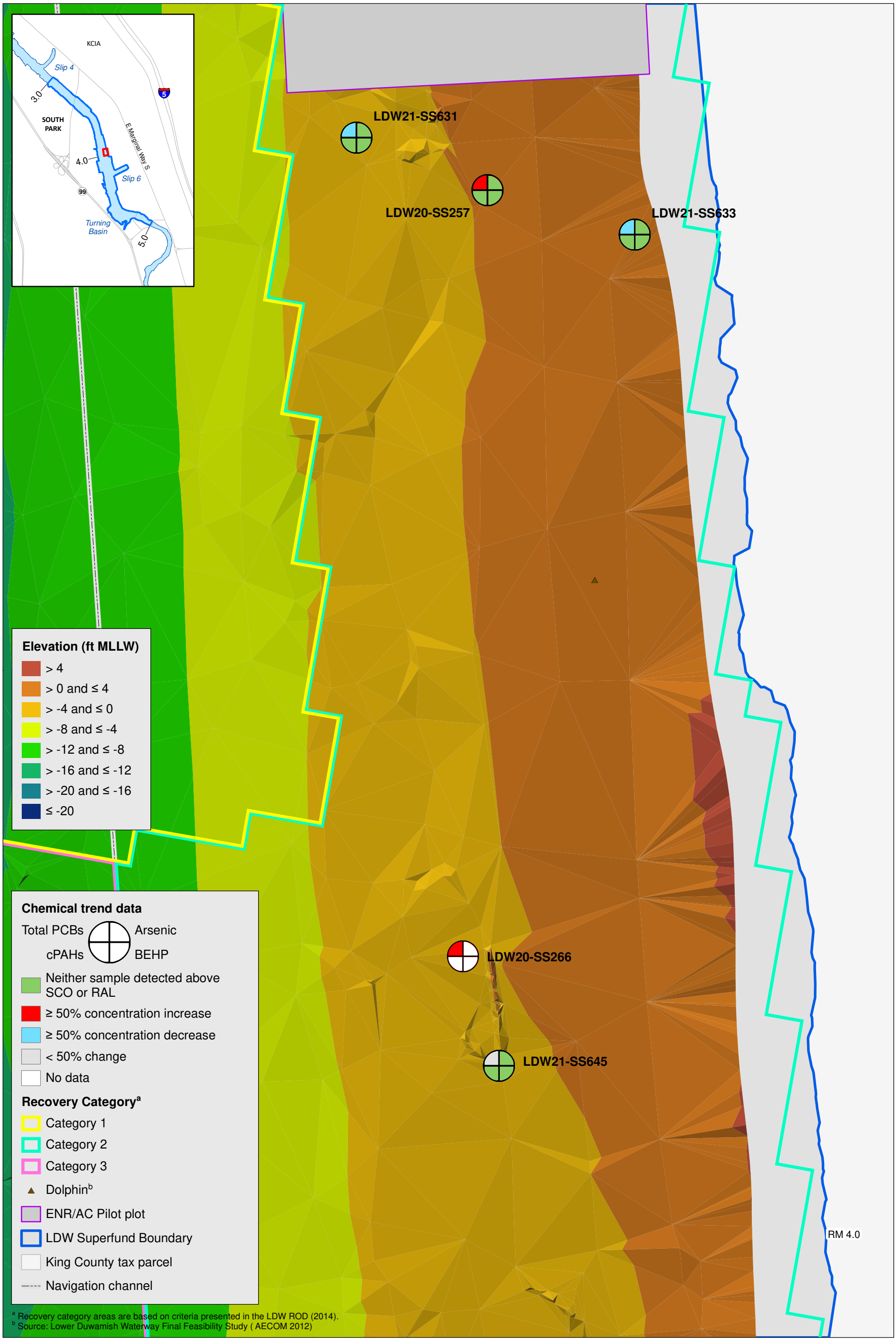

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N

0 25 50 Feet

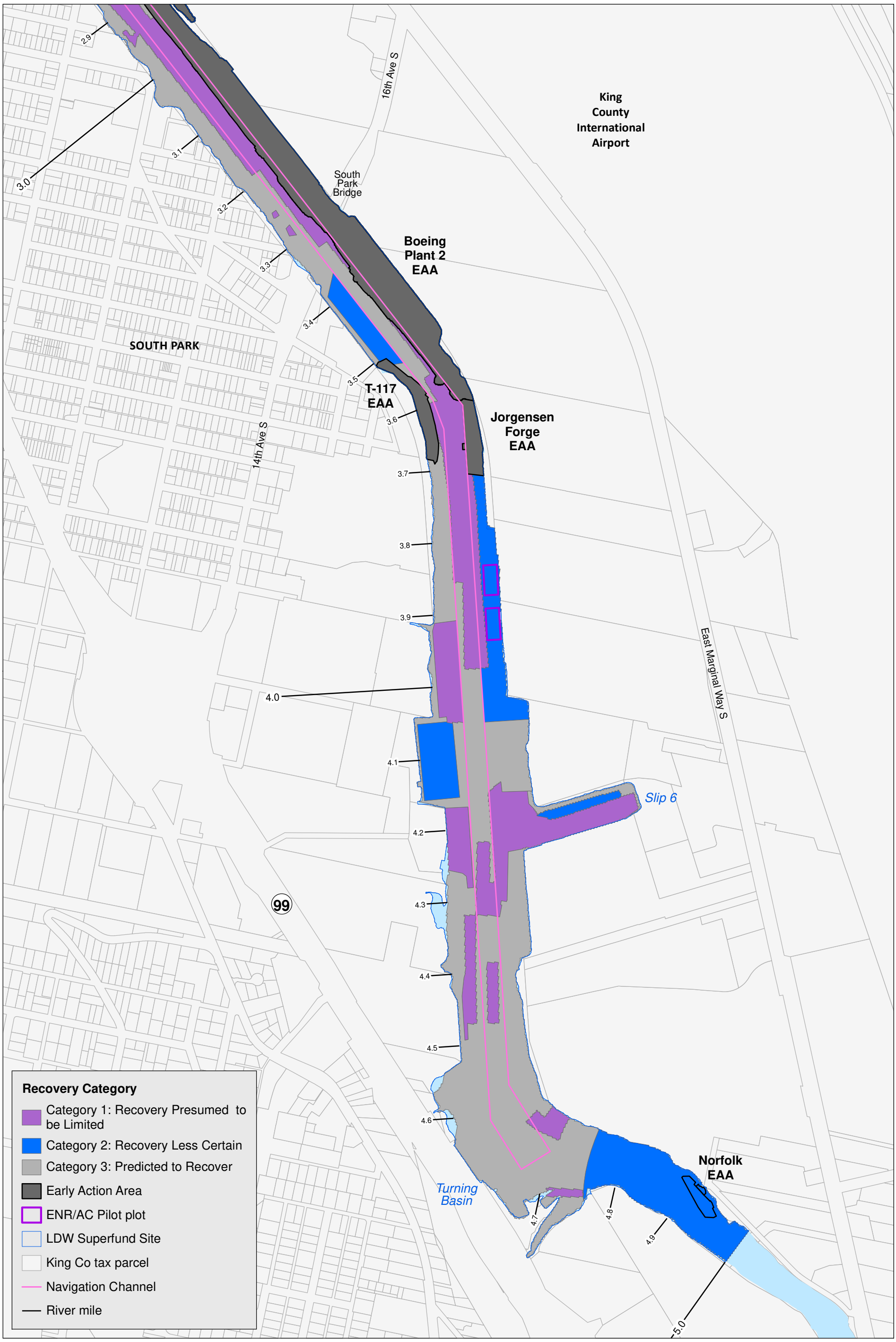
0 5 10 Meters

Map 3-1. Chemical trend data, RM 3.9 to RM 4.0 (east)

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

DRAFT

Prepared by craigh, 2/18/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-1 7109 Recommended recovery categories - A4.mxd



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N

0 500 1,000 Feet

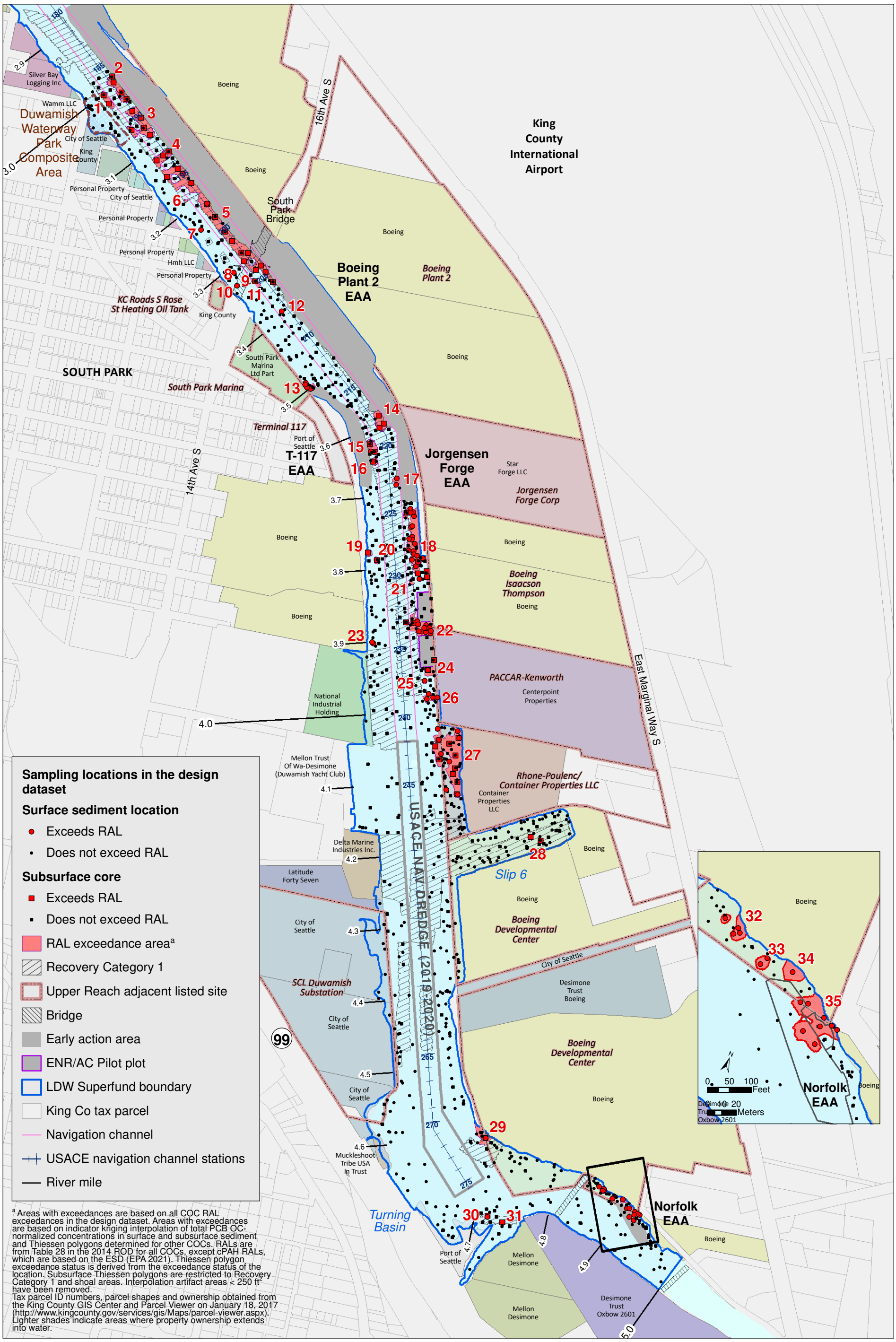
0 200 400 Meters

Map 3-2. Final recovery categories for the upper reach

PRE-DESIGN INVESTIGATION DATA EVALUTATION REPORT FOR THE LDW UPPER REACH

DRAFT

Prepared by craigh, 2/18/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-2 7109 Proposed recovery categories.mxd



