Memo

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To: Steve Teel, LHG (Ecology)

From: Hannah Morse, E.I.T. and Chris Waldron, P.E.

Cc: Jake Lund, P.E. (City of Olympia), Nicholas Acklam (Ecology)

Date: November 12, 2021

Subject: Meeting Minutes from 11/02/2021 Meeting with Ecology to Discuss Groundwater Comments on the 2015 Solid Wood RI/FS Report

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The purpose of this memo is to document the minutes from the meeting with the Washington State Department of Ecology (Ecology) on November 2, 2021. The purpose of this meeting was to provide feedback and response to groundwater-related comments provided by Ecology on May 19, 2021 regarding the Remedial Investigation/Feasibility Study (RI/FS) Report for the City of Olympia's (City's) Solid Wood, Inc. Site dated October 5, 2015.

These meeting minutes will be attached to the Response to Comments on the October 5, 2015 RI/FS Report for the Solid Wood, Inc. Site tech memo dated September 14, 2021.

Meeting Minutes

Who Attended:

- Jake Lund (City)
- Steve Teel (Ecology)
- Nicholas Acklam (Ecology)
- Chris Waldron (PIONEER Technologies Corporation [PIONEER])
- Hannah Morse (PIONEER)

Below is a summary of the Solid Wood, Inc. Site RI/FS Groundwater Discussion:

1. Ecology Comment: Ecology does not agree that groundwater at the Site is not a feasible drinking water source due to its proximity to surface water. … Please revise the document to include potential drinking water beneficial uses of groundwater for the Solid Wood Site (Ecology comment #8).

   Summary: The City and Ecology agreed that the RI/FS Report will be revised based on the assumption that groundwater at the Site (including the Oil Stain Area) is potable.[1] Screening levels (SLs) in the RI/FS Report will be updated to include surface water SLs and MTCA Method A (WAC 173-340-720(3)) Cleanup Levels (CULs) for potable groundwater.[2] Based on preliminary groundwater evaluations, no additional groundwater constituents of concern (COCs) were identified. The City and Ecology agreed that groundwater at the Site has been characterized and no further groundwater sampling is required at this time.

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[1] The City believes that the groundwater at the Site is not potable and the site qualifies for the "Harbor Island Exemption" (WAC 173-340-720(2)(d)) under MTCA; however, the City agreed to evaluate groundwater as potable in the RI/FS Report in order to move this project forward to completion.

[2] MTCA Method A Groundwater SLs that are protective of surface water were identified consistent with WAC 173-340-720(3)(b)(iv).

Action items:

a. Update the groundwater SLs in the RI/FS Report to incorporate MTCA Method A potable groundwater CULs. This will be reflected in the text, tables, and figures. The minimum of MTCA Method A potable groundwater SLs and groundwater SLs that are protective of surface water will be evaluated in the RF/FS report.

b. Add text describing the evaluation of empirical groundwater data with emphasis on better clarifying exceedance locations and where contamination has already been addressed (i.e., source removed during interim actions [IAs] performed at the Site).

2. Ecology Comment: The standard point of compliance for protection of groundwater is through the Site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the Site. … Based on the data collected to date, Ecology does not agree that this alternative [i.e., soil cap/cover] adequately protects groundwater (Ecology Comment #14, #15, and #16).

   Summary: The City and Ecology agreed that the RI/FS Report will be revised based on the assumption that groundwater at the Site (including the Oil Stain Area) is potable. SLs in the RI/FS Report for the soil-to-groundwater/surface water pathway will be updated from surface water SLs to the minimum between potable groundwater CULs and surface water SLs. Based on preliminary groundwater evaluations, no soil-to-groundwater/surface water COCs were identified; however, additional evaluation in the Oil Stain Area is required for TPHs in soil for the protection of groundwater. TPHs in soil and groundwater should be re-evaluated using the sum of TPH-D and TPH-HO concentrations compared to the SL of 500 ug/L.

