of the boring.
<p>Revise the Conceptual Site Model (CSM) as follows:</p> <ul style="list-style-type: none"> • Please provide on Figure 16 and in the text a description of where soil ends and sediments begin, for the purpose of the cleanup. This is expected to be at or near the mean high high-water mark. • Explain in text and on Figure 16 the difference between the "NA" designation and the "incomplete exposure" designation. • Surface water often ponds at the site in significant quantities during rain events and could cause exposures due to direct contact and should be considered a pathway. 	The CSM figure and text have been revised as requested.

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<ul style="list-style-type: none"> • Include all potential exposure pathways. At least one seep has been documented and sampled (as shown on Figure I 5A). In the absence of additional information, there is potential for off property human, benthic and aquatic organism exposure to impacted groundwater. • Ingestion of benthic/aquatic species for sediment/surface water should be shown as a complete pathway unless it can be shown that there is no benthic community at the sediment/surface water boundary. 	
Specific Text Comments:	
Section 1.1, bullet 1. Replace "current" with "former" with regard to the top of bank.	We have replaced "current" with "historic" with regard to the top of shoreline bank. "Historic" was used instead of "former" to be consistent with the other references to this line.
Section 1.1, bullet 2. Only the corrugated metal pipe release at the outfall and the pipes themselves were covered under the Environmental Protection Agency (EPA) Jorgensen Forge Outfall Site (JFOS) orders. The soil surrounding the upland pipe part of the upland cleanup part of AO-14143.	Acknowledged.
Section 1.1, last sentence. The shoreline wedge was only partially remediated in 2014. The shoreline wedge must be included as part of AO-14143.	The shoreline wedge is included within the Site. We have amended the text to include "partially" with regard to the 2014 remediation of the shoreline wedge.
Section 1.5. Confirm that all of the central portion of the Site is paved, as Ecology recalls observing unpaved areas during Site visits.	We have confirmed that the central portion of the Site is paved. Figure 2 includes hatching to mark unpaved areas that lie outside off the central portion of the Site.
Section 2.2.1. There is no evidence of sample collection after removal of slag and the underlying surface soils. Please flag as a data gap and propose resolution.	The lack of sample collection following the 2013 slag storage area closure has been added as a data gap in Section 9.7. As discussed on January 23, 2020, proposed borings/wells in Area 7 have been shifted to improve coverage within this area. While reviewing Section 2.2.1, it was noted that the text incorrectly identified this area as being located in the northwest corner of the Site when it was actually located in the southwest corner of the Site, as depicted in the figures. The text has been corrected.
Section 2 and remainder. Briefly define manufacturing terms. For example, what is the difference between and ingot and a billet? What is the galvanizing process?	Brief definitions for some of the key metal manufacturing terms have been added to the beginning of Section 2.2.
Section 2.2.3, third paragraph. There is no evidence of sampling conducted when this area was "cleaned" and closed in 2015. Please flag as a data gap and propose resolution.	The lack of sampling following the 2015 closure has been noted as a data gap in Section 9.7. As discussed and agreed on January 23, 2020 (confirmed by email on February 11, 2020), the proposed borings/wells in Area 7 have been shifted to improve coverage within this area.
Section 3.1, third paragraph and on. Please describe units from the ground surface downward, giving depth ranges to	Descriptions of the stratum layers encountered at the Site (shallowest to deepest) have been added to the

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the top of each unit and to the bottom of each unit. It would be helpful to define the units first, and then discuss the depth to top and bottom of units. Interpretations in this section should be reflected on the cross-sections. If the text says an area is fill, then the cross-section needs to also show that interpretation.	Section 3.1 write-up. The text and cross sections have been checked for consistency. Where inconsistencies were noted, the text has been revised.
Section 3.2.2. It would be helpful to have a range of seasonal mean river water elevations here.	Seasonal mean river water elevations were not available for the nearby station. Instead of mean river elevations, the average predicted low and high tide elevations have been incorporated into this section.
Section 4.2, second paragraph. Explain why the oil-water separator is considered the source of the LNAPL. Discuss the timing, depth, and extent of sampling east of the LNAPL plume in Area 2. There are several large tanks east of the aluminum heat treat building (AHTB) that are also potential sources.	Section 4 is intended to serve as an introduction to the Site areas and key features. As such, we have not added discussion to Section 4.2 pertaining to the investigations within the area. Investigations within Area 2 are described in Section 5.5. The Section 5.5 discussion has been revised to include more detail regarding the distribution of contamination within the AHTB building footprint (i.e., borings SB-8, SB-9, and SB-10). The oil-water separator is considered the source of hydraulic oil LNAPL; the diesel LNAPL within the area is attributed to a break in a fuel return line which ran from the Decommissioned Diesel Storage Area, below the AHTB, to the main building. The fuel return line as the presumptive source of diesel LNAPL has been added to Section 4.2 as it was not previously mentioned within this section.
Section 4.2. Where trade names are used to describe chemicals used at the Site, please provide some information about those chemicals.	Where available, this information has been added.
Section 4.7 and 6.3.1. Please provide documentation that the swarf was removed from the underground storage bins prior to their cover with soil and pavement. In absence of documentation, a test pit or boring is will be needed to confirm that swarf was removed.	No documentation has been found; however, we have added in an employee recollection regarding the bin removal. According to the employee (Mr. Wayne Turk), the metal contents were removed using a magnet. Some metal may have been left behind if it had stuck to the sides due to compaction and/or rusting. A test pit or boring is not advised as the bins have concrete bases and we would not want to provide a routeway for groundwater into these old storage bins since they would then not drain again.
Section 5.5.2, below bullets. More information on the location and purpose of the "return line" below the AHTB is needed. Please also make sure it is shown on Figure 2.	We have limited information regarding the purpose of the line in question. However, the approximate location of the line has been added to Figure 2 and investigation data added to aid in the delineation of contamination.
Section 5.9, last paragraph. Contaminated soil was identified but no samples reported, please include additional borings at these locations to determine if contamination remains.	The contaminated soil identified within boring FB-2 is located within the Area 1 LNAPL plume footprint. Characterization of this area is described within Section 10.1. The contaminated soil identified within boring FB-3 is identified as a data gap within Section 9.5. As outlined within Table 8, borings SB-2020-001,

