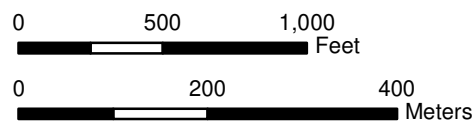


- Early Action Area
 - AC Pilot plots
 - Recovery Category 1^a
 - Intertidal area
 - Shoaled subtidal area in navigation channel
 - Subtidal area outside of shoaled area
 - Area not covered by bathymetric survey
 - Bridge
 - Dock/pier/marina
 - LDW Superfund Site
 - King Co tax parcel
 - Navigation channel
 - River mile
- ^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Note: The federally regulated channel depth in the upper reach is -15 ft MLLW.



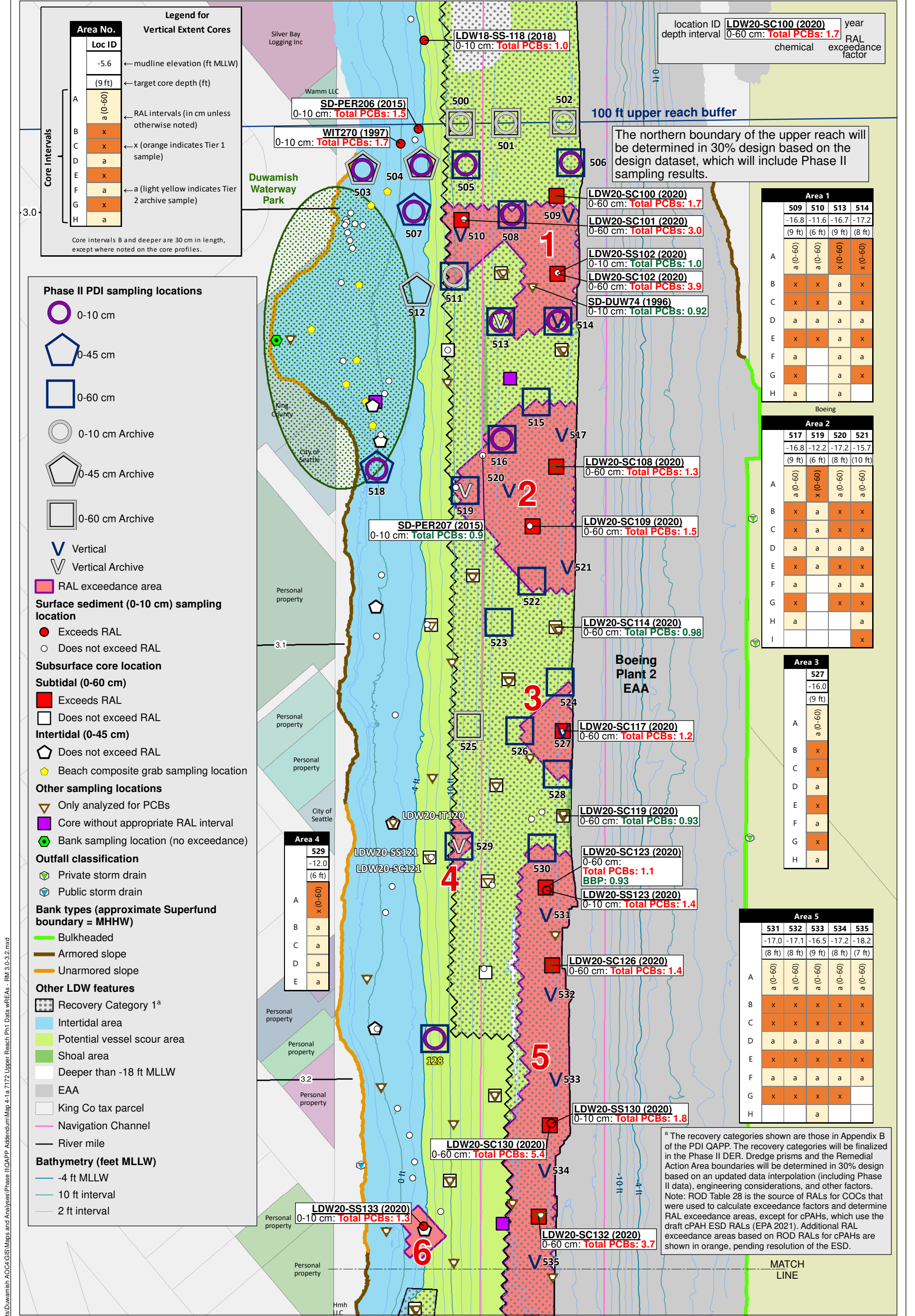
Lower Duwamish Waterway Group
 Port of Seattle / City of Seattle / King County / The Boeing Company