   Action Items:

   a. Update the soil-to-groundwater/surface water SLs in the RI/FS Report to incorporate MTCA Method A potable groundwater CULs. This will be reflected in the text, tables, and figures. Soil-to-groundwater/surface water SLs based on the minimum of MTCA Method A potable groundwater SLs and groundwater SLs that are protective of surface water will be evaluated in the RF/FS report.

   b. Add text describing the soil-to-GW/SW modeling evaluation with emphasis on better clarifying exceedance locations and where contamination has already been addressed (i.e., source removed during IAs performed at the Site).

   c. Evaluate TPHs in the Oil Stain Area based on the sum of TPH-D and TPH-HO concentrations compared to the SL of 500 ug/L.

      i. Pending the results of the evaluation, revise the Remedial Alternatives presented in the FS to include active remediation of soil exceedances in the Oil Stain Area for the protection of groundwater.

Summary of Path Forward

Below is a summary of the action items from the Solid Wood, Inc. Site RI/FS Groundwater Discussion:

1. Evaluate soil concentrations for TPHs in the Oil Stain Area based on Ecology's combined SL for total TPHs (500 ug/L) for the protection of potable groundwater.
2. Re-evaluate the Remedial Alternatives assembled in the FS based on the evaluation of TPHs in the Oil Stain Area.

Enclosures

Attachment #1	Solid Wood, Inc. Site RI/FS RTC Groundwater Presentation (dated 11/02/2021)

West Bay Park RI/FS

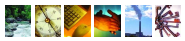
(Solid Wood Inc. Site)