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	SB-2020-002, and SB-2020-028, are proposed to investigate the location of this contamination.
Section 5.10. Where polychlorinated biphenyls (PCBs) were detected in oil samples, soil and groundwater in the vicinity must be analyzed for PCBs. Please add another boring in this area to address this data gap.	Boring SB-2020-004, is proposed adjacent to the Q1/Q2/Q3 vault (see Figure 20A). The boring is proposed to be completed to a depth of 30 feet bgs and five soil samples will be collected. Boring SB-2020-038 is proposed to be completed to the east of the vault to evaluate the vault and the nearby Craven Lathes. As outlined within Table 8, the analytical suite for both borings includes PCBs analysis.
Section 5.12. A minimum of three additional borings east of MW-49 must be added to determine if PCBs were released from the upgradient portions of the 24-inch pipe.	As outlined within Table 8, borings SB-2020-042, SB-2020-043, and SB-2020-044 will be completed to evaluate the pipe. As discussed in Section 10.2, these borings will only extend just past the base of the stormwater pipe fill material. The samples will be analyzed for PCBs.
In the subsections of Section 9, indicate how many soil and groundwater samples were analyzed for each analytical suite discussed. It may be easier to provide a short table at the beginning of each Area discussion. This will give the reader context for the follow-on discussions.	A brief table has been added at the beginning of Sections 9.1 through 9.9 to summarize the investigation locations and analyses performed.
Section 9 .1. It is noted that the piping in the Hollowbore area is believed to be a significant source of LNAPL. Now that equipment the obscured the piping is removed, please include an accurate map the piping to get a better understanding of these features as a potential source.	We have not been able to obtain an accurate map to provide clarity regarding the piping layout. Field observations (which are noted in Appendix C) have been found to be inconsistent with existing maps. We anticipate that LIF may provide some clarity regarding the source of LNAPL in this area.
Section 9.1 "PCBs". Please describe the LNAPL PCB results from Table B-17. The units on this table are shown as mg/kg, please confirm that these units are correct. If incorrect, please provide the correct units and discuss the detection limits in the LNAPL samples to the preliminary cleanup levels (PCULs) for reference.	The units are correct. We have not added discussion regarding the detection limits with respect to PCULs because the PCULs are established for soil and groundwater, not for free product. We have added discussion regarding the fact that the detection limits are elevated, likely due to the high concentrations of petroleum within the samples.
Section 9.1 "VOCs". Note that the extent of TCE that appears to come from off-site has not been defined, but this may be difficult given that the TCE plume appears to reach the LNAPL plume. Please include sufficient sampling to determine if the plumes are comingling and to determine extent of TCE and daughter products in groundwater below the LNAPL. Please clarify the second paragraph. Vinyl chloride has been detected across the Site; does this paragraph only discuss MW-23 and MW-49? It is important to note in the text that some of the data gaps regarding COPC distribution are due to the difficulty sampling groundwater wells with LNAPL. This has limited our understanding of what is happening in the groundwater beneath the LNAPL plume and a method to sample should be proposed to address this data gap.	As outlined within Table 8, groundwater samples taken from the proposed wells to be completed within Area 1 surrounding the LNAPL plume (MW-55 through MW-59) will be analyzed for HVOCs to provide additional information regarding the extent of TCE and other VOCs within Area 1. We do not believe that there is value in attempting to sample groundwater from wells in which LNAPL is present. The concentrations of petroleum hydrocarbons within these samples will significantly impact the laboratory's ability to analyze and report other compounds such as HVOCs. The second paragraph was specifically discussing Area 1 groundwater conditions. Wells MW-23 and MW-49 were discussed because they are the wells in which

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	VOCs have been primarily detected (i.e., more frequently and at higher concentrations). An additional clarifying statement has been added with regard to vinyl chloride.
<p>Section 9.1 "Summary and Data Gaps".</p> <ul style="list-style-type: none"> • Please add "and residual TPH" after LNAPL in the second paragraph. • The residual contamination in soil and groundwater around the LNAPL source must also be characterized. • Please propose additional sampling to determine if there is an additional VOC source. Some of the greatest VC concentrations in groundwater were found in MW-40, away from an "off-Site" source, therefore we do not concur that there is no evidence of another VOC source (fourth paragraph). 	<p>The requested wording has been added.</p> <p>Delineation of residual soil and groundwater contamination is an objective of the RI.</p> <p>Section 9.10 has been added to discuss sitewide contaminants, including vinyl chloride. We do not see evidence of a Site source; however, soil samples collected from proposed well MW-58 (to be completed within the Shipping Area) will be analyzed for HVOs. In addition, the groundwater samples from 24 of the 27 new wells across the Site will be analyzed for HVOs.</p>
<p>Section 9.2 "TPH and BTEX". MW-32 is cross-gradient to the LNAPL in this area, therefore, further discussion regarding how to resolve this down-gradient data gap is needed. Please discuss the detections of gasoline range total petroleum hydrocarbons (TPHg) at MW-33 in this subsection.</p>	<p>The discussion within Section 9.2 has been expanded with respect to the downgradient data gap. New monitoring wells MW-63, MW-64, and MW-74 are proposed to address this data gap. The TPH-G detections within MW-33 (soil) and MW-34 (groundwater) have been discussed. As outlined in Table 8, select samples within the vicinity will be analyzed for TPH-G to confirm that TPH-G contamination is not present within the area.</p>
<p>Section 9.2 "Summary and Data Gaps".</p> <ul style="list-style-type: none"> • The former wells in the source area should be replaced with a single new well in that area. • Another well is needed in the AHTB east of the presumed limit of the LNAPL plume to confirm that the LNAPL plume does not originate further east at the former diesel tank storage area. MW-14 is cross-gradient of the OWS. MW-15 is upgradient of the OWS, but not the former diesel tanks, so a well is also needed upgradient of the tanks and OWS. 	<p>Proposed well MW-13R (see Figure 20A) may be installed within the LNAPL footprint between the AHTB and the main building, near the former location of wells MW-12 and MW-13. LIF delineation results will determine whether the well is needed. If LIF suggests that LNAPL within this area has diminished, the well will not be installed.</p> <p>Well MW-72 (see Figure 20A) is proposed to be completed east of the former diesel tanks. Well MW-73 is proposed to be completed east of the presumed LNAPL plume footprint and west of the diesel tanks. If the plume is found to extend to the tanks, the well will not be installed.</p>
<p>Section 9.4 "TPH and BTEX" The extent of soil impacts have not been defined to the east of SB-9, where there is a potential source at the decommissioned oil storage area. Discuss the source for oil range TPH (TPHo) and diesel range TPH (TPHd) at MW-11 and propose additional sampling to resolve this data gap.</p>	<p>Two borings are proposed to be completed within the footprint of the Decommissioned Oil Storage Area vault to evaluate for releases from the feature. As discussed in Section 10.2 of the text, these borings are considered potential borings. If the tanks are removed by Star Forge prior to the RI field activities, the data collected during tank removal activities will be reviewed and the necessity of the borings will be evaluated. The borings may be eliminated or relocated based on the tank removal investigation findings, and with Ecology</p>