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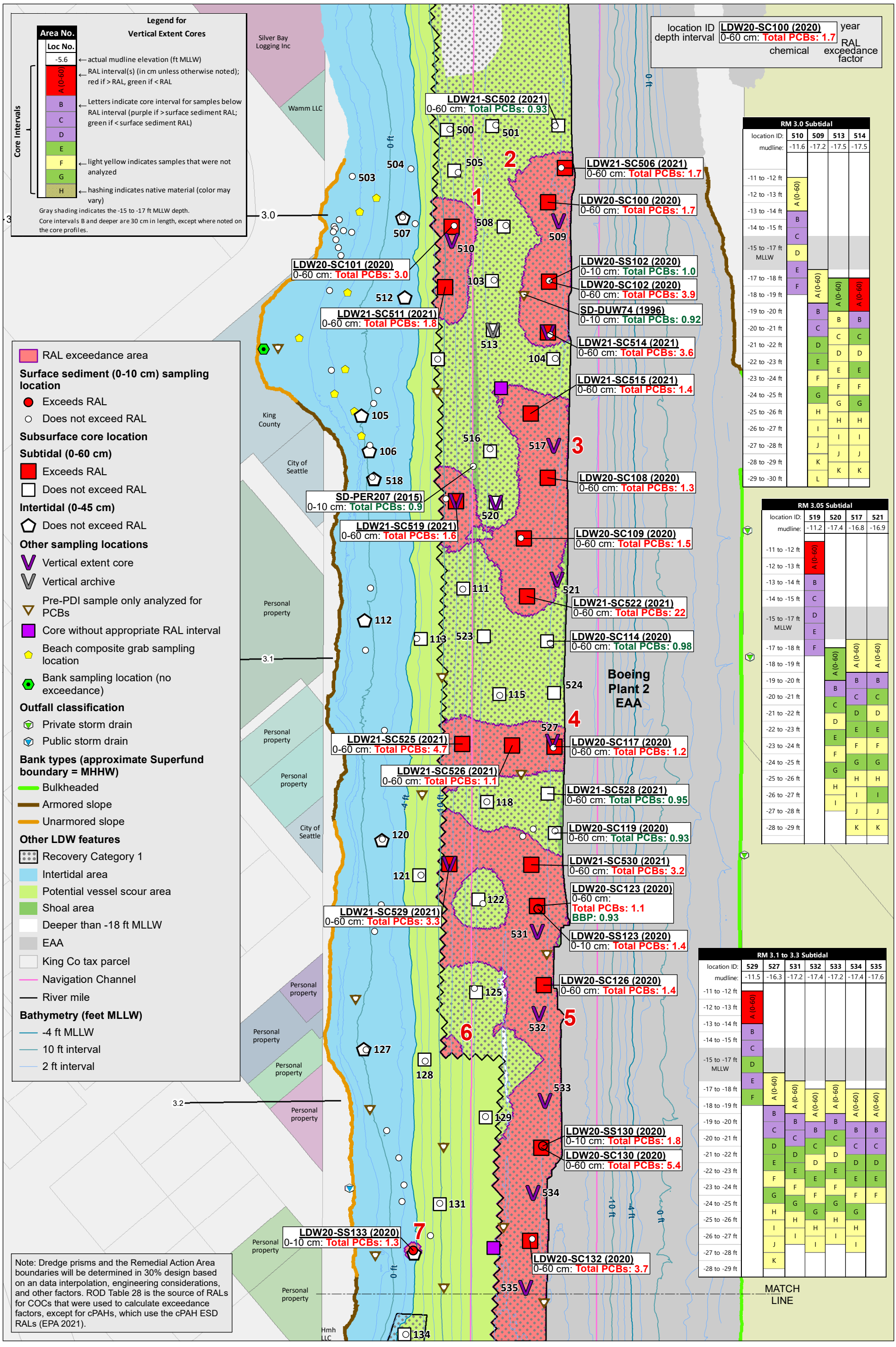
Map 3-3. RAL exceedance areas in the upper reach

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

DRAFT

Prepared by craigh, 2/21/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-3 7259 Prelim RAL exceedance areas wPropOwnership.mxd



Map 3-4a. RAL exceedance areas with design data, RM 3.0 to RM 3.2

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

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Prepared by craigh, 2/21/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-4a 7172 Upper Reach Ph2 Prelim Data - RM 3.0-3.2.mxd

location ID LDW20-SC100 (2020) year
depth interval 0-60 cm: Total PCBs: 1.7 RAL exceedance factor
chemical

Legend for Vertical Extent Cores

Area No.
Loc No.
-5.6 ← actual mudline elevation (ft MLLW)
Core Intervals: A (0-60) ← RAL interval(s) (in cm unless otherwise noted); red if > RAL, green if < RAL
B, C, D ← Letters indicate core interval for samples below RAL interval (purple if > surface sediment RAL; green if < surface sediment RAL)
E
F ← light yellow indicates samples that were not analyzed
G
H ← hashing indicates native material (color may vary)

Gray shading indicates the -15 to -17 ft MLLW depth.
Core intervals B and deeper are 30 cm in length, except where noted on the core profiles.

RM 3.1 to 3.3 Subtidal

location ID:	534	535	537	538	539
mudline:	-17.4	-17.6	-17.7	-19.9	-18.9
-11 to -12 ft					
-12 to -13 ft					
-13 to -14 ft					
-14 to -15 ft					
-15 to -17 ft MLLW					
-17 to -18 ft					
-18 to -19 ft	A (0-60)	A (0-60)	A (0-60)		
-19 to -20 ft	B	B	B		A (0-60)
-20 to -21 ft	C	C	C	A (0-60)	B
-21 to -22 ft	D	D	D	B	C
-22 to -23 ft	E	E	E	C	D
-23 to -24 ft	F	F	F	D	E
-24 to -25 ft	G			E	F
-25 to -26 ft	H			F	
-26 to -27 ft	I				
-27 to -28 ft					
-28 to -29 ft					

RM 3.3 W Intertidal

location ID:	543	545
mudline:	-3.5	-0.1
+1 to 0 ft		
0 to -1 ft		A (0-45)
-1 to -2 ft		B
-2 to -3 ft		C
-3 to -4 ft	A (0-45)	D
-4 to -5 ft	B	E
-5 to -6 ft	C	F
-6 to -7 ft	D	
-7 to -8 ft	E	
-8 to -9 ft	F	
-9 to -10 ft		

RM 3.35 Subtidal

location ID:	549	553	554
mudline:	-15.0	-20.0	-18.2
-14 to -15 ft			
-15 to -17 ft MLLW	A (0-60)		
-17 to -18 ft	B		
-18 to -19 ft	C		A (0-60)
-19 to -20 ft	D		
-20 to -21 ft	E	A (0-60)	B
-21 to -22 ft	F		C
-22 to -23 ft	G	B	D
-23 to -24 ft	H	C	E
-24 to -25 ft	I	D	F
-25 to -26 ft	J	E	
-26 to -27 ft	K	F	
-27 to -28 ft	L		
-28 to -29 ft	M		

RM 3.4 W

location ID:	LDW13	558
mudline:	-8.5	-9.5
-9 to -10 ft	0-2 ft	
-10 to -11 ft		A (SH 0-83)
-11 to -12 ft	2-6.5 ft	
-12 to -13 ft		B (SH (83-166)
-13 to -14 ft		
-14 to -15 ft		
-15 to -17 ft MLLW	6.5-8.5 ft	C (-15 to -17 ft)
-17 to -18 ft		D
-18 to -19 ft		E
-19 to -20 ft		F
-20 to -21 ft		G
-21 to -22 ft		H
-22 to -23 ft		I
-23 to -24 ft		J
-24 to -25 ft		K
-25 to -26 ft		L
-26 to -27 ft		M
-27 to -28 ft		N
-28 to -29 ft		O

South Park Marina

location ID:	560
mudline:	-2.9
-3 to -4 ft	
-4 to -5 ft	A (0-60)
-5 to -6 ft	B
-6 to -7 ft	C
-7 to -8 ft	D
-8 to -9 ft	E
-9 to -10 ft	F
-10 to -11 ft	G
-11 to -12 ft	H
-12 to -13 ft	I

South Park Marina is an intertidal area that was characterized with 0-60 cm samples for comparison with subtidal RALs because of the intended use of this area per the PDI QAPP.

Two cores were collected in this area. The results for both cores are presented in the core diagrams. Additional data will be collected in Phase III to determine the final RAL exceedance areas.

Note: Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an data interpolation, engineering considerations, and other factors. ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD RALs (EPA 2021).