GROUNDWATER DISCUSSION

Response/Discussion of Ecology's Significant Comments

and

Path Forward for the RI/FS Report

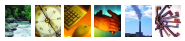


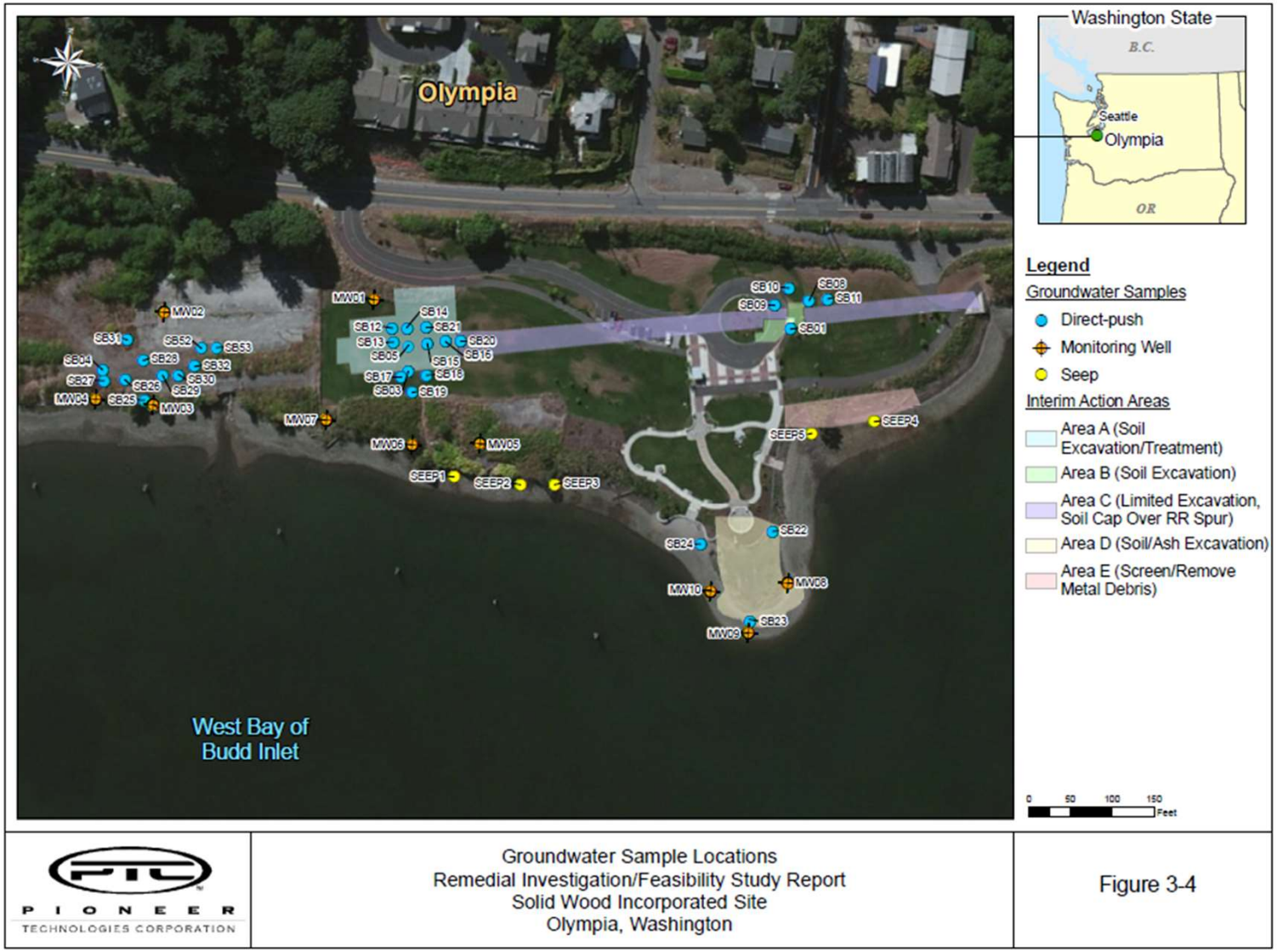
Purpose and Meeting Agenda

- The purpose of this meeting is for the City and Ecology to agree on the path forward for evaluating groundwater in the RI/FS
  - Discussion focuses on classification of groundwater and the Soil-to-Groundwater/Surface Water Pathway (Soil-to-GW/SW)
  - Make a determination if characterization of groundwater at West Bay is complete based on the results of preliminary groundwater evaluations
- Review, clarify, discuss, and respond to GROUNDWATER comments provided by Ecology on May 19, 2021 and follow up to July 13, 2021 meeting:
  - Groundwater Potability (Comments #8 and #14)
  - Soil-to-GW/SW Pathway (Comments #14, #15 and #16)
- Response/Discussion:
  - Present preliminary evaluation of groundwater at the Site based on surface water screening levels (presented in RI/FS) compared to the lesser of potable groundwater cleanup levels and surface water cleanup levels.
- Meeting minutes will be sent out following this meeting
  - The City will move forward with the action items identified as an outcome of this meeting

Groundwater Potability
Ecology Comments #8 and #14

- Ecology Comment: Currently there is insufficient data for Ecology to conclude that the "Harbor Island exemption" is applicable for the Site. WAC 173-340-720(2)(d) lists specific criteria, each of which must be satisfied…
- Recap of Previous Discussion (07/13/2021):
  - Harbor Island Exemption was not based on well yield data as described in Ecology's comment
  - Groundwater at the Site is very shallow (4 – 14 feet bgs)
  - MW03, MW04, MW05, MW06, MW07, MW08, MW09, MW10 installed on the shoreline
  - MW01 and MW02 are located slightly inland (~100 to 150 feet from shoreline)
  - 2014 study of GW and SEEP samples showed that Copper and Nickel concentrations in GW were similar to background concentrations in Budd Inlet. This conclusively demonstrated that the groundwater on site is hydraulically connected and is significantly impacted by surface water in Budd Inlet.
  - Additionally, typical chloride concentrations in groundwater are approximately 100 mg/L, but chloride concentrations in groundwater have ranged from 1,100 mg/L to 13,000 mg/L. This is further evidence that groundwater is hydraulically connected to surface water.
- The City does not agree that groundwater at the Site should be classified as potable <u>but is moving forward, per Ecology's comments, with a potable water evaluation in the RI/FS Report</u>.