Comment	Response
	concurrency. If the tanks have not been removed at the time of the RI field activities, the borings will be completed and angle boring methods will be used to avoid disturbing the tanks.
Section 9.5. Please indicate that limited sampling has been conducted in this area to give context to the discussion. Only MW-40 and 41, which are co-located, and FB-1 and FB-3 have been previously advanced in this large Area.	The introductory paragraph of Section 9.5 has been updated to provide the suggested context. In addition, Exhibit 9-5 has been added to summarize the investigation locations and samples analyzed within the area.
Section 9.5 "VOCs". No soil samples were analyzed for volatile organic compounds (VOCs) and the source of VOCs in this Area needs to be determined. The distribution of VC in groundwater indicates there could be on-site sources.	The vinyl chloride detections have been discussed further and identified as a data gap. Vinyl chloride has also been discussed in detail within Section 9.10. Groundwater samples within the area will be analyzed for HVOCs to better understand the distribution of vinyl chloride within the area.
Section 9. 7 and 9.8. Provide discussion, including the source, for the vinyl chloride in deep groundwater at MW-43. The source of the vinyl chloride in deep groundwater is a data gap that needs resolution.	Further discussion has been added. Vinyl chloride has also been discussed in detail within Section 9.10.
Section 9 .10. Indicate that sampling is proposed for chromium speciation.	Hexavalent chromium analysis is included within the analysis lists for both soil and groundwater. The need for chromium speciation is addressed in Section 9.11.
Section 10. Please revise this section to indicate that the goal of the RI with respect to LNAPL includes determining the extent of residual soil and groundwater contamination related to the LNAPL. Please indicate if borings advanced to define LNAPL will also be used to determine the vertical extent of residual contamination in soil below the LNAPL.	The Section 10 introduction has been updated to specify that residual soil and groundwater contamination related to the LNAPL is to be delineated. Section 10.1 has been updated to emphasize that residual soil contamination delineation is an objective of the LIF delineation.
Additional Data Gaps/ Required Sampling:	
The additional data gaps and additional required sampling are summarized on revised Table 3, attached. Table 3 has also been annotated for the expected analytical parameters for samples collected in each area. In general, the number of samples proposed per boring proposed on Table 8 is reasonable and should be similarly applied to the additional borings requested by Ecology.	A separate comment/response table has been created for the items outlined in Table 3.
Figures:	
On Appendix B figures, the blue and black text are very difficult to distinguish. Please use something more different from black to use instead of blue. A different shade of blue or purple might work well.	As discussed on February 18, 2020, this change will be completed for the RI report, rather than this work plan. If Ecology requests, specific figures can be modified on a case by case basis to aid in Ecology review.
The LNAPL extent is not fully delineated on the western edge. Please dash the line at the western extent between MW-48 and MW-31 on Figure 17. This is one of the reasons that MW-56 is proposed at the location that it is.	The requested dashing has been added to Figure 18 (formerly Figure 17).

Comment	Response
Please indicate the significance of the red text on Figure 2. It appears to be related to the former Bethlehem Steel facility, but is not defined in the legend.	The red text refers to the former Bethlehem Steel Facility. We have added a note to clarify this (on Figure 2).
Please provide a legend sheet for the united soil classification system (USCS) symbols used on the cross-sections in the figures.	The USCS legend has been added to each of the profile figures.
Figure 2 shows a 300 gallon aboveground storage tank (AST) at the Former Waste Chemical Storage Building, but text indicates it is 3,000 gallon capacity. Please revise for accuracy and consistency.	The tank at this location was most recently a 300-gallon capacity AST. Historically, a 3,000-gallon AST was present in this location. During upland source control actions, the larger tank was removed and replaced with a 300-gallon AST.
It would be helpful to have the approximate distance from the LDW of each well shown on Figure 12 in the legend.	The approximate distances have been added to Figure 13 (formerly Figure 12).
Please revise Figure 14 to indicate whether tanks shown are process tanks and whether they are regulated. Please also indicate closure status (removed, closed-in-place, unknown, etc.) for each tank. If you require assistance with this effort, please coordinate with Andrew Imke of our UST unit to assure that what is indicated on the Figure is accurate. He can be reached at andrew.imke@ecy.wa.gov .	We have not updated the figure with respect to process tanks and regulatory status because Star Forge is addressing the facility tanks during their clean closure activities. SoundEarth (on behalf of Star Forge) is working with Ecology to determine that status of each tank. Figure 15 (formerly Figure 14) has been revised to include whether the tanks has been removed or is present at the Site. Appendix H of the work plan includes cross-reference tables which include SoundEarth identifiers for the tanks.
The labels on Figure 15C for the areas are too small to read. Area 3 should be enlarged to be readable, or should be provided on a separate figure.	An additional figure has been added for Area 3 (Figure 16D) to allow for larger font.
There are still features on the main figures that are not explained in the legend. For example, the dashed lines running east-west in Area 2 need to be defined in the legend.	The dashed lines have been removed during this editing process. Due to the additional vaults/features observed during Site visits completed between October 2019 and February 2020, a new figure (Figure 3) has been added to define identified below ground features. The lines in Area 2 that the comment refers to are defined in the figure.
Revise Figure 16 per comments regarding the CSM for the Site.	Figure 17 (formerly Figure 16) has been updated.
On Appendix B figures, there are some samples with an "e" notation. This notation is explained in Table H-1 to indicate a sample removed by excavation. However, the legend on the Appendix B figures should include this explanation. Further, the addition of the "e" flag appears to be inconsistent. For example, on Figure B-5A (PCB concentrations in soil), there is an "e" for the 0-2'bgs interval. However, borings that were within the JFOS that were removed are not indicated as removed. Please revise the Appendix B figures to clearly illustrate sample location and depth intervals that have been removed.	As discussed on February 18, 2020, this revision will be completed within the RI report rather than within this work plan.