Map 1-1. Upper reach of the Lower Duwamish Waterway

PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH

Prepared by craigh. 6/28/21. W:\Projects\Duwamish\ACQ\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 1-1 7059 Upper Reach.mxd



Legend for Vertical Extent Cores

Area No.	Loc ID	Notes
	-5.6	mudline elevation (ft MLLW)
	(9 ft)	target core depth (ft)
A	a (0-60)	RAL intervals (in cm unless otherwise noted)
B	x	x (orange indicates Tier 1 sample)
C	x	
D	a	
E	x	
F	a	a (light yellow indicates Tier 2 archive sample)
G	x	
H	a	

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

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

The northern boundary of the upper reach will be determined in 30% design based on the design dataset, which will include Phase II sampling results.

- Phase II PDI sampling locations**
- 0-10 cm
 - ⬡ 0-45 cm
 - ⬢ 0-60 cm
 - 0-10 cm Archive
 - ⬡ 0-45 cm Archive
 - ⬢ 0-60 cm Archive
 - ∇ Vertical
 - ∇ Vertical Archive
 - 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
 - ⬢ Beach composite grab sampling location
- Other sampling locations**
- ∇ 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^a
 - Intertidal area
 - Potential vessel scour area
 - Shoal area
 - Deeper than -18 ft MLLW
 - EAA
 - King Co tax parcel
 - Navigation Channel
 - River mile
- Bathymetry (feet MLLW)**
- -4 ft MLLW
 - 10 ft interval
 - 2 ft interval

Area 1

	509	510	513	514
	-16.8	-11.6	-16.7	-17.2
	(9 ft)	(6 ft)	(9 ft)	(8 ft)
A	a (0-60)	a (0-60)	x (0-60)	x (0-60)
B	x	x	a	x
C	x	x	a	x
D	a	a	a	a
E	x	x	a	x
F	a		a	a
G	x		a	x
H	a		a	

Area 2

	517	519	520	521
	-16.8	-12.2	-17.2	-15.7
	(9 ft)	(6 ft)	(8 ft)	(10 ft)
A	a (0-60)	x (0-60)	a (0-60)	a (0-60)
B	x	a	x	x
C	x	a	x	x
D	a	a	a	a
E	x	a	x	x
F	a		a	a
G	x		x	x
H	a			a
I				x

Area 3

	527
	-16.0
	(9 ft)
A	a (0-60)
B	x
C	x
D	a
E	x
F	a
G	x
H	a

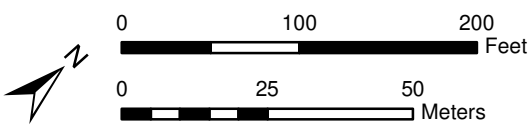
Area 4

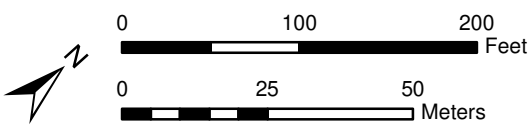
	529
	-12.0
	(6 ft)
A	x (0-60)
B	a
C	a
D	a
E	a

Area 5