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Groundwater Sample Locations
Remedial Investigation/Feasibility Study Report
Solid Wood Incorporated Site
Olympia, Washington

Figure 3-4

CW5

Preliminary Groundwater COC Evaluation

Constituent	Maximum Detected Concentration (µg/L)	MTCA Method A Groundwater CUL[a] (µg/L)	MCL[2] (µg/L)	Updated GW SLs (based on Surface Water) (µg/L)	Lesser of Method A GW CUL and MCL (µg/L)	Potable SL < SW SL?	Stations with Exceedances of Lesser of Method A GW CUL and/or MCL	Stations with Exceedances of GW CLs presented in 2015 RI/FS Report.	Stations with Exceedances of Method A GW and do NOT Exceed GW CLs in 2015 RI/FS Report
TPH									
TPH-D	2,200	500	--	500	500	FALSE	SB03, SB21	SB03, SB21	--
TPH-HO	11,000	500	--	500	500	FALSE	SB31, SB03, SB12, SB13, SB15, SB17, SB19, SB21	SB31, SB03, SB12, SB13, SB15, SB17, SB19, SB21	--
Metals									
Antimony (Total)	3.4	--	6	90	6	TRUE	N/A	--	--
Arsenic (Total)	9.1	5	10	10	5	TRUE	SB03	SB03	--
Beryllium (Total)	0.74	--	4	273	4	TRUE	N/A	--	--
Cadmium (Total)	5.1	5	5	7.9	5	TRUE	SB03	N/A	SB03
Chromium (Total)	93	100	100	243,056	100	TRUE	N/A	--	--
Copper (Total)	160	--	1,300	3.1	3.1	FALSE	Natural Background	Natural Background	--
Lead (Total)	130	15	15	5.6	6	FALSE	SB03, SB04	SB03, SB04	--
Mercury (Total)	0.35	2	2	0.025	0.025	FALSE	N/A	SB03	--
Nickel (Total)	510	--	100	8.2	8.2	FALSE	Natural Background	Natural Background	--
Selenium (Total)	2.1	--	50	71	50	TRUE	N/A	--	--
Silver (Total)	ND	--	100	1.9	1.90	FALSE	--	--	--
				0.22	0.22	FALSE	N/A	SB03	--
				81	81	FALSE	N/A	SB03	--
				1.6	1.6	FALSE	--	--	--
				31	31	FALSE	--	--	--
				4,938	160	TRUE	--	--	--
				130	130	FALSE	--	--	--
				0.018	0.018	FALSE	SB04, SB13	SB01, SB03, SB04, SB13, SB15	--
				1,000	1,000	FALSE	--	--	--
				0.0000051	0.0000051	FALSE	--	--	--