Comment	Response
<p>Similarly, Appendix B Tables (for example, Table B-3) appear to not indicate JFOS samples that have been removed as removed. Please cross-check and correct all of the "e" flags on tables and figures. Further, on the tables, please find a way to make the "e" flagged samples stand out more clearly.</p>	
Tables:	
<p>Table 1: It would be helpful to provide another version of Table 1 sorted into separate lists of decommissioned wells and active wells. For each well status, please indicate using shading to show LNAPL wells, or list them all together.</p>	<p>There are now two versions of Table 1. Table 1A is sorted by well ID. Table 1B is sorted by well status. Both tables include shading to highlight wells with LNAPL.</p>
<p>Table 2: Based on notations in Table 2, there are three monitoring wells, MW-16, MW-18, and MW-19 where the extent of LNAPL extends to or below the bottom of casing noted in Table 1. Please describe this situation in the text and ensure that the LNAPL investigation provides depths of LNAPL adjacent to these wells. This may require an additional probe boring near MW-19, and revised placement of borings already proposed near MW-16 and MW-18.</p>	<p>At well MW-16, LNAPL has extended to the bottom of the casing. This is not known to have occurred at MW-18; the two uses of the > symbol at MW-18 occurred in 1993 when an obstruction prevented measurement of the LNAPL thickness/depth to water. At MW-19, there was one instance (2007) of depth to water occurring at the bottom of the casing. It appears that the water table was lower during this event at several wells. In 2017 and 2018, LNAPL thickness at MW-19 was below 1 foot and the depth to water was 4 to 5 feet above the bottom of the casing. The proposed LIF investigation points shown in Figure 20A include points near MW-19 to improve LNAPL delineation.</p>
<p>Table 2: Please add a footnote explaining why or how LNAPL thickness is known, but the depth to LNAPL is not provided.</p>	<p>A footnote has been added to explain that we have not performed calculations using values reported by others because we do not have their field notes. We have only included the values that they reported.</p>
<p>Table 3: The Oil House and Tacchi Vault and Tank are listed under Area 1, but the Oil House is in Area 4 and the Tacchi Vault is in Area 5. Please revise.</p>	<p>The Oil House is in Area 4 and has been moved in Table 3. The Tacchi Vault is in Area 1 and has not been moved in Table 3. This feature was previously shown with a question mark in Area 5 (on the ASTs and USTs figure) but has been repositioned within Area 1 based on field observations.</p>
<p>Table 3: As noted for text, this table is sometimes unclear as to whether the proposed sampling is to delineate LNAPL extent, or soil and groundwater contamination extent greater than screening levels. A goal of the RI is to delineate the extent of residual contamination around the LNAPL plumes as well as the extent of the LNAPL plumes themselves.</p>	<p>Additional clarifying statements have been added.</p>
<p>Table 3: For Area 1 at least, it is noted that there isn't evidence of leaks from vaults and tanks, but that it is more likely to have come from the piping. Will LIF provide additional information to determine the sources of the LNAPL? It does not appear on Figure 19A that specific locations for the LIF investigation are targeting the piping. Please explain how the proposed locations may provide more information regarding actual release locations.</p>	<p>The LIF investigation may provide additional information regarding the source(s) of LNAPL contamination within Area 1 and Area 2; however, the main objective is to fully delineate the contamination to support remedial action. Given that the facility is no longer operating and the potential contaminative sources are or will be removed, identifying the source is not the primary objective.</p>

