

Seeds, Tena (ECY)

From: Kristin Anderson <Kristin.Anderson@floydsnider.com>
Sent: Wednesday, April 5, 2023 9:58 AM
To: Seeds, Tena (ECY)
Cc: Kim Hempel; Lynn Grochala
Subject: Time Oil Bulk Terminal- Q1 Groundwater draft summary materials
Attachments: Int. WBZ GW Elevations Q1 2023.mxd.pdf; Shallow WBZ GW Elevations Q1 2023.mxd.pdf; TOC Groundwater IHSs Q1 2023.pdf

Hi Tena,

Attached are the draft summary materials you requested for the Q1 groundwater monitoring event: a table of IHS results (also showing the most recent pre-remediation results) and groundwater elevation contour maps for the shallow and intermediate WBZs.

Please note that these are considered drafts for discussion purposes, so we have provided them separately from the quarterly report. We anticipate preparing similar drafts for Q2 and Q3 to facilitate the check-in meeting following Q3, with final versions to be included in the 2023 annual report.

The crew will be in the field to complete Q2 monitoring this Friday, April 7.

Thanks,
Kristin

Kristin Anderson, LHG Senior Geologist (she/her)

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Preliminary Draft
Pre- and Post-Remediation Groundwater Results for Indicator Hazardous Substances

Analyte Class		Total Metals	TPH		VOCs	cVOCs		SVOCs	
Analyte		Arsenic	GRO	Total DRO + ORO	Benzene	TCE	cis-1,2-DCE	Vinyl Chloride	
Unit		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Cleanup Level		5.0	800	500	0.44	0.50		0.20	
Parcel	Location	Sample Date							
Bulk Terminal	01MW12								
	Pre-remediation	4/30/19		100 U	590 ⁽¹⁾	3.0			
	Post-remediation	1/31/23		100 U	1,000 ⁽¹⁾	0.35 U			
	01MW19/01MW19R								
	Pre-remediation	4/30/19		10,000	1,900 ⁽¹⁾	2,600	1.0 U	1.0 U	0.20 U
	Post-remediation	1/31/23		990	910 ⁽¹⁾	5.2			
	01MW35								
	Pre-remediation	5/1/19		100 U	550 ⁽¹⁾	0.35 UJ			
	Post-remediation	1/31/23		100 U	110 ⁽¹⁾	0.35 U			
	01MW40								
	Pre-remediation	4/30/19			1,100 ⁽¹⁾	0.35 UJ			
	Post-remediation	1/31/23		100 U	5,300 ⁽¹⁾	0.73			
	01MW49/01MW49R								
	Pre-remediation	5/1/19		100 U	850 ⁽¹⁾	0.35 UJ			
	Post-remediation	1/31/23		100 U	260 ⁽¹⁾	0.35 U			
	01MW66								
Pre-remediation	4/30/19		100 U	250	0.35 UJ			3.6	
Post-remediation	1/31/23							1.9	
01MW84									
Pre-remediation	5/1/19		8,400	2,800 ⁽¹⁾	5.0 U				
Post-remediation	1/31/23		2,300	810 ⁽¹⁾	0.35 U				
	1/31/23		2,200	830 ⁽¹⁾	0.35 U				
ASKO	01MW15								
	Pre-remediation	5/2/19		100 U	220 ⁽¹⁾	0.41	0.50 U	1.7	7.2
	Post-remediation	2/1/23					0.50 U	6.4	36
	01MW46								
	Pre-remediation	5/2/19			280 ⁽¹⁾	14	880	220	11
	Post-remediation	2/1/23				3.8	240	140	17
	01MW53								
	Pre-remediation	5/2/19			94 ⁽¹⁾	0.35 U	0.50 U	4.4	0.26
	Post-remediation	2/1/23					2.9	5.4	0.57
	01MW56								
	Pre-remediation	5/2/19			1,000 ⁽¹⁾	0.35 U	0.50 U	1.0 U	0.61
	Post-remediation	2/1/23					0.81	1.0 U	0.99
	01MW85								
	Pre-remediation	5/3/19			450 ⁽¹⁾		0.50 U	2.4	7.9
	Post-remediation	1/31/23					5.7	1,200	13
	01MW108								
Pre-remediation	5/3/19					0.50 U	1.0 U	0.33	
Post-remediation	2/1/23					0.50 U	1.0 U	0.27	
MW05									
Pre-remediation	5/3/19		140	310 ⁽¹⁾	1.0	240	120	27	
Post-remediation	2/1/23				1.4	140	360	6.8	
MW06									
Pre-remediation	5/3/19			370 ⁽¹⁾	2.6	330	31	2.8	
Post-remediation	2/1/23				0.35 U	0.50 U	1.0 U	2.6	
East Waterfront	02MW04/02MW04R								
	Pre-remediation	5/18/16		3,100	2,000 ⁽¹⁾	19			
		5/3/19				3.7			
	Post-remediation	2/1/23		100 U	69 ⁽¹⁾	0.35 U			
	02MW07								
	Pre-remediation	5/19/16		100 U	160 ⁽¹⁾	1.0 U			
		5/3/19			670 ⁽¹⁾				
		7/25/19	3.9						
	Post-remediation	2/1/23	1.0 U	100 U	86 ⁽¹⁾	0.35 U			
	02MW19								
Pre-remediation	5/6/19		100 U	380 ⁽¹⁾					
	7/25/19	14							
Post-remediation	2/1/23	3.3	100 U	150 ⁽¹⁾	0.35 U				