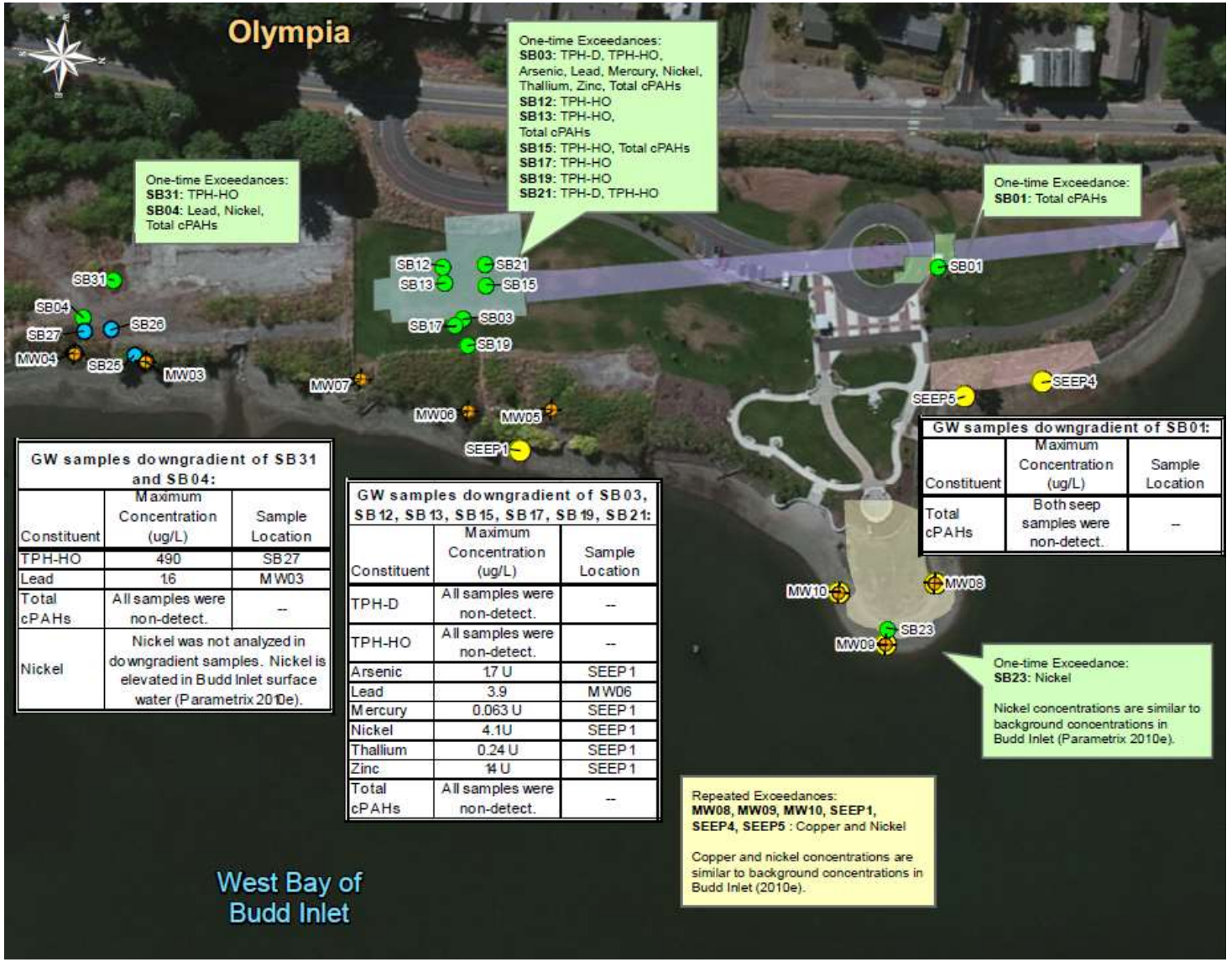
Key Findings:

- All Exceedances are in Direct Push Borings.
- Most were removed during IAs.
- No Exceedances in Monitoring Wells.

Values were updated based on Ecology Comment #25a. Values are the most stringent of all applicable or relevant and appropriate requirements (ARAR) values referenced in WAC 173-340-730(3)(b)(i) (i.e., Chapter 173-201A WAC, Section 304 of the Clean Water Act, and 40 CFR 131) for marine waters. Obtained from CLARC (October 2021).

Slide 5

CW5 Chris Waldron, 11/1/2021



GW samples downgradient of SB31 and SB04:

Constituent	Maximum Concentration (ug/L)	Sample Location
TPH-HO	490	SB27
Lead	16	MW03
Total cPAHs	All samples were non-detect.	--
Nickel	Nickel was not analyzed in downgradient samples. Nickel is elevated in Budd Inlet surface water (Parametrix 2010e).	

GW samples downgradient of SB03, SB12, SB13, SB15, SB17, SB19, SB21:

Constituent	Maximum Concentration (ug/L)	Sample Location
TPH-D	All samples were non-detect.	--
TPH-HO	All samples were non-detect.	--
Arsenic	17 U	SEEP1
Lead	3.9	MW06
Mercury	0.063 U	SEEP1
Nickel	4.1U	SEEP1
Thallium	0.24 U	SEEP1
Zinc	14 U	SEEP1
Total cPAHs	All samples were non-detect.	--

GW samples downgradient of SB01:

Constituent	Maximum Concentration (ug/L)	Sample Location
Total cPAHs	Both seep samples were non-detect.	--

One-time Exceedance:
SB23: Nickel

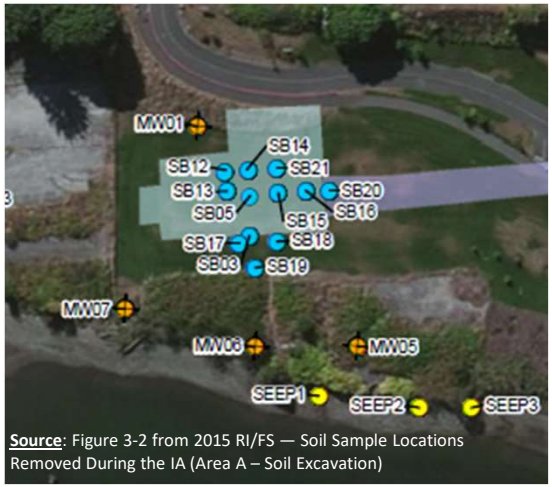
Nickel concentrations are similar to background concentrations in Budd Inlet (Parametrix 2010e).