Comment	Response
<p>Table 3: Ecology has added a column to provide comments or questions on the features described in the table. Remaining Table 3 comments that summarize additional data gaps for the site are provided on that revised table presented as Attachment A. Our requested analytical per Area is also provided on revised Table 3 in Attachment A.</p>	<p>A separate comment/response table has been prepared to address the comments made to Table 3.</p>
<p>Table 5: The COPC summary table is very confusing. The detailed COPC pages should indicate why a COPC was eliminated or retained, but the summary table should simply list the COPCs and what media the COPC is retained in. Ecology has developed a list that is presented in Attachment B of this letter that we believe is the appropriate COPC list for the Site.</p>	<p>The summary table has been simplified as requested.</p>
<p>Table 6: We understand why the total and dissolved metals concentrations are on separate lines. However, COPCs should not be called out as total or dissolved. It is a COPC regardless of whether total or dissolved concentrations make it a COPC.</p>	<p>The summary table only lists the metal as a COPC (no mention of total or dissolved). We have retained them as separate line items within Table 6 because we believe this is useful information for later discussions.</p>
<p>Table 8: Please add columns for full suite SVOCs to both the soil and groundwater portions of the table, and update according to Ecology's comments on additional sampling needed in the data gaps portion of this letter, and as outlined on the revised Table 3 we have provided.</p>	<p>We have reorganized Table 8 by the Site area. We have added full list SVOC analysis to Table 8. Our proposed approach (for SVOCs) includes analyzing for the full list at a limited number of locations (both soil and groundwater) as discussed on February 18 and January 23, 2020.</p>
<p>Table 9: Please add a column for full-suite SVOCs and to indicate which sub-area each monitoring well is located within. Please re-order the table according to the sub-Areas, or provide a Table 9A that provides sorting by area as well as the version provided. All existing wells should be sampled during at least the first event for TPH-Dx and COPC VOCs. In addition, add NWTPH-G analysis to MW-32, MW-5, and MW-51, and PCB analysis to MW-23, MW-24, and MW-39. Zinc should also be analyzed at more wells to establish Zinc concentrations across the Site.</p>	<p>The table has been organized by the Site area. A full list SVOCs column has been added. As discussed on February 18, 2020, existing well MW-47 will be analyzed for full list SVOCs.</p> <p>We have not included TPH-D and COPC VOCs at all existing wells because the Table 9 schedule was streamlined to account for previously collected data. Zinc analysis was not added. The Appendix B figure showing zinc detections within groundwater monitoring wells was missing a significant amount of data, likely leading to your request. Many new wells (Table 8) will be analyzed for these parameters. We believe that the data collected from existing wells during the August 2017 and February 2018 sampling events, along with the new data proposed to be collected at new and existing wells, should be sufficient.</p> <p>With the exception of analyzing MW-5 (decommissioned) for TPH-G, we have added the specific analyses requested in the comment.</p>
<p>Sampling Analysis Plan (SAP):</p>	
<p>Indicate that all printed and handwritten sample labels will be marked using indelible ink.</p>	<p>The sample labeling section has been updated to indicate that indelible ink will be used on labels.</p>
<p>Always be clear about whether you are discussing the LNAPL plume and/or the dissolved plume emanating from</p>	<p>We have clarified the discussion with regards to plume type (LNAPL versus dissolved phase).</p>

Comment	Response
the LNAPL plume. Sometimes it is difficult to distinguish the two.	
As noted in data gaps for Area 2, additional delineation of LNAPL extent is needed to the east, where previously sampling has not been possible.	This has been addressed within the introductory portion of Section 3.
In Section 3.1.2, you state that a soil sample will be collected, but do not indicate if or how it will be analyzed. Please note that the limit of the LNAPL will have to be documented, as well as the limit of residual TPH contamination below the plume.	We have included collection of two samples per plume-center boring, including one within the depth interval which had the highest LIF response (to calibrate the LIF technology) and the second from the bottom of the boring to delineate the residual TPH contamination. Both samples will be analyzed for TPH-D/TPH-O and PAHs.
In Section 3.2, bullet 2, you may want to consider an approach like a peristaltic pump that may be easier to control the intake near the oil water interface, thus reducing the likelihood of water removal.	We have included the potential use of a peristaltic pump for LNAPL removal.
Section 3.3, please clarify when and how often vapor sampling will be conducted in permanent vapor points.	As discussed on February 18, 2020, vapor sampling for NSZD evaluation has been eliminated from the RI. This may be completed at a later date following completion of Site remediation activities.
Section 3.3.1 : In Section 2.2, it is stated that hand augering will be done for utility clearance to 5 feet bgs at locations where volatile samples will be collected. But here it is stated that a direct push rig will install probes to 5 feet. These two statements appear to conflict, please clarify.	This section has been removed since soil gas sampling wells are no longer part of the proposed scope due to the closure of the facility.
Section 3.3.I: Please add the sentence from Table H-1 or the RIWP regarding why two sample ports are used at the end of this section.	This section has been removed since soil gas sampling wells are no longer part of the proposed scope due to the closure of the facility.
Section 4: Soil borings should be advanced to delineate the vertical extent of contaminants based on PCULs, not 15 feet. The driver at the site for cleanup levels will likely be the leaching pathway and not direct contact.	We have revised the wording within this section to indicate that vertical delineation is an objective. To target this objective, the investigation will be sequenced with deeper borings completed first to inform target depths for shallower borings. In addition, we have included the potential for increasing borings depths in the field in response to observed apparent contamination within the base of a boring.
Section 4, third paragraph: Compositing samples are not useful for site characterization. Collect discrete samples.	These are now discrete samples.
Section 4.0, last paragraph: Indicate what the materials in contact with the slag and/or swarf will be analyzed for; a minimum of TPH and metals is expected.	This has been updated to indicate that the soil will be analyzed for TPH-D, TPH-O, metals, and compounds detected at elevated concentrations within groundwater samples collected within the vicinity of the boring in which the slag or swarf was observed.
Section 5.1: Please add that wells will be surged during sandpack placement to optimize the well and prevent bridging of the sandpack during later development.	The statement has been added.