RAL exceedance area

Surface sediment (0-10 cm) sampling location
- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)
- Exceeds RAL
- Does not exceed RAL

Intertidal (0-45 cm)
- Does not exceed RAL

Other sampling locations
- Vertical extent core
- Pre-PDI sample only analyzed for PCBs
- Core without appropriate RAL interval
- Bank sampling location (no exceedance)

Outfall classification
- Private storm drain
- Public storm drain

Bank types (approximate Superfund boundary = MHHW)
- Bulkheaded
- Armored slope
- Unarmored slope

Other LDW features
- Recovery Category 1
- Habitat restoration boundary
- Intertidal area
- Potential vessel scour area
- Shoal area
- Deeper than -18 ft MLLW
- Bridge footing
- Bridge
- Dock/pier/marina
- EAA
- King Co tax parcel
- Navigation Channel
- River mile

Bathymetry (feet MLLW)
- -4 ft MLLW
- 10 ft interval
- 2 ft interval

0 100 200 Feet
0 25 50 Meters

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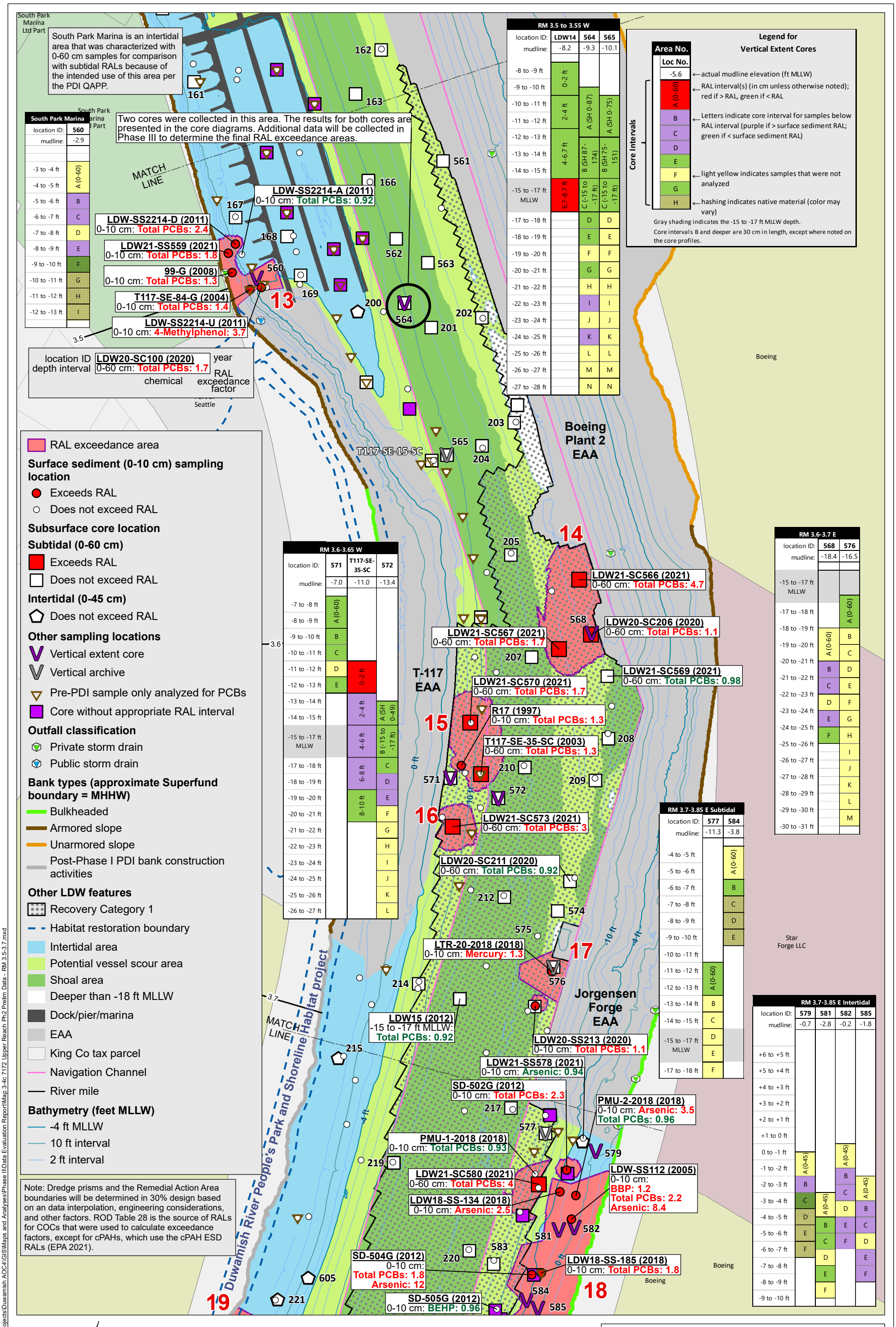
Lower Duwamish Waterway Group
Port of Seattle / City of Seattle / King County / The Boeing Company

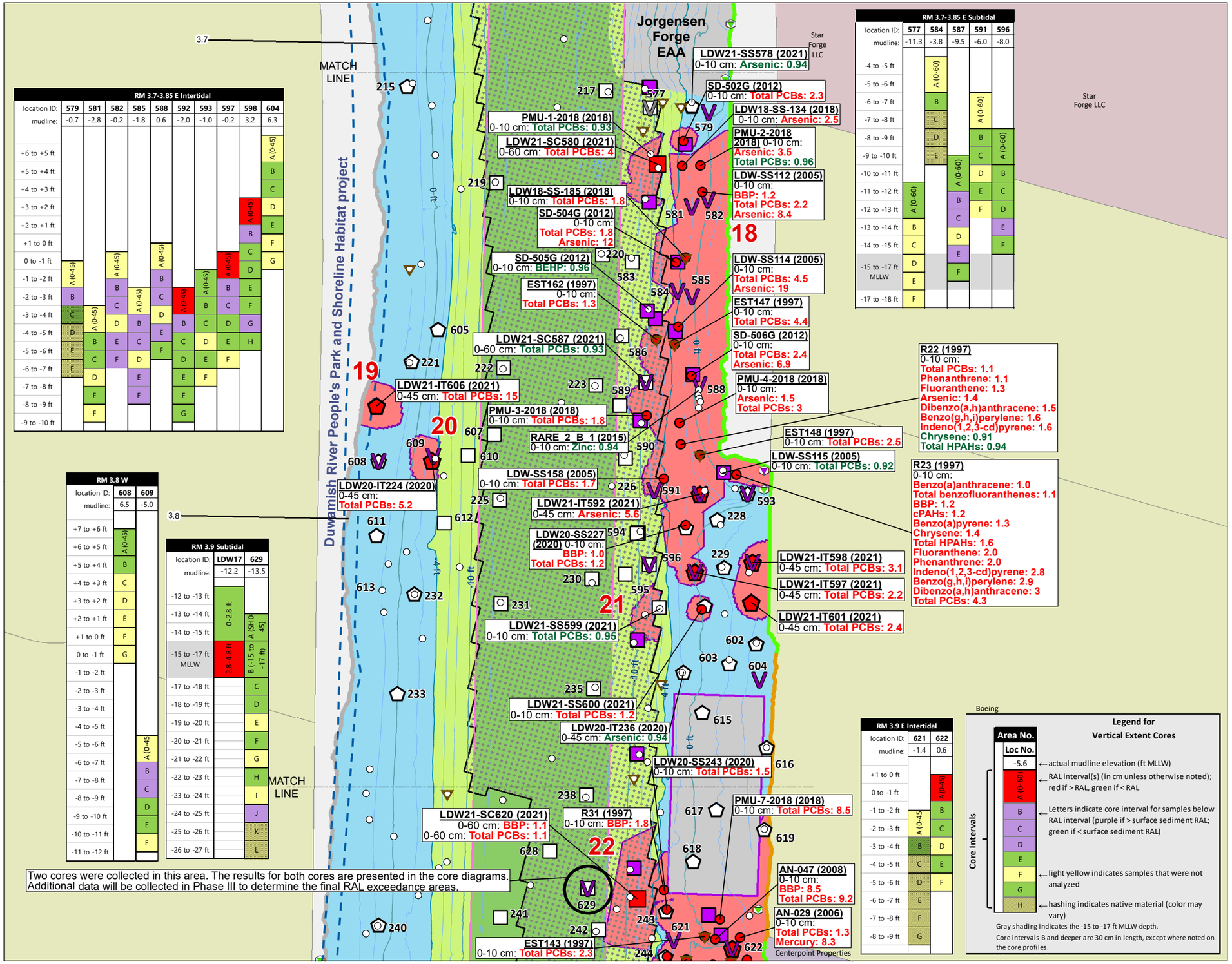
Map 3-4b. RAL exceedance areas with design data, RM 3.2 to RM 3.5

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

DRAFT

Prepared by craigh, 2/21/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-4b 7172 Upper Reach Ph2 Prelim Data - RM 3.2-3.5.mxd


South Park Marina is an intertidal area that was characterized with 0-60 cm samples for comparison with subtidal RALs because of the intended use of this area per the PDI QAPP.
Two cores were collected in this area. The results for both cores are presented in the core diagrams. Additional data will be collected in Phase III to determine the final RAL exceedance areas.
MATCH LINE
LDW-SS2214-A (2011) 0-10 cm: Total PCBs: 0.92
LDW-SS2214-D (2011) 0-10 cm: Total PCBs: 2.4
LDW21-SS559 (2021) 0-10 cm: Total PCBs: 1.8
99-G (2008) 0-10 cm: Total PCBs: 1.3
T117-SE-84-G (2004) 0-10 cm: Total PCBs: 1.4
LDW-SS2214-U (2011) 0-10 cm: 4-Methylphenol: 3.7
location ID
depth interval
LDW20-SC100 (2020) 0-60 cm: Total PCBs: 1.7
year
chemical
RAL exceedance factor
T117-SE-15-SC
Boeing Plant 2 EAA
LDW21-SC566 (2021) 0-60 cm: Total PCBs: 4.7
LDW20-SC206 (2020) 0-60 cm: Total PCBs: 1.1
LDW21-SC567 (2021) 0-60 cm: Total PCBs: 1.7
LDW21-SC569 (2021) 0-60 cm: Total PCBs: 0.98
T-117 EAA
LDW21-SC570 (2021) 0-60 cm: Total PCBs: 1.7
R17 (1997) 0-10 cm: Total PCBs: 1.3
T117-SE-35-SC (2003) 0-60 cm: Total PCBs: 1.3
LDW21-SC573 (2021) 0-60 cm: Total PCBs: 3
LDW20-SC211 (2020) 0-60 cm: Total PCBs: 0.92
LTR-20-2018 (2018) 0-10 cm: Mercury: 1.3
Jorgensen Forge EAA
LDW15 (2012) -15 to -17 ft MLLW: Total PCBs: 0.92
LDW20-SS213 (2020) 0-10 cm: Total PCBs: 1.1
LDW21-SS578 (2021) 0-10 cm: Arsenic: 0.94
SD-502G (2012) 0-10 cm: Total PCBs: 2.3
PMU-2-2018 (2018) 0-10 cm: Arsenic: 3.5 Total PCBs: 0.96
PMU-1-2018 (2018) 0-10 cm: Total PCBs: 0.93
LDW21-SC580 (2021) 0-60 cm: Total PCBs: 4
LDW-SS112 (2005) 0-10 cm: BBP: 1.2 Total PCBs: 2.2 Arsenic: 8.4
LDW18-SS-134 (2018) 0-10 cm: Arsenic: 2.5
SD-504G (2012) 0-10 cm: Total PCBs: 1.8 Arsenic: 12
LDW18-SS-185 (2018) 0-10 cm: Total PCBs: 1.8
SD-505G (2012) 0-10 cm: BEHP: 0.96
Duwamish River People's Park and Shoreline Habitat project
Boeing
Star Forge LLC
Seattle
South Park Marina Ltd Part
RAL exceedance area
Surface sediment (0-10 cm) sampling location
Exceeds RAL
Does not exceed RAL
Subsurface core location
Subtidal (0-60 cm)
Exceeds RAL
Does not exceed RAL
Intertidal (0-45 cm)
Does not exceed RAL
Other sampling locations
Vertical extent core
Vertical archive
Pre-PDI sample only analyzed for PCBs
Core without appropriate RAL interval
Outfall classification
Private storm drain
Public storm drain
Bank types (approximate Superfund boundary = MHHW)
Bulkheaded
Armored slope
Unarmored slope
Post-Phase I PDI bank construction activities
Other LDW features
Recovery Category 1
Habitat restoration boundary
Intertidal area
Potential vessel scour area
Shoal area
Deeper than -18 ft MLLW
Dock/pier/marina
EAA
King Co tax parcel
Navigation Channel
River mile
Bathymetry (feet MLLW)
-4 ft MLLW
10 ft interval
2 ft interval
Note: Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an data interpolation, engineering considerations, and other factors. ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD RALs (EPA 2021).
Legend for Vertical Extent Cores
Area No.
Loc No.
-5.6 actual mudline elevation (ft MLLW)
A (0-60) RAL interval(s) (in cm unless otherwise noted); red if > RAL, green if < RAL
B Letters indicate core interval for samples below RAL interval (purple if > surface sediment RAL; green if < surface sediment RAL)
F light yellow indicates samples that were not analyzed
H hashing indicates native material (color may vary)
Core Intervals
Gray shading indicates the -15 to -17 ft MLLW depth.
Core intervals B and deeper are 30 cm in length, except where noted on the core profiles.
RM 3.5 to 3.55 W
RM 3.6-3.65 W
RM 3.6-3.7 E
RM 3.7-3.85 E Subtidal
RM 3.7-3.85 E Intertidal
South Park Marina
Windward environmental LLC
ANCHOR QEA
Lower Duwamish Waterway Group
Port of Seattle / City of Seattle / King County / The Boeing Company
0 100 200 Feet
0 25 50 Meters
Map 3-4c. RAL exceedance areas with design data, RM 3.5 to RM 3.7
Pre-Design Investigation Data Evalutation Report for the LDW Upper Reach
DRAFT
Prepared by craigh, 2/21/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-4c 7172 Upper Reach Ph2 Prelim Data - RM 3.5-3.7.mxd