Repeated Exceedances:
MW08, MW09, MW10, SEEP1, SEEP4, SEEP5 : Copper and Nickel

Copper and nickel concentrations are similar to background concentrations in Budd Inlet (2010e).

Groundwater COC Evaluation (Continued)

- TPHs
  - TPH-D exceedance in SB03, SB21
  - TPH-HO exceedance in SB03, SB12, SB13, SB15, SB17, SB19, SB21, SB31
  - No exceedance in four quarters of groundwater monitoring at MWs downgradient from exceedance locations (WAC 173-340-720[9][a]) or in a downgradient sample collected.
  - Indication contamination has not migrated
  - GW monitoring results (no exceedances) are representative of current conditions since source contamination (soil) was removed as IA in Area A
- Arsenic
  - Only exceedance in SB03 (soil removed as part of IA in Area A)
  - Downgradient concentrations were non-detect, indication contamination is not migrating
- Cadmium
  - Only exceedance in SB03 (soil removed as part of IA in Area A)
  - Maximum detected concentration was 5.1 ug/L, only slightly exceeds GW CUL (MCL = 5.0 ug/L)
  - Downgradient concentrations were non-exceedance and/or non-detect
- Lead
  - Exceedances in SB03 (removed during IA Area A) and SB04.
  - No exceedance in four quarters of groundwater monitoring at MWs downgradient from exceedance locations (WAC 173-340-720[9][a]) or in a downgradient sample collected.



Source: Figure 3-2 from 2015 RI/FS — Soil Sample Locations Removed During the IA (Area A – Soil Excavation)

Source: Figure 3-4 from 2015 RI/FS – Groundwater Sample Locations (Area A – Soil Excavation)

Groundwater COC Evaluation (Continued)

- Mercury
  - Only exceedance in SB03 (soil removed as part of IA in Area A)
  - Downgradient concentrations were non-detect, indication contamination is not migrating

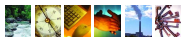
- Total cPAHs
  - Exceedance: SB01, SB03, SB04, SB13, SB15
    - SB03, SB13, SB15 were removed during IA in Area A
    - SB01 was removed during IA in Area B
  - No exceedance in four quarters of groundwater monitoring at MWs downgradient from exceedance locations (WAC 173-340-720[9][a]) or in a downgradient sample collected.

- Copper and Nickel
  - Copper and Nickel exceedances were attributed to background concentrations in surface water due to the proximity of Site groundwater to Budd Inlet surface water (Parametrix 2014).