Comment	Response
Section 5.1: According to Table 2A, MW-70 is also proposed to be a deeper well.	This section has been corrected to include both MW-64 and MW-70 as deeper wells.
Section 5.3: This section indicates two monitoring events will be conducted, but this conflicts with your response to comments Table H-1 and our previous comment. Please clarify that quarterly sampling will be completed during the first year after the new wells are installed to determine the best future monitoring schedule.	We have revised the section to include four quarterly monitoring events. The sampling schedule provided in Tables 2A and 2B will be used for the first two events. Schedules for the second two events will be developed following receipt of analytical results from the first two events (with Ecology concurrence). It is expected that the second two events will primarily include new monitoring wells because existing wells will have already been monitored four times.
The numbering of bullets in Sections 5.3.1.2 and 5.3.1.3 should start with the number 4.	The values have been updated.
Section 5.3 .2.1: Indicate that wells deeper than 25 feet will be sampled with a submersible pump, but don't name them in case the list changes.	The sentence has been updated.
Section 5.3.2.2: Halogenated VOC (HVOC) and SVOC analysis in all newly installed wells must include reporting of the full suite of parameters during the first sampling event. This is because the COPCs were determined based on limited data sets in many cases.	As discussed on January 23, 2020, analysis for full list SVOCs (rather than the COPC SVOCs) has been included at select locations across the Site to provide additional data. Sampling completed in August 2017 and February 2018 included HVOCs (full suite). The only compounds detected above screening levels were trichloroethene and vinyl chloride, both of which are included within the COPC HVOC list.
Section 6.2.3: Equipment blanks should also be collected using the first rinse water.	An equipment blank will be collected from the first distilled water rinse to evaluate the need for a second distilled water rinse.
Section 6.2.4: It is specifically because of the variability discussed that Ecology requests matrix spike/matrix spike duplicate (MS/MSD) soil samples be collected, so that the variability can be documented.	We have removed the statement excluding soil MS/MSD samples. As discussed on February 18, 2020, one groundwater MS/MSD will be collected per sampling event and one soil MS/MSD will be collected per week of soil sampling.
Section 6.3: Consider a double distilled water rinse due to the low PCULs used for screening.	A second distilled water rinse has been added.
Quality Assurance Project Plan (QAPP):	
Section 1.2: Note that for areas where only limited data sets were used to determine COPCs, full suite analysis is required in soil samples. This is to ensure that we did not eliminate COPCs due to an incomplete data set as opposed to it not being present at levels of concern.	A statement has been added to Section 1.2 pertaining to the full list analysis of SVOCs at select locations.
Section 1.3 .3: Verify the current contact for the Site is still valid.	The Site contact has been updated; however, upon sale of the property, the contact will likely change.
Section 2.1.2.3: With the low PCULs used for screening, it is advisable to collect equipment blanks on disposable sampling equipment also.	These will be collected.

Comment	Response
Section 2.2.2: It is specifically because of the variability discussed that Ecology requests MS/MSD soil samples be collected, so that the variability can be documented.	MS/MSD soil samples will be collected.

NOTES:

COPC = chemical of potential concern; LIF = laser-induced fluorescence; MTBE = methyl tert-butyl ether; NSZD = natural source zone depletion; OWS = oil-water separator; SVOCs = semivolatle organic compounds; UST = underground storage tank

Table 2: Response to Ecology Comments – Additional Data Gaps/Required Sampling

Area/Feature	Comment	Response
Area 1 - Hollowbore Area	Area 1 soil analytical should include NWTPH-Dx, COPC metals, and full suite SVOCs at each sample location and COPC VOCs in soil samples collected from the finishing area. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs and COPC metals in new wells.	This comment was responded to within our March 13, 2020, memo regarding the proposed RI sample analytical schedule.
Hollowbore 59/60 Lathes Cutting Oil Holding Tank and Vault	1) Please always be clear whether you are discussing the LNAPL plume, or residual soil or groundwater extent. Extent of residual soil and groundwater TPH should also be an objective of the RI, not just delineation of the LNAPL.	We have attempted to provide additional clarity where possible. The objective of the RI includes delineating the extent of residual contamination in soil and groundwater.
	2) Add a boring at the north central portion of the LNAPL plume, where it is not well defined near the SE corner of the office building.	As discussed on January 23, 2020, the boring is not needed near the southeast corner of the office building. We have included LIF investigation points in this area to delineate the LNAPL plume (see Figure 20A).
	3) MW-22 is a critical well given that it is near the leading edge of the LNAPL plume at Area 1. This well either needs to be found or replaced. MW-22 needs to be replaced in addition to proposed monitoring well MW-56.	Well MW-22 will be located or replaced with MW-22R (see Figure 20A).
Ecology addition - Metal storage shed west of Machine Shop area	Machined swarf was formerly stored here and was presumably oil soaked. No sampling was reported at closure in 2015. Install a boring to determine if storage of oil soaked swarf resulted in a release.	This feature has been added to Table 3. This area was not closed in 2015; the text was referring to the storage area in Area 7. An additional boring is not planned in this area; however, if feasible, proposed well MW-56 will be completed at this location to serve a dual purpose (see Figure 20A).
Hollowbore 58 Lathe Vault, Oil-Return Trench, Clean Cutting Oil Tank, and Dirty Cutting Oil Tank	Will LIF answer the source question of whether it was the tanks or the piping in this area?	The LIF delineation may provide clarity regarding the source; however, the main objective will be delineation of the LNAPL and residual soil contamination to support remedial action.
Tacchi Vault and Tank	This feature is located in Area 5; move this line to that area. At least one boring	This feature is in Area 1. We have added a boring just south of this feature (SB-2020-027