RM 3.7-3.85 E Intertidal

location ID:	579	581	582	585	588	592	593	597	598	604
mudline:	-0.7	-2.8	-0.2	-1.8	0.6	-2.0	-1.0	-0.2	3.2	6.3
+6 to +5 ft										A (0-45)
+5 to +4 ft										B
+4 to +3 ft										C
+3 to +2 ft									A (0-45)	D
+2 to +1 ft									B	E
+1 to 0 ft									C	F
0 to -1 ft			A (0-45)		A (0-45)			A (0-45)	D	G
-1 to -2 ft	A (0-45)		B		B		A (0-45)	B	E	
-2 to -3 ft	B		C	A (0-45)	C	A (0-45)	B	C	F	
-3 to -4 ft	C	A (0-45)	D	B	D	B	C	D	G	
-4 to -5 ft	D	B	E	C	E	C	D	E	H	
-5 to -6 ft	E	C	F	D	F	D	E	F		
-6 to -7 ft	F	D		E		E	F			
-7 to -8 ft		E		F		F				
-8 to -9 ft		F				G				
-9 to -10 ft										

RM 3.7-3.85 E Subtidal

location ID:	577	584	587	591	596
mudline:	-11.3	-3.8	-9.5	-6.0	-8.0
-4 to -5 ft		A (0-60)			
-5 to -6 ft		B		A (0-60)	
-6 to -7 ft		C		B	A (0-60)
-7 to -8 ft		D		C	B
-8 to -9 ft		E	A (0-60)	D	C
-9 to -10 ft			B	E	D
-10 to -11 ft			C	F	E
-11 to -12 ft	A (0-60)		D		F
-12 to -13 ft	B		E		
-13 to -14 ft	C		F		
-14 to -15 ft	D				
-15 to -17 ft MLLW	E				
-17 to -18 ft	F				

RM 3.8 W

location ID:	608	609
mudline:	6.5	-5.0
+7 to +6 ft		
+6 to +5 ft	A (0-45)	
+5 to +4 ft	B	
+4 to +3 ft	C	
+3 to +2 ft	D	
+2 to +1 ft	E	
+1 to 0 ft	F	
0 to -1 ft	G	
-1 to -2 ft		
-2 to -3 ft		
-3 to -4 ft		
-4 to -5 ft		
-5 to -6 ft		A (0-45
-6 to -7 ft		B
-7 to -8 ft		C
-8 to -9 ft		D
-9 to -10 ft		E
-10 to -11 ft		F
-11 to -12 ft		

RM 3.9 Subtidal

location ID:	LDW17	629
mudline:	-12.2	-13.5
-12 to -13 ft	0-2.8 ft	
-13 to -14 ft		A (SHO 45)
-14 to -15 ft		
-15 to -17 ft MLLW	2.8-4.8 ft	B (-15 to -17 ft)
-17 to -18 ft		C
-18 to -19 ft		D
-19 to -20 ft		E
-20 to -21 ft		F
-21 to -22 ft		G
-22 to -23 ft		H
-23 to -24 ft		I
-24 to -25 ft		J
-25 to -26 ft		K
-26 to -27 ft		L

RM 3.9 E Intertidal

location ID:	621	622
mudline:	-1.4	0.6
+1 to 0 ft		
0 to -1 ft		A (0-45)
-1 to -2 ft	A (0-45	B
-2 to -3 ft		C
-3 to -4 ft	B	D
-4 to -5 ft	C	E
-5 to -6 ft	D	F
-6 to -7 ft	E	
-7 to -8 ft	F	
-8 to -9 ft	G	

Boeing

Legend for Vertical Extent Cores

Area No.
Loc No.
-5.6 ← actual mudline elevation (ft MLLW)
A (0-60) ← RAL interval(s) (in cm unless otherwise noted); red if > RAL, green if < RAL
B, C, D, E ← Letters indicate core interval for samples below RAL interval (purple if > surface sediment RAL; green if < surface sediment RAL)
F ← light yellow indicates samples that were not analyzed
G, H ← hashing indicates native material (color may vary)
Core Intervals

Gray shading indicates the -15 to -17 ft MLLW depth.
Core intervals B and deeper are 30 cm in length, except where noted on the core profiles.

RAL exceedance area

Surface sediment (0-10 cm) sampling location
- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)
- Exceeds RAL
- Does not exceed RAL

Intertidal (0-45 cm)
- Exceeds RAL
- Does not exceed RAL

Other sampling locations
- Vertical extent core
- Vertical archive
- Pre-PDI sample only analyzed for PCBs
- Core without appropriate RAL interval

Outfall classification
- EOF/storm drain
- Private storm drain

Bank types (approximate Superfund boundary = MHHW)
- Bulkheaded
- Unarmored slope
- Post-Phase I PDI bank construction activities

Other LDW features
- Recovery Category 1
- Habitat restoration boundary
- Intertidal area
- Potential vessel scour area
- Shoal area
- EAA
- ENR/AC Pilot plot
- King Co tax parcel
- Navigation Channel
- River mile

Bathymetry (feet MLLW)
- -4 ft MLLW
- 10 ft interval
- 2 ft interval

Note: Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an data interpolation, engineering considerations, and other factors. ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD RALs (EPA 2021).

N
0 100 200 Feet
0 25 50 Meters

Map 3-4d. RAL exceedance areas with design data, RM 3.7 to RM 3.85

PRE-DESIGN INVESTIGATION DATA EVALUTATION REPORT FOR THE LDW UPPER REACH **DRAFT**

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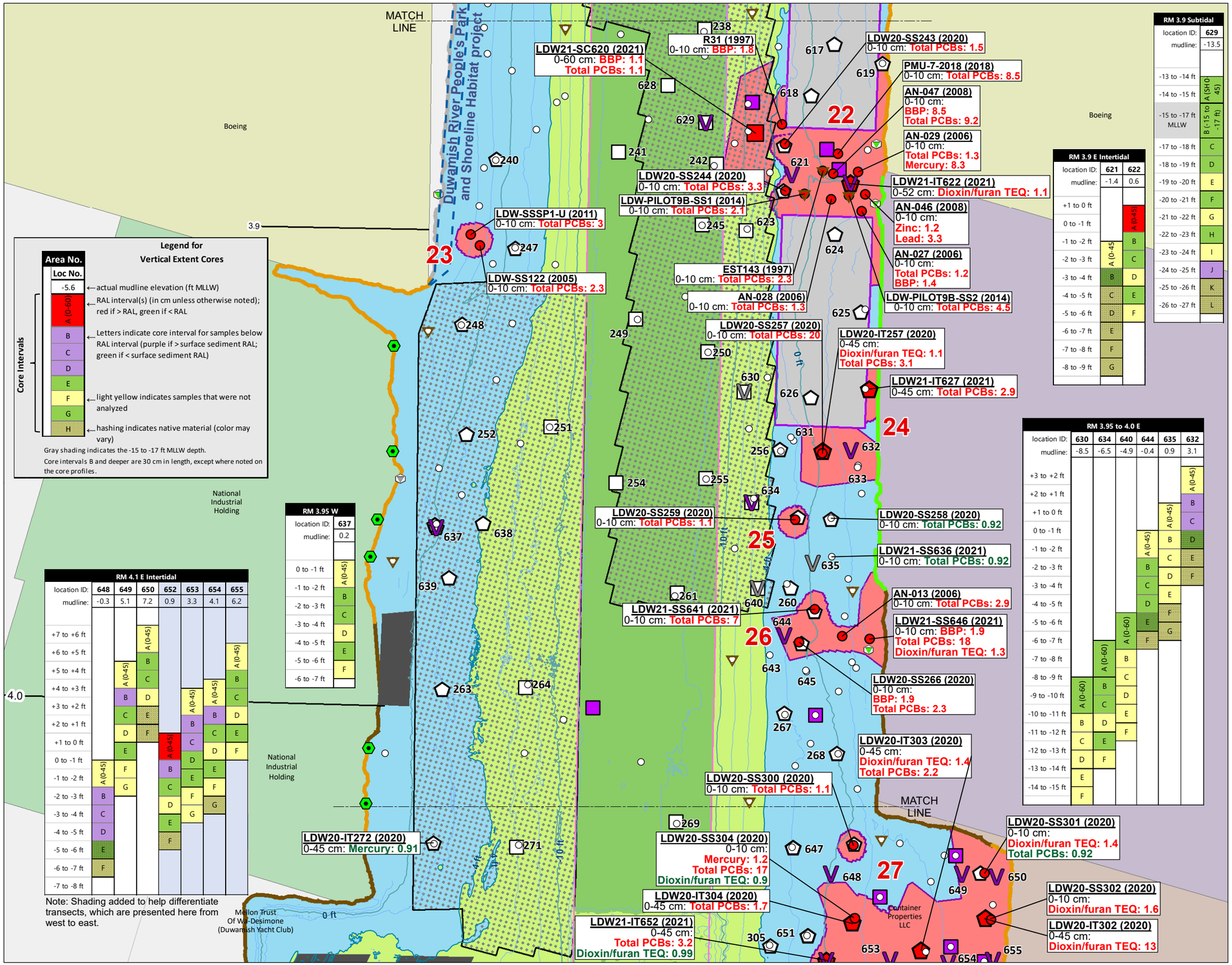
Prepared by craigh, 2/21/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-4d 7172 Upper Reach Ph2 Prelim Data - RM 3.7-3.85.mxd