Source: Figure 3-4 from 2015 RI/FS Report – Groundwater Sample Locations

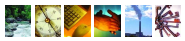
Soil-to-GW/SW Pathway

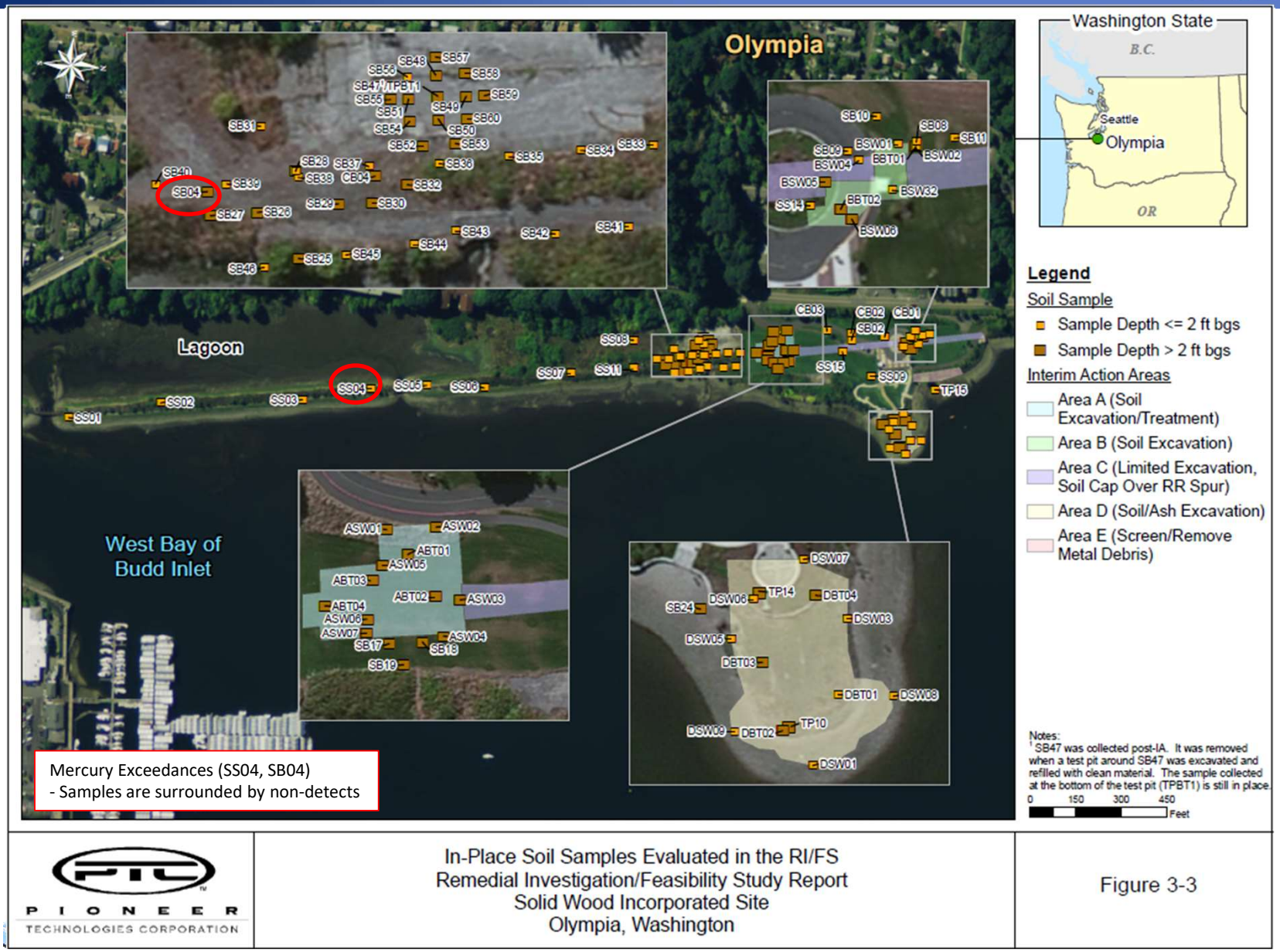
- Ecology Comment: Based on the data collected to date, as indicated in the responses above, Ecology does not agree that the Cap/Cover Alternative adequately protects groundwater.
- Recap of Previous Discussion (07/13/2021):
  - Soil-to-GW/SW Pathway is Incomplete:
    - Empirical Demonstration – 4 Quarters of groundwater data collected from MWs showed no exceedances of MTCA CULs
      - All groundwater exceedances were "one-time" exceedances in direct push borings and most were removed during the interim actions (IAs)
    - Modeling-Evaluation
      - MTCA 3-Phase Model was performed in the RI (Section 3.3.4.1)
        - Calculated per WAC 173-340-747(3)(a)
      - Only copper and nickel were detected at concentrations exceeding soil-to-gw/sw screening levels
        - Copper and nickel exceedances were attributed to background concentrations in surface water due to the proximity of Site groundwater to Budd Inlet surface water (Parametrix 2014).