Area/Feature	Comment	Response
	should be advanced at this location. Contaminated soil was removed from this area with no confirmation samples. Need to know if residual soil contamination remains.	in Area 5, shown in Figure 20A). The contaminated soil removal which the comment refers to was taken during installation of the Tacchi #2 (feature 3C of Figure 3), located in the Hollowbore Area. This area will be investigated during the LIF investigation.
	Two additional borings should also be advanced and sampled in this largely uninvestigated area where machining was done historically. At least one of the three added borings should be completed as a monitoring well.	As shown in Figure 20A, boring SB-2020-029 is proposed to be completed near the eastern end of Area 5 and a monitoring well (MW-75) is proposed to be completed within the central portion of the northern section of Area 5.
Oil House	The Oil House is located in Area 4; move this line there.	Within Table 3, the Oil House line was moved down from the Area 1 section to the Area 4 section.
Flammable Lockers in Shipping Area	Move the location of MW-58 as close as possible to the former solvent storage lockers, where we are most likely to determine if an additional source of HVOCs is present.	Boring has been shifted closer to the lockers (see Figure 20A). Building footings may impact how close the well can be to the former lockers.
Area 2 - Oil-Water Separator and Decommissioned Diesel Storage Area	Area 2 soil analytical should include NWTPH-Dx, COPC metals, and full suite SVOCs at each sample location and NWTPH-G and COPC VOCs in soil samples collected near the former OWS. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs, NWTPH-G, PCBs, and COPC metals in new wells.	This comment was responded to within our March 13, 2020 memo regarding the proposed RI sample analytical schedule.
660-Ton Press Vault and Hydraulic Oil Tank	Delineation of the extent of residual soil and groundwater TPH should also be an objective of the RI, not just delineation of the LNAPL.	The objective of the RI includes delineating the extent of residual contamination in soil and groundwater. The first paragraph of Section 10 has been updated to include this objective.
5,000-Ton Press Vault and Hydraulic Oil Tank	Move MW-60 closer to the south wall of this feature. That way, it can do double duty to determine if there was a release from this feature and help delineate the LNAPL plume and residual contamination.	Agreed to move monitoring well (see Figure 20A).
Ring Expander Vault and Hydraulic Oil Tank	MW-37 is cross-gradient of this feature. Install a monitoring well west of this feature to determine if there has been a release.	MW-74 is proposed to the west of the Ring Expander Vault (see Figure 20A).
Decommissioned Diesel Storage Area Vault and Tanks (also known as the South Bank of 8 Tanks)	1) An upgradient monitoring well is needed east of the Decommissioned Diesel Storage Area Vault and Tanks to determine baseline conditions in this area. MW-15 is upgradient of the OWS, but not these tanks.	An upgradient well (MW-72) will be installed to the east of the Decommissioned Diesel Storage Area Vault and Tanks (see Figure 20A).
	2) A minimum of 4-5 borings are needed beneath the Decommissioned Diesel Storage Area Vault and Tanks, in the former electrical substation and near the fill ports. Samples under the tanks can	As shown in Figure 20A, we have added two borings (SB-2020-030 and SB-2020-031) within the footprint of the vault/tanks and a boring adjacent to the fill ports (SB-2020-032). As discussed in Section 10.2 of the text, these

Area/Feature	Comment	Response
	either be after removal of tanks, or by using angle borings.	borings are considered potential borings. If the tanks are removed by Star Forge prior to the RI field activities, the data collected during tank removal activities will be reviewed and the necessity of the borings will be evaluated. The borings may be eliminated or relocated based on the tank removal investigation findings, and with Ecology concurrence. If the tanks have not been removed at the time of the RI field activities, the borings will be completed and angle boring methods will be used (except at SB-2020-032) to avoid disturbing the tanks.
Oil-Water Separator (West of Aluminum Heat Treat Building)	A well is needed to replace former wells 12, 13, 2, and 33 and should be located just east of proposed VP-3 and A2-2, but within the plume.	As discussed on January 23, 2020, LIF results will be used to determine if a well (MW-13R, see Figure 20A) is needed to replace wells 12, 13, 2, and 33. If LIF suggests that LNAPL is no longer prevalent in this area, the well will not be installed.
	Another monitoring well is needed just east of the assumed extent of the plume and within the Aluminum Heat Treat Building. It is not uncommon for LNAPL to not be visible in borings, but show up in wells installed in those borings, so a monitoring well is needed.	As shown in Figure 20A, a well will be installed upgradient of the plume (MW-78) unless LIF demonstrates that the plume extends further eastward. If that occurs, the well to be installed upgradient of the Decommissioned Diesel Storage Area vault and tanks (MW-72) will be used as upgradient.
Area 3 - Former Underground Storage Tank Area	Area 3 soil analytical should include NWTPH-G, NWTPH-Dx, and COPC VOCs. Groundwater analytical should include COPC VOCs including MTBE and NWTPH-G in all wells.	This comment was responded to within our March 13, 2020, memo regarding the proposed RI sample analytical schedule.
Former Regulated Gasoline UST and Unregulated USTs	Historic soil sampling indicate that TPHg and TPHd impacted soil was present in this area. To show this area is no longer of concern, confirmatory soil samples will need to be collected and analyzed at the three locations of the exceedances in soil to demonstrate that soil is in compliance.	We have added three borings (SB-2020-033, SB-2020-034, and SB-2020-035) to generally target each former UST (see Figure 20A).
Area 4 - Decommissioned Oil Storage Area	Area 4 soil analytical should include NWTPH-Dx, COPC metals, and full suite at each sample location. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs, PCBs, and COPC metals in new wells.	This comment was responded to within our March 13, 2020, memo regarding the proposed RI sample analytical schedule.
Decommissioned Oil Storage Area "Vault" and Tanks (also known as the North Bank of 10 Tanks)	Is the downgradient well MW-62 in Area 5? If so, please state so. Sampling needs to be conducted under the Decommissioned Oil Storage Area "Vault" and Tanks. Samples under the tanks can either be after removal of tanks, or by using angle borings.	Yes, MW-62 is located in Area 5. This is mentioned in Section 9.4 of the text and within Tables 3 and 8. As shown in Figure 20A, we have added two borings (SB-2020-036 and SB-2020-037) to investigate the vault/tanks. As discussed in Section 10.2 of the text, these borings are considered potential borings. If the tanks are removed by Star Forge prior to the RI field activities, the data collected during tank removal activities will be reviewed and the