RAL exceedance area

Surface sediment (0-10 cm) sampling location

- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)

- Exceeds RAL
- Does not exceed RAL

Intertidal (0-45 cm)

- Exceeds RAL
- Does not exceed RAL

Other sampling locations

- Vertical extent core
- Vertical archive
- Pre-PDI sample only analyzed for PCBs
- Core without appropriate RAL interval
- Bank sampling location (no exceedance)

Outfall classification

- Private storm drain
- Pipe of unresolved origin and/or use
- Stream, channel, or ditch

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope
- Unarmored slope
- Post-Phase I PDI bank construction activities

Other LDW features

- Recovery Category 1
- Habitat restoration boundary
- Intertidal area
- Potential vessel scour area
- Shoal area
- Dock/pier/marina
- ENR/AC Pilot plot
- King Co tax parcel
- Navigation Channel
- River mile

Bathymetry (feet MLLW)

- -4 ft MLLW
- 10 ft interval
- 2 ft interval

Note: Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an data interpolation, engineering considerations, and other factors. ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD RALs (EPA 2021).

N

0 100 200 Feet

0 25 50 Meters

Map 3-4e. RAL exceedance areas with design data, RM 3.85 to RM 4.05

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

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Lower Duwamish Waterway Group

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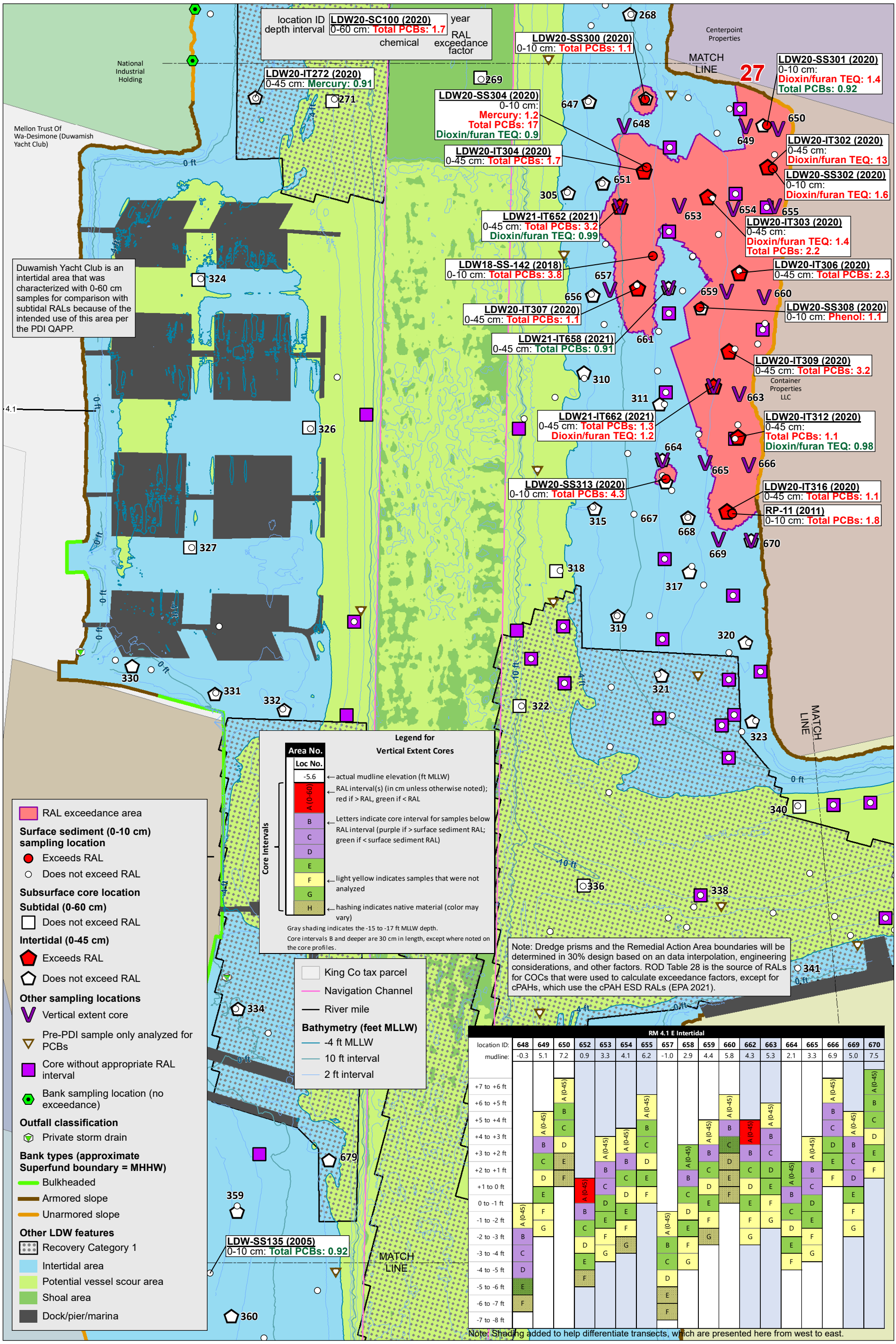
Prepared by craigh, 2/18/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-4e 7172 Upper Reach Ph2 Prelim Data - RM 3.85-4.05.mxd



Windward environmental LLC

ANCHOR QEA

Lower Duwamish Waterway Group
Port of Seattle / City of Seattle / King County / The Boeing Company

N

0 100 200 Feet

0 25 50 Meters

Map 3-4f. RAL exceedance areas with design data, RM 4.05 to RM 4.3

Pre-Design Investigation Data Evalutation Report for the LDW Upper Reach

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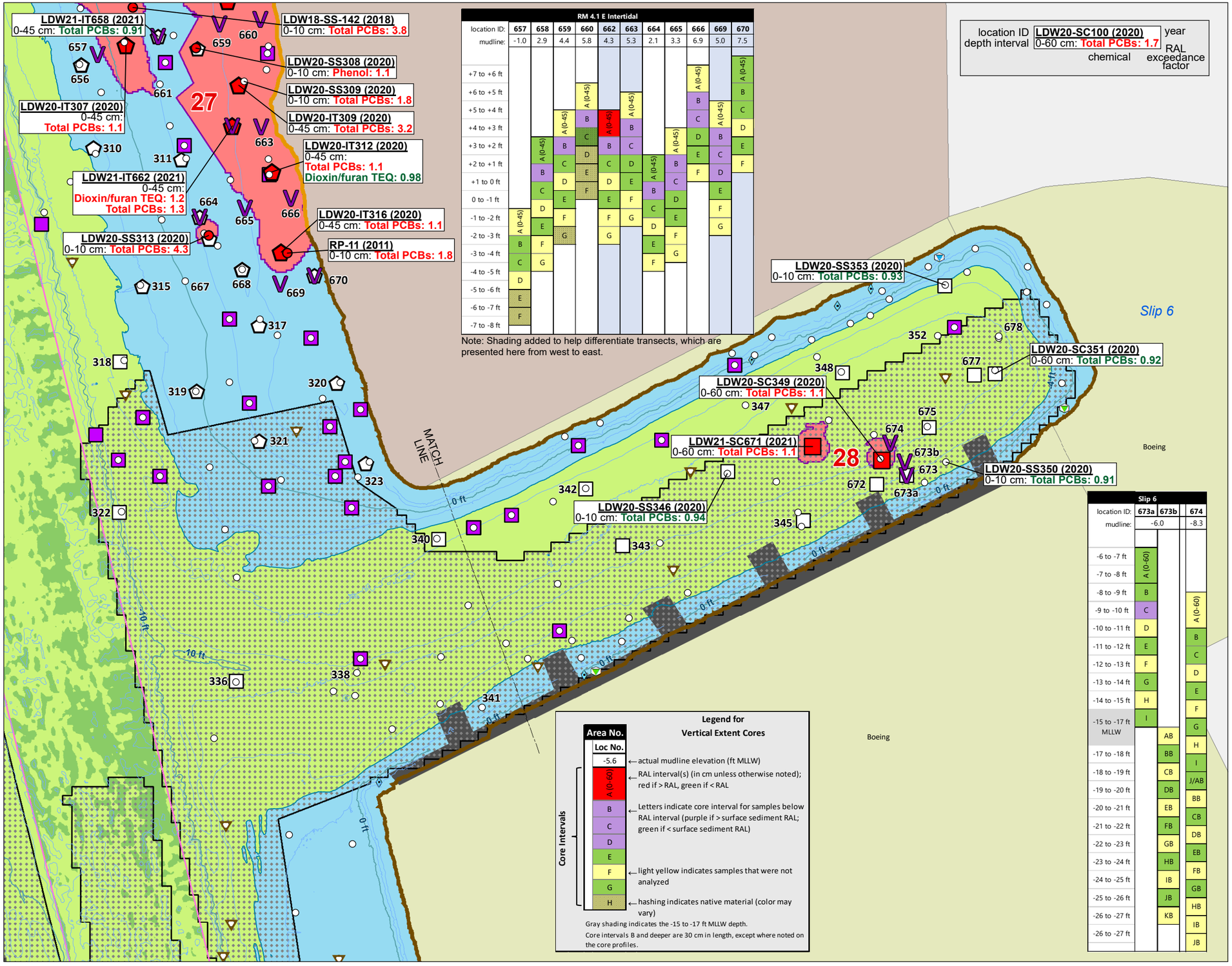
Prepared by craigh, 2/18/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 3-4f 7172 Upper Reach Ph2 Prelim Data - RM 4.05-4.3.mxd