Preliminary Soil-to-GW/SW COC Evaluation

Constituent	Potable Water CUL[a] (ug/L)	Updated Surface Water SL (2021) (ug/L)	Lesser of Potable CUL and SW SL (ug/L)	Soil-to-GW SL (mg/kg)	Maximum Detected Concentration (mg/kg)	Does the Maximum Concentration Exceed Soil-to-GW?	Soil Locations Exceeding Soil-to-GW SLs (2021 Evaluation)	Soil Locations Exceeding Soil-to-SW SLs (2015 Evaluation)
TPH								
TPH-D	500	500	500	No Value	170	N/A		
TPH-HO	500	500	500	No Value	12,000	N/A		
Metals								
Antimony (Total)	6.0	90	6.0	5.4	2.3	No		
Arsenic (Total)	5.0	10	5	2.9	2.7	No		
Beryllium (Total)	4.0	273	4.0	63	0.16	No		
Cadmium (Total)	5.0	7.9	5.0	0.67	0.54	No		
Chromium (Total)	100	243,056	100	2,000	32	No		
Copper (Total)	1,300	3.1	3.1	1.4	67	Yes	Natural Background	Natural Background
Lead (Total)	15	5.6	5.6	1,120	30	No		
Mercury (Total)	2.0	0.025	0.025	0.026	0.13	Yes	SB04, SS04	
Nickel (Total)	100	8.2	8.2	11	34	Yes	Natural Background	Natural Background
Selenium (Total)	50	71	50	5.0	1.9	No		
Silver (Total)	100	1.9	1.9	0.32	0	No		
Thallium (Total)	2.0	0.22	0.22	0.31	0	No		
Zinc (Total)	5,000	81	81	100	98	No		
VOCs								
Benzene	5.0	1.6	2	0.0043	0.0	No		
Ethylbenzene	700	31	31	0.18	0.0	No		
Naphthalene	160	4,938	160	3.9	2.8	No		
Toluene	1,000	130	130	0.57	0.038	No		
Total cPAHs	0.10	0.018	0.018	0.35	0.31	No		
Total Xylenes	1,000	1,000	1,000	6.3	0.0010	No		
Dioxins/Furans								
Total TCDD-TEQ	0.000030	0.0000051	0.0000051	No Value	11	N/A		





In-Place Soil Samples Evaluated in the RI/FS
Remedial Investigation/Feasibility Study Report
Solid Wood Incorporated Site
Olympia, Washington

Figure 3-3

Conclusions/Discussion

- Evaluation of multiple lines of evidence and empirical data demonstrate that groundwater on the West Bay Site is not a significant concern
  - Determination is made using MTCA Method A CULs for potable water and MCLs
    - For the soil-to-GW/SW pathway, the more stringent between the surface water criteria and potable water CULs were used
    - No groundwater or soil-to-GW/SW COCs were identified as part of this evaluation
  - MW03, MW04, MW05, MW06, MW07, MW08, MW09, MW10 installed on the shoreline
    - In accordance with WAC 173-340-720[9][a] – 4 Quarters of groundwater data collected from MWs showed no exceedances of MTCA CULs
    - Exceedances were one-time exceedances in direct push samples
      - These samples were removed as part of the IAs
      - Exceedances were surrounded by non-exceedances
      - Concentrations were non-detect downgradient of exceedance
  - Primary contaminants of concern are TPHs and metals
    - Screening levels in the 2015 RI/FS were (in some cases) lower than the potable water screening levels
    - 2015 RI/FS screening levels were based on protection of surface water and metals are more toxic to aquatic receptors than humans

Path Forward

- Characterization of groundwater at the Site is considered complete; therefore, no additional groundwater samples are proposed at the Site. This determination is supported by:
  - Empirical Groundwater Data Evaluation
  - Soil-to-GW/SW Pathway Evaluation
- Proposed path forward in the RI/FS:
  - Evaluate empirical groundwater data using MTCA Method A potable groundwater CULs
  - Evaluate the soil-to-GW/SW pathway using the more stringent of the surface water SLs and potable groundwater CULs
  - The RI/FS will be revised to better clarify exceedance locations, soil samples that are no longer in place (NLIP), and where contamination has already been addressed

Questions?