Area/Feature	Comment	Response
		necessity of the borings will be evaluated. The borings may be eliminated or relocated based on the tank removal investigation findings, and with Ecology concurrence. If the tanks have not been removed at the time of the RI field activities, the borings will be completed and angle boring methods will be used to avoid disturbing the tanks.
Area 5 - Remaining Building Interior Area	Area 5 soil analytical should include NWTPH-Dx, COPC metals, and full suite SVOCs at each sample location. Sample for PCBs also at Quench Tank 1/2/3. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs, PCBs, and COPC metals in new wells.	This comment was responded to within our March 13, 2020, memo regarding the proposed RI sample analytical schedule.
Buelmann Bar Peeler Oil-Return Vault	Add a boring immediately east of FB-3 to determine the extent vertically and to the east of this location. Another boring may be needed if it is determined that there is relatively new fill at FB-3 because FB-3 was removed.	SB-2020-028 has been added to the east of the feature (see Figure 20A).
2,500 Ton Press Vault	Please move the proposed monitoring wells as close as possible to the vault to determine if there was a release.	As shown in Figure 20A, MW-63/MW-64 has been moved closer to the vault.
West Craven Lathe Vault and Hydraulic Oil Tank	Please add another boring west of these features and immediately north of the 5,000-ton press vault. This will serve the dual purpose of evaluating both features.	Boring SB-2020-038 is proposed to the north of the vault (Figure 20A).
Quench Tank 1/2/3 (Q1/Q2/Q3) Vault, Q1, Q2, and Q3	Please add another boring east of these features because PCBs were detected in fluids in this vault/tank.	Per our discussion on January 23, 2020, this is not needed because a boring (SB-2020-038, see Figure 20A) will be completed west of the Craven lathe vaults.
Area 6 - Former Bethlehem Steel Facility	Area 6 soil analytical should include NWTPH-Dx, COPC metals, COPC VOCs, full suite SVOCs at each sample location. In addition, sample for PCBs at within embayment and shoreline areas. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs, PCBs, and COPC metals in new wells.	This comment was responded to within our March 13, 2020, memo regarding the proposed RI sample analytical schedule.
Former Bethlehem Steel Operations	Move SB-2019-006 to the northwest, close to GP-09107, and make it a monitoring well.	As shown in Figure 20A, the boring has been relocated and is now a monitoring well (MW-76).
Former Steam Clean Area and Oil-Water Separator	Add a boring north of the former Oil Water Separator.	Boring SB-2020-039 is proposed to the north of the oil-water separator (see Figure 20A).
Area 7 - Former Metals Storage Area	Area 7 soil analytical should include NWTPH-Dx, COPC metals, full suite SVOCs at each sample location. In addition, sample for PCBs and COPC VOCs within embayment and shoreline	This comment was responded to within our March 13, 2020, memo regarding the proposed RI sample analytical schedule.

Area/Feature	Comment	Response
	areas and PCBs near the former transformers. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs, PCBs, and COPC metals in new wells.	
Arc Furnace Vault and Hydraulic Oil Tanks	1) Add two borings near the former sumps on the north and east ends of the melt pits to provide better coverage and spatial distribution in this area inside the building. 2) Add a boring immediately north of the former transformer locations.	As shown in Figure 20A, we have added one boring (SB-2020-040) and shifted boring SB-2019-010 (now SB-2020-010) to target the low points near the melt pit. Per our discussion on January 23, 2020, the transformers are located on the roof. No boring was added.
Former Scrap Storage Bins	The text still does not clearly state that swarf was removed from all the bins prior to filling and paving. Until it can be documented that the swarf was all removed, Ecology is requesting additional investigation here. Add a boring or test pit within these bins to determine if metal scrap/swarf was left belowground and whether such scrap, if present is below the water table.	This section has been revised to include information obtained from an employee (Wayne Turk).
Former Unpaved Metals Storage Areas (Former Melt Steel Slag and Mill Scale AOD/EAF Slag Storage Area)	Add 1 boring in the former unpaved slag storage area to provide better spatial coverage in this area. Make sure all borings in the former unpaved area have near-surface soil samples collected and analyzed.	As discussed on January 23, 2020 (and shown in Figure 20A), instead of an additional boring in this area, proposed boring SB-2019-011 (now SB-2020-011) will be shifted northwest and proposed well MW-67 will be shifted west to provide better spatial coverage in the area. As noted in Table 8, near surface soil samples will be collected and analyzed at these locations.
Area 8 - Shoreline and Embayment	Area 8 soil analytical should include NWTPH-Dx, COPC metals, full suite SVOCs, PCBs and COPC VOCs at each sample location. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs, PCBs, and COPC metals in new wells.	This comment was responded to within our March 13, 2020 memo, regarding the proposed RI sample analytical schedule.
Embayment and Shoreline Fill	As noted in Area 7, add a boring in the former unpaved slag storage area to provide better spatial coverage in this area. Make sure all borings in the former unpaved area have near surface soil samples collected and analyzed.	See response above.
Area 9 - Northwest Corner and Northern Property Boundary	Area 9 soil analytical should include NWTPH-Dx, COPC metals, full suite SVOCs, and COPC VOCs at each sample location. PCBs also east of MW-49 and near OA-11. Groundwater analytical should include COPC VOCs and NWTPH-Dx in all wells, full suite SVOCs, PCBs, and COPC metals in new wells.	This comment was responded to within our March 13, 2020, memo regarding the proposed RI sample analytical schedule.

Area/Feature	Comment	Response
Diesel Fueling and Used Oil Storage (Former Waste Chemical Storage) Building and Diesel Fuel Tank	Please note the boring numbers to be consistent with remainder of the table. 1) Add a boring directly east of former AST-11 to address the former tank and waste storage area. Note that AST-11 is noted on Figure 2 as 300-gallons.	As shown in Figure 20A, boring SB-2020-041 has been added to the east of former AST-11. As discussed in Section 6.3.5 of the text, AST-11 was most recently a 300-gallon AST.
Jorgensen Forge Outfall Site (JFOS)	Add 3 borings east of MW-49 to evaluate the potential for releases from the decommissioned 24-inch pipe and sample within 1 foot of the bottom depth of the pipe.	Borings SB-2020-042, SB-2020-043, and SB-2020-044 (see Figure 20A) will be completed to evaluate the 24-inch pipe. These borings will only extend just past the base of the stormwater pipe fill material.

NOTES:

AST = aboveground storage tank; COPC = chemical of potential concern; HVOCs = halogenated volatile organic compounds; LIF = laser-induced fluorescence; LNAPL = light nonaqueous phase liquid; MTBE = methyl tert-butyl ether; NWTPH-Dx= Northwest Total Petroleum Hydrocarbon-Diesel Extended; NWTPH-G = Northwest Total Petroleum Hydrocarbon-Gaoline Extended; OWS = oil-water separator; PCBs = polychlorinated biphenyls; SVOCs = semivolatile organic compounds; TPHd = total petroleum hydrocarbons as diesel-range; TPHg = total petroleum hydrocarbons as gasoline-range; UST = underground storage tank; VOCs = volatile organic compounds

MJS:SKH/skh