RM 4.1 E Intertidal

location ID:	657	658	659	660	662	663	664	665	666	669	670
mudline:	-1.0	2.9	4.4	5.8	4.3	5.3	2.1	3.3	6.9	5.0	7.5
+7 to +6 ft									A (0-45)		A (0-45)
+6 to +5 ft									B		B
+5 to +4 ft				A (0-45)		A (0-45)			C		C
+4 to +3 ft			A (0-45)	B	A (0-45)	B			D	A (0-45)	D
+3 to +2 ft		A (0-45)	B	C	B	C		A (0-45)	E	B	E
+2 to +1 ft		B	C	D	C	D	A (0-45)	B	F	C	F
+1 to 0 ft		C	D	E	D	E	B	C		D	
0 to -1 ft		D	E	F	E	F	C	D		E	
-1 to -2 ft	A (0-45)	E	F		F	G	D	E		F	
-2 to -3 ft	B	F	G		G		E	F		G	
-3 to -4 ft	C	G					F	G			
-4 to -5 ft	D										
-5 to -6 ft	E										
-6 to -7 ft	F										
-7 to -8 ft											

Note: Shading added to help differentiate transects, which are presented here from west to east.

location ID: LDW20-SC100 (2020) — year
depth interval: 0-60 cm: Total PCBs: 1.7 — RAL exceedance factor
chemical

Legend for Vertical Extent Cores

Area No.
Loc No.
-5.6 ← actual mudline elevation (ft MLLW)
Core Intervals:
A (0-60) ← RAL interval(s) (in cm unless otherwise noted); red if > RAL, green if < RAL
B, C, D, E ← Letters indicate core interval for samples below RAL interval (purple if > surface sediment RAL; green if < surface sediment RAL)
F ← light yellow indicates samples that were not analyzed
G, H ← hashing indicates native material (color may vary)

Gray shading indicates the -15 to -17 ft MLLW depth.
Core intervals B and deeper are 30 cm in length, except where noted on the core profiles.

Slip 6

location ID:	673a	673b	674
mudline:	-6.0		-8.3
-6 to -7 ft	A (0-60)		
-7 to -8 ft			
-8 to -9 ft	B		
-9 to -10 ft	C		A (0-60)
-10 to -11 ft	D		B
-11 to -12 ft	E		C
-12 to -13 ft	F		D
-13 to -14 ft	G		E
-14 to -15 ft	H		F
-15 to -17 ft MLLW	I		G
		AB	H
-17 to -18 ft		BB	I
-18 to -19 ft		CB	J/AB
-19 to -20 ft		DB	BB
-20 to -21 ft		EB	CB
-21 to -22 ft		FB	DB
-22 to -23 ft		GB	EB
-23 to -24 ft		HB	FB
-24 to -25 ft		IB	GB
-25 to -26 ft		JB	HB
-26 to -27 ft		KB	IB
-26 to -27 ft			JB

RAL exceedance area

Surface sediment (0-10 cm) sampling location
- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)
- Exceeds RAL
- Does not exceed RAL

Intertidal (0-45 cm)
- Exceeds RAL
- Does not exceed RAL

Other sampling locations
- Vertical extent core
- Pre-PDI sample only analyzed for PCBs
- Core without appropriate RAL interval

Outfall classification
- Private storm drain
- Public storm drain
- Abandoned/inactive

Bank types (approximate Superfund boundary = MHHW)
- Armored slope
- Unarmored slope

Other LDW features
- Recovery Category 1
- Intertidal area
- Potential vessel scour area
- Shoal area
- Dock/pier/marina
- King Co tax parcel
- Navigation Channel
- River mile

Bathymetry (feet MLLW)
- -4 ft MLLW
- 10 ft interval
- 2 ft interval

Note: Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an data interpolation, engineering considerations, and other factors. ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD RALs (EPA 2021).

N

0 100 200 Feet

0 25 50 Meters

Map 3-4g. RAL exceedance areas with design data, Slip 6

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

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Port of Seattle / City of Seattle / King County / The Boeing Company

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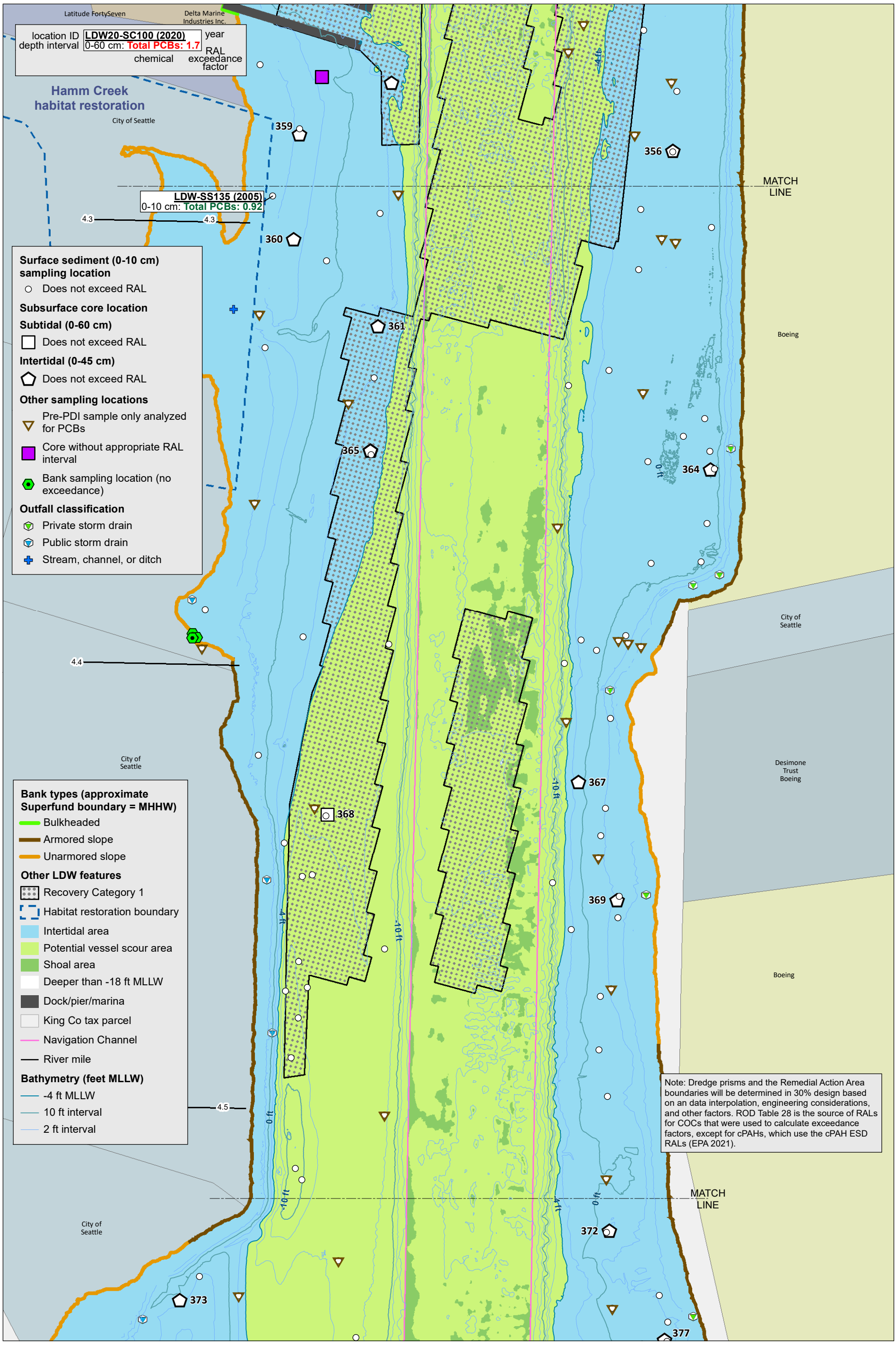

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N

0 100 200 Feet

0 25 50 Meters

Map 3-4h. RAL exceedance areas with design data, RM 4.3 to RM 4.55

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

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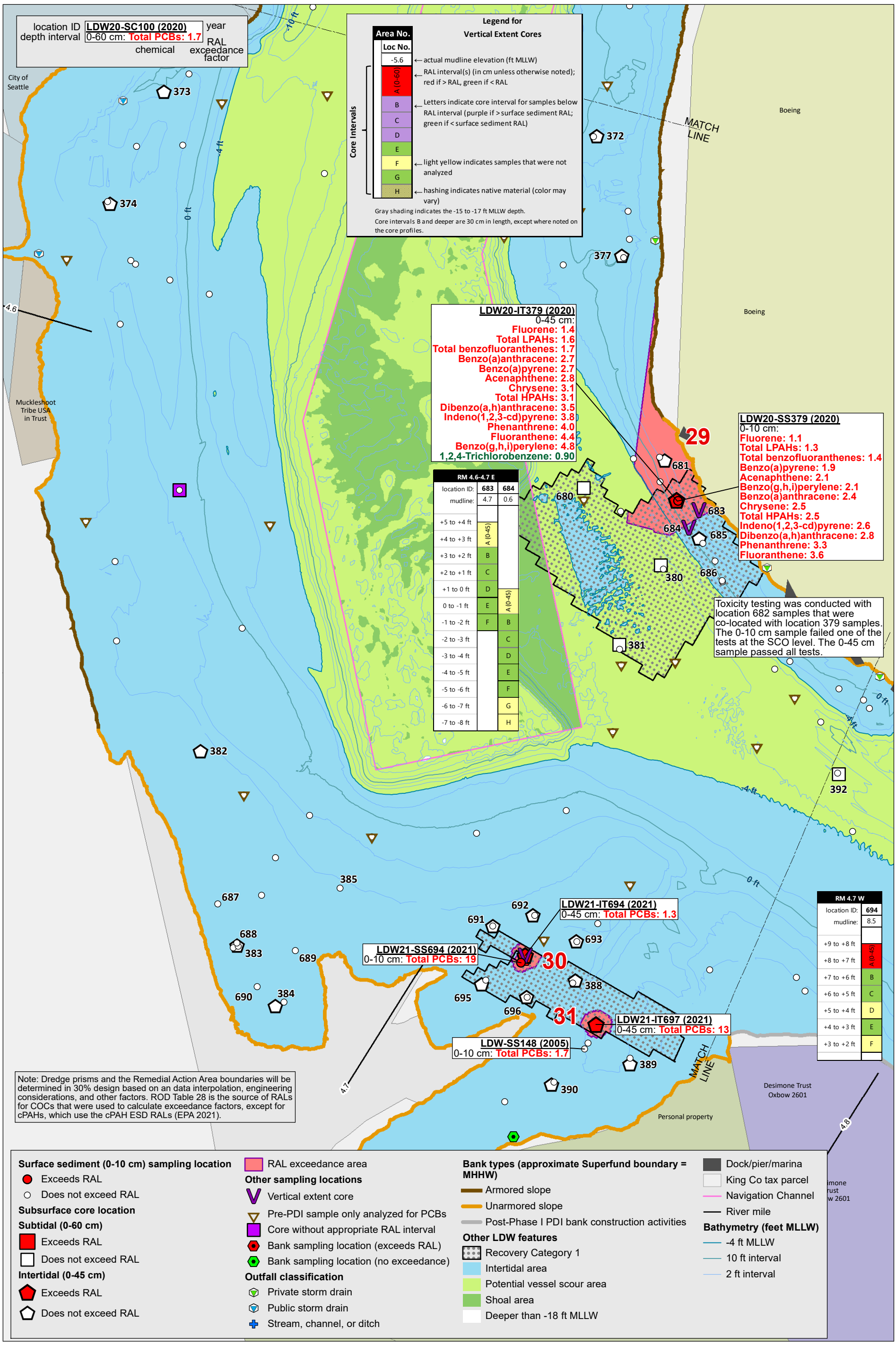