Notes:

Blanks are intentional. Data not collected for specific analyte.

BOLD Detected exceedance of cleanup level.

Italic Reporting limit exceeds cleanup level.

¹ Laboratory noted that the sample chromatographic pattern does not resemble the fuel standard used for quantitation for one or more of the detected concentrations in the sum.

Abbreviations:

- cVOC Chlorinated volatile organic compound
- DCE Dichloroethene
- DRO Diesel-range organics
- GRO Gasoline-range organics
- µg/L Micrograms per liter
- ORO Oil-range organics
- Penta Pentachlorophenol
- SVOC Semivolatile organic compound
- TCE Trichloroethene
- TPH Total petroleum hydrocarbon
- VOC Volatile organic compound

Qualifiers:

- U Analyte was not detected at the given reporting limit.
- UJ Analyte was not detected at the given reporting limit, which is considered estimated.

Legend

- Groundwater Contour (feet NAVD 88)
- Shallow WBZ Groundwater Flow Direction

Existing Monitoring Well Locations

- Shallow WBZ Monitoring Well

Well Decommissioning Plan

- Damaged—Decommission Required
- Decommission During Redevelopment

Cleanup Action Components

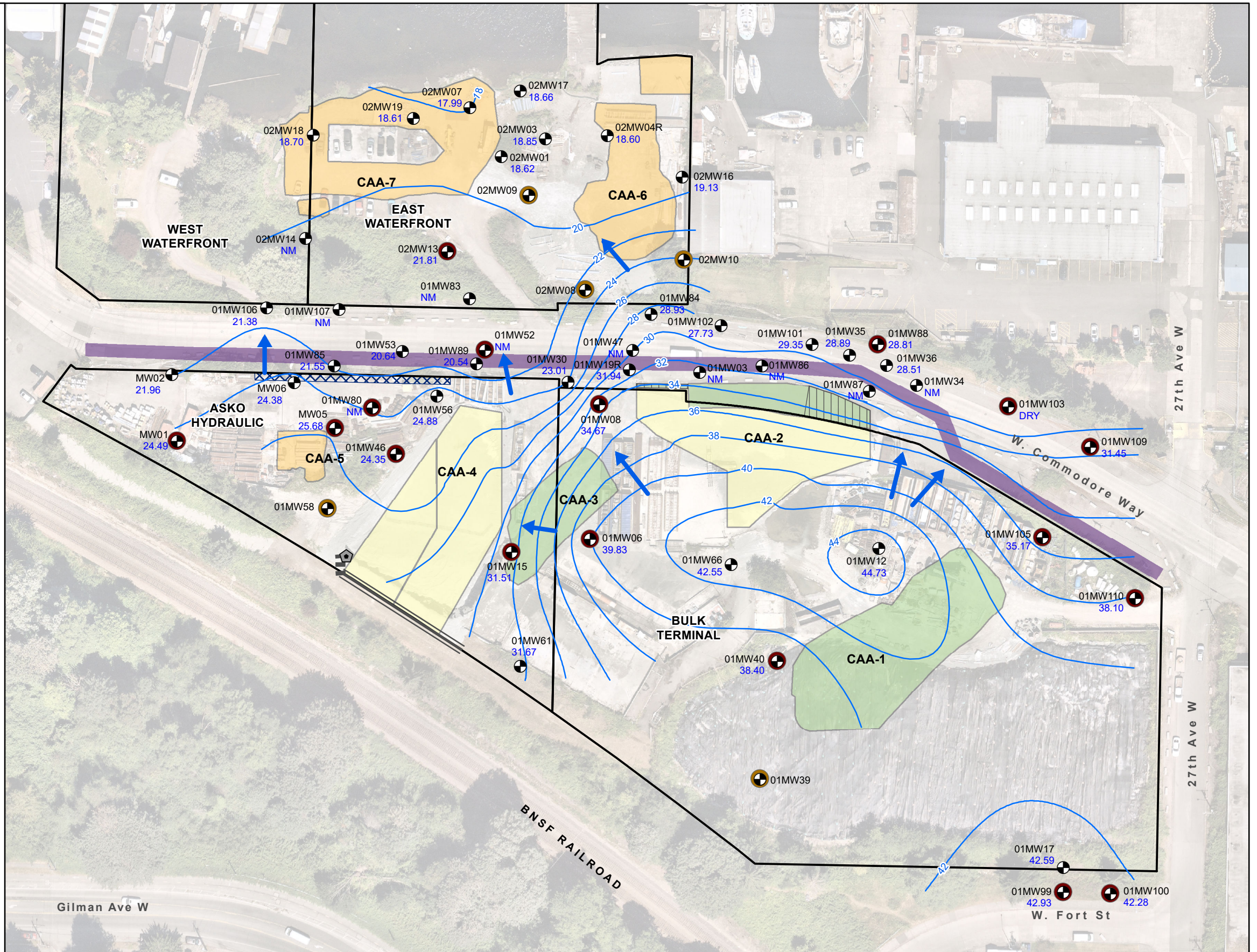
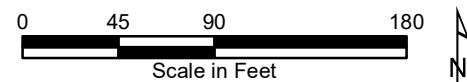
- Excavated to CULs
- Excavated to RELs
- In Situ Stabilization/Solidification
- PlumeStop Injection
- ORC-A Treatment
- Interceptor Trench
- PRB Wall for Trench
- Gravity Well

Other Site Features

- Property Boundary for the Former TOC Seattle Terminal
- Conditional Point of Compliance

Notes:
 · Depth to water measurements not collected at select wells that were inaccessible because they are located within the W. Commodore Way right of way or buried by gravel or vegetation.
 · Parcel boundaries obtained from King County Geographic Information Systems Center, 2011. Lot lines are approximate. Not for legal use.
 · Orthoimagery obtained from Nearmap, 2018.

Abbreviations:
 CUL = Cleanup level
 ORC-A = Oxygen Release Compound Advanced
 NAVD 88 = North American Vertical Datum of 1988
 NM = Not measured
 PRB = Permeable reactive barrier
 REL = Remediation level
 TOC = TOC Holdings Co. and any predecessor entity including Time Oil Company
 WBZ = Water-bearing zone



Legend

- Groundwater Contour (feet NAVD 88)
- Intermediate WBZ Groundwater Flow Direction

Existing Monitoring Well Locations

- Intermediate WBZ Monitoring Well

Well Decommissioning Plan

- Damaged—Decommission Required
- Decommission During Redevelopment

Cleanup Action Components

- Excavated to CULs
- Excavated to RELs
- In Situ Stabilization/Solidification
- PlumeStop Injection
- ORC-A Treatment
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