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0 100 200 Feet
0 25 50 Meters

Map 3-4i. RAL exceedance areas with design data, RM 4.55 to RM 4.8

Pre-Design Investigation Data Evalutation Report for the LDW Upper Reach

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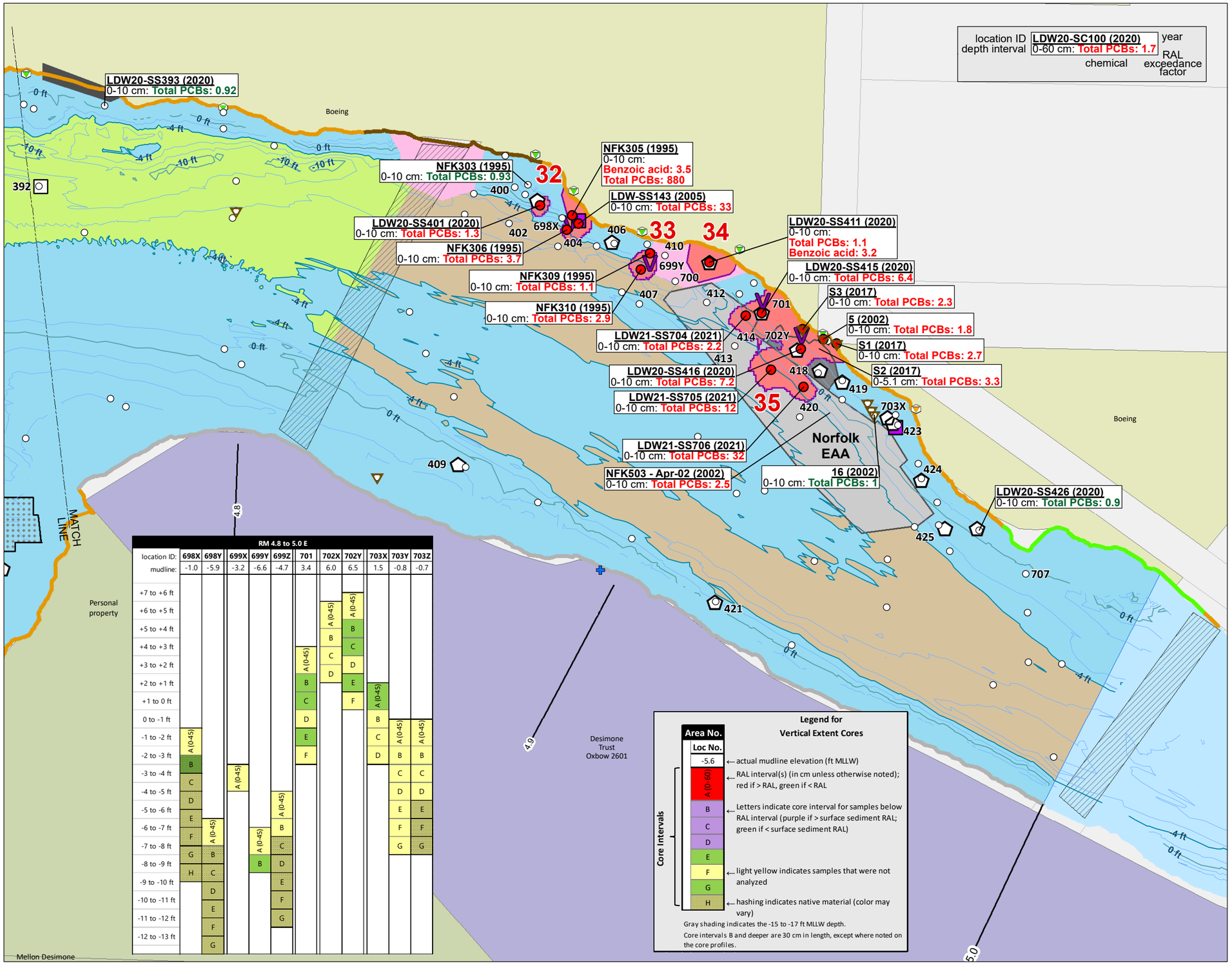

RM 4.8 to 5.0 E											
location ID:	698X	698Y	699X	699Y	699Z	701	702X	702Y	703X	703Y	703Z
mudline:	-1.0	-5.9	-3.2	-6.6	-4.7	3.4	6.0	6.5	1.5	-0.8	-0.7
+7 to +6 ft											
+6 to +5 ft							A (0-45)	A (0-45)			
+5 to +4 ft							B	B			
+4 to +3 ft							C	C			
+3 to +2 ft						A (0-45)	D	D			
+2 to +1 ft						B		E	A (0-45)		
+1 to 0 ft						C		F			
0 to -1 ft						D			B		
-1 to -2 ft	A (0-45)					E			C	A (0-45)	A (0-45)
-2 to -3 ft	B					F			D	B	B
-3 to -4 ft	C		A (0-45)							C	C
-4 to -5 ft	D									D	D
-5 to -6 ft	E				A (0-45)					E	E
-6 to -7 ft	F	A (0-45)			B					F	F
-7 to -8 ft	G	B		A (0-45)	C					G	G
-8 to -9 ft	H	C		B	D						
-9 to -10 ft		D			E						
-10 to -11 ft		E			F						
-11 to -12 ft		F			G						
-12 to -13 ft		G									

Legend for Vertical Extent Cores

Area No. / Loc No.

- -5.6 ← actual mudline elevation (ft MLLW)
- Core Intervals: A (0-60) ← RAL interval(s) (in cm unless otherwise noted); red if > RAL, green if < RAL
- Core Intervals: B, C, D ← Letters indicate core interval for samples below RAL interval (purple if > surface sediment RAL; green if < surface sediment RAL)
- Core Intervals: E, F ← light yellow indicates samples that were not analyzed
- Core Intervals: G, H ← hashing indicates native material (color may vary)

Gray shading indicates the -15 to -17 ft MLLW depth.

Core intervals B and deeper are 30 cm in length, except where noted on the core profiles.

RAL exceedance area

Surface sediment (0-10 cm) sampling location

- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)

- Does not exceed RAL

Intertidal (0-45 cm)

- Does not exceed RAL

Other sampling locations

- Vertical extent core
- Pre-PDI sample only analyzed for PCBs
- Core without appropriate RAL interval

Outfall classification

- CSO/storm drain
- Private storm drain
- Abandoned/inactive
- Stream, channel, or ditch

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope
- Unarmored slope
- Post-Phase I PDI bank construction activities

Other LDW features

- Recovery Category 1
- Bridge
- Dock/pier/marina
- Intertidal area
- Potential vessel scour area
- Subtidal with no subsurface RAL
- Area not covered by bathymetric survey
- Boeing South Storm Drain removal area
- EAA
- King Co tax parcel
- River mile

Bathymetry (feet MLLW)

- -4 ft MLLW
- 10 ft interval
- 2 ft interval

Note: Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an data interpolation, engineering considerations, and other factors. ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD RALs (EPA 2021).

N

0 100 200 Feet

0 25 50 Meters

Map 3-4j. RAL exceedance areas with design data, RM 4.8 to RM 5.0

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH **DRAFT**

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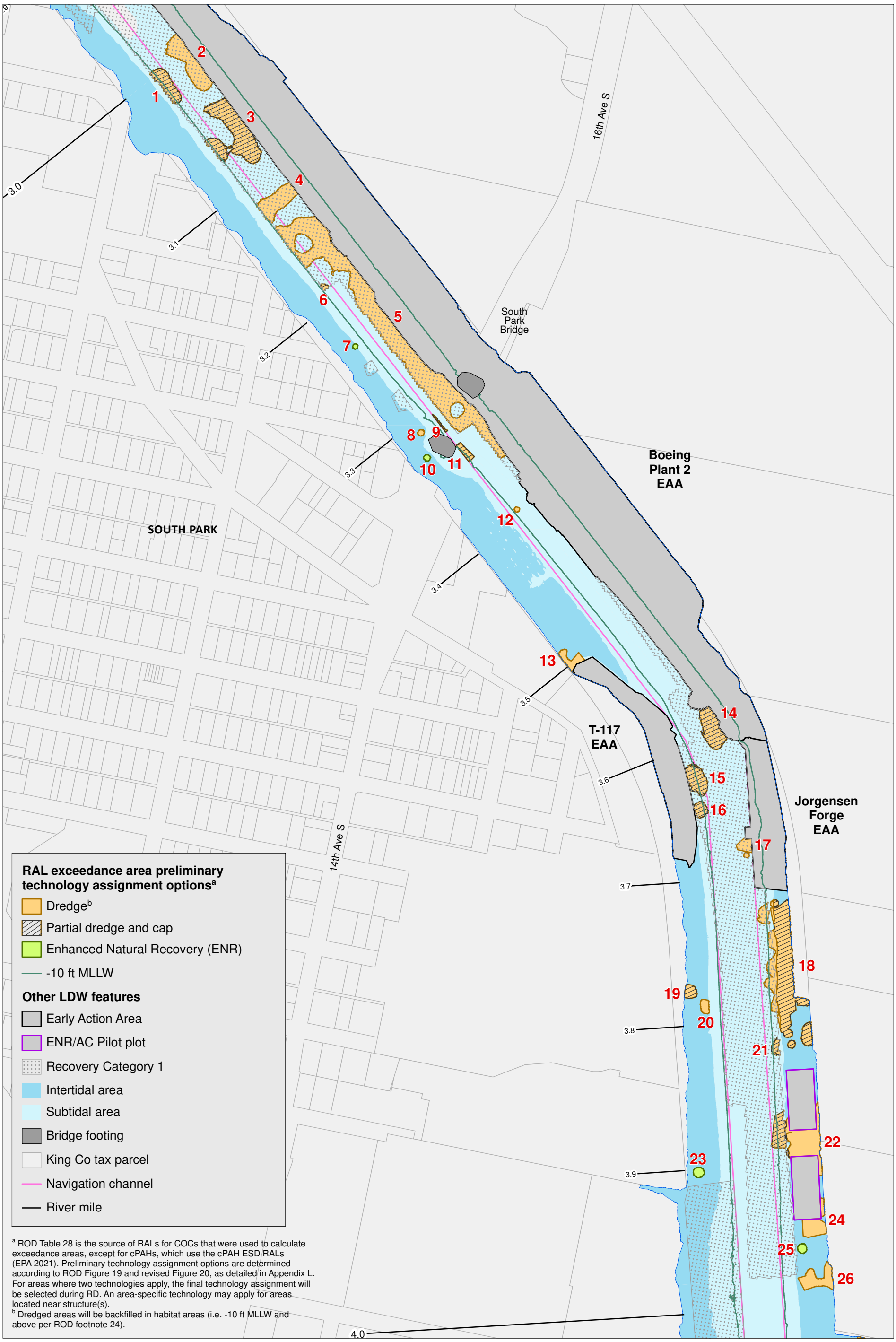

[a] ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance areas, except for cPAHs, which use the cPAH ESD RALs (EPA 2021). Preliminary technology assignment options are determined according to ROD Figure 19 and revised Figure 20, as detailed in Appendix L. For areas where two technologies apply, the final technology assignment will be selected during RD. An area-specific technology may apply for areas located near structure(s).

[b] Dredged areas will be backfilled in habitat areas (i.e. -10 ft MLLW and above per ROD footnote 24).

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N

0 250 500 Feet

0 100 200 Meters

Map 3-5a. Preliminary technology assignment options by RAL exceedance area, RM 3.0 to RM 4.0

Pre-Design Investigation Data Evalutation Report for the LDW Upper Reach

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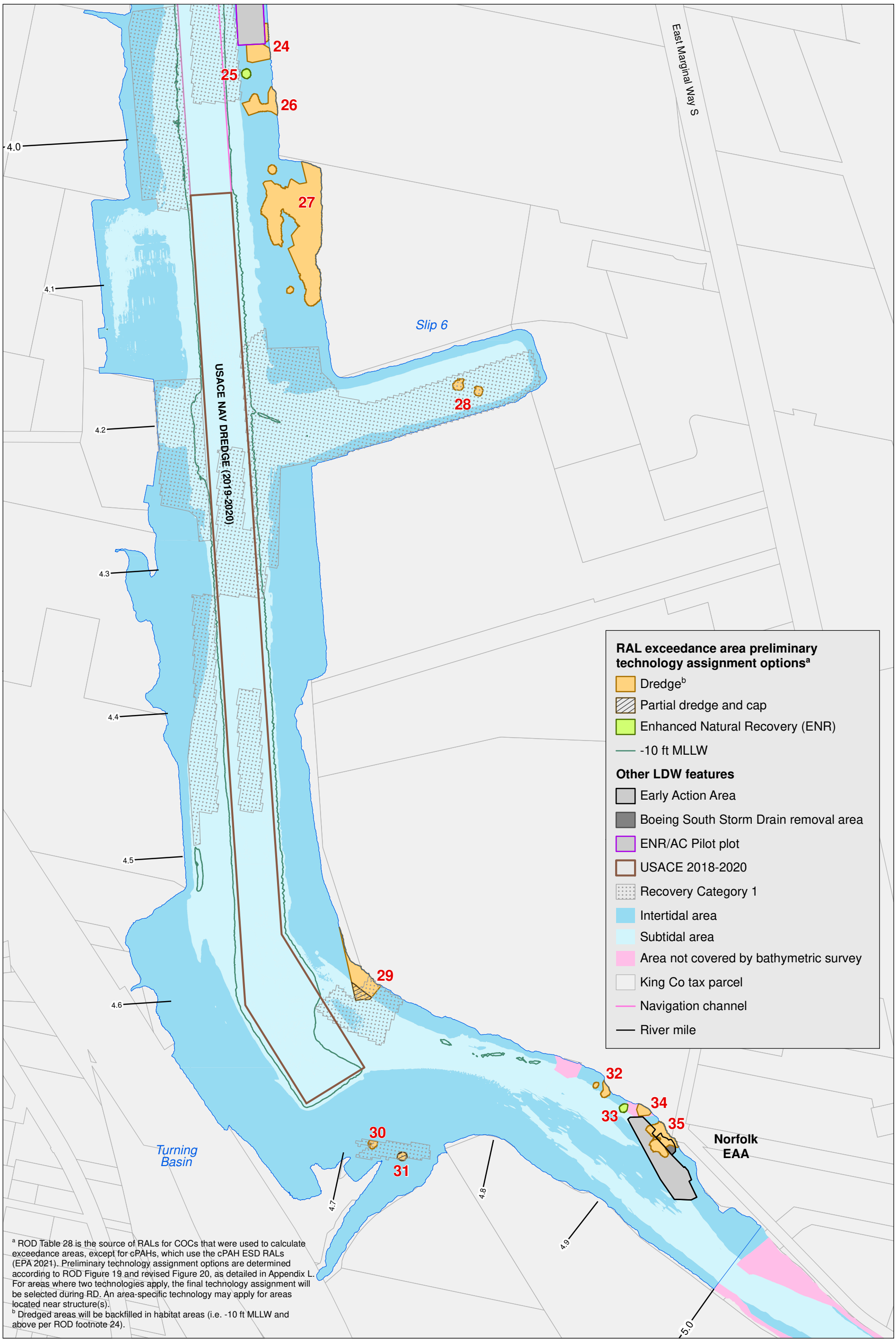

[a] ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance areas, except for cPAHs, which use the cPAH ESD RALs (EPA 2021). Preliminary technology assignment options are determined according to ROD Figure 19 and revised Figure 20, as detailed in Appendix L. For areas where two technologies apply, the final technology assignment will be selected during RD. An area-specific technology may apply for areas located near structure(s).

[b] Dredged areas will be backfilled in habitat areas (i.e. -10 ft MLLW and above per ROD footnote 24).

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N

0 250 500 Feet

0 100 200 Meters

Map 3-5b. Preliminary technology assignment options by RAL exceedance area, RM 4.0 to RM 5.0

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

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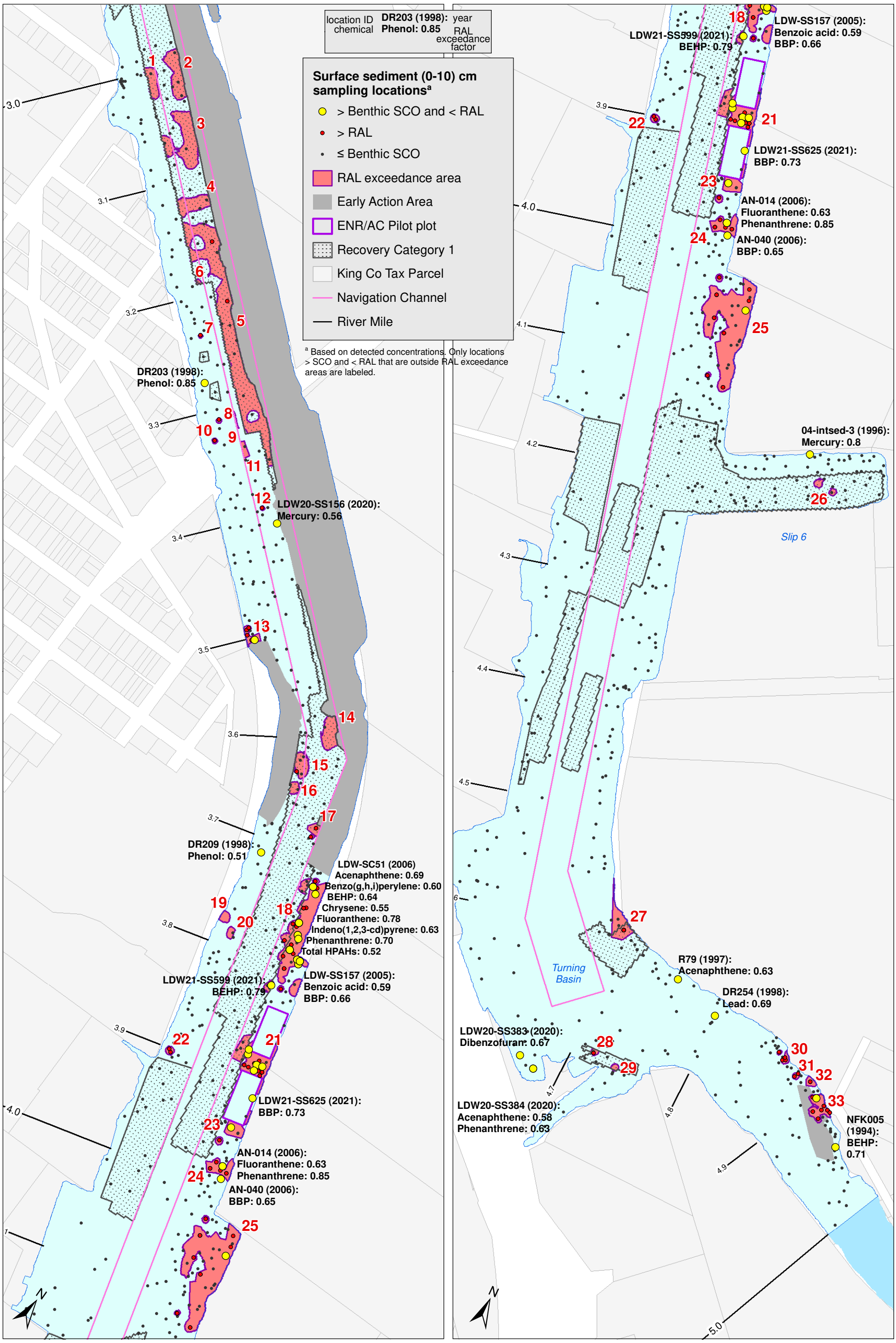

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0 500 1,000 Feet

0 100 200 Meters

Scale is the same for each inset map

Map 4-1. Locations in the upper reach with surface sediment concentrations > benthic SCO and < RAL

PRE-DESIGN INVESTIGATION DATA EVALUATION REPORT FOR THE LDW UPPER REACH

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Prepared by craigh, 2/18/22; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\Data Evaluation Report\Map 4-1 7305 PhII SCO vs RAL exceedances.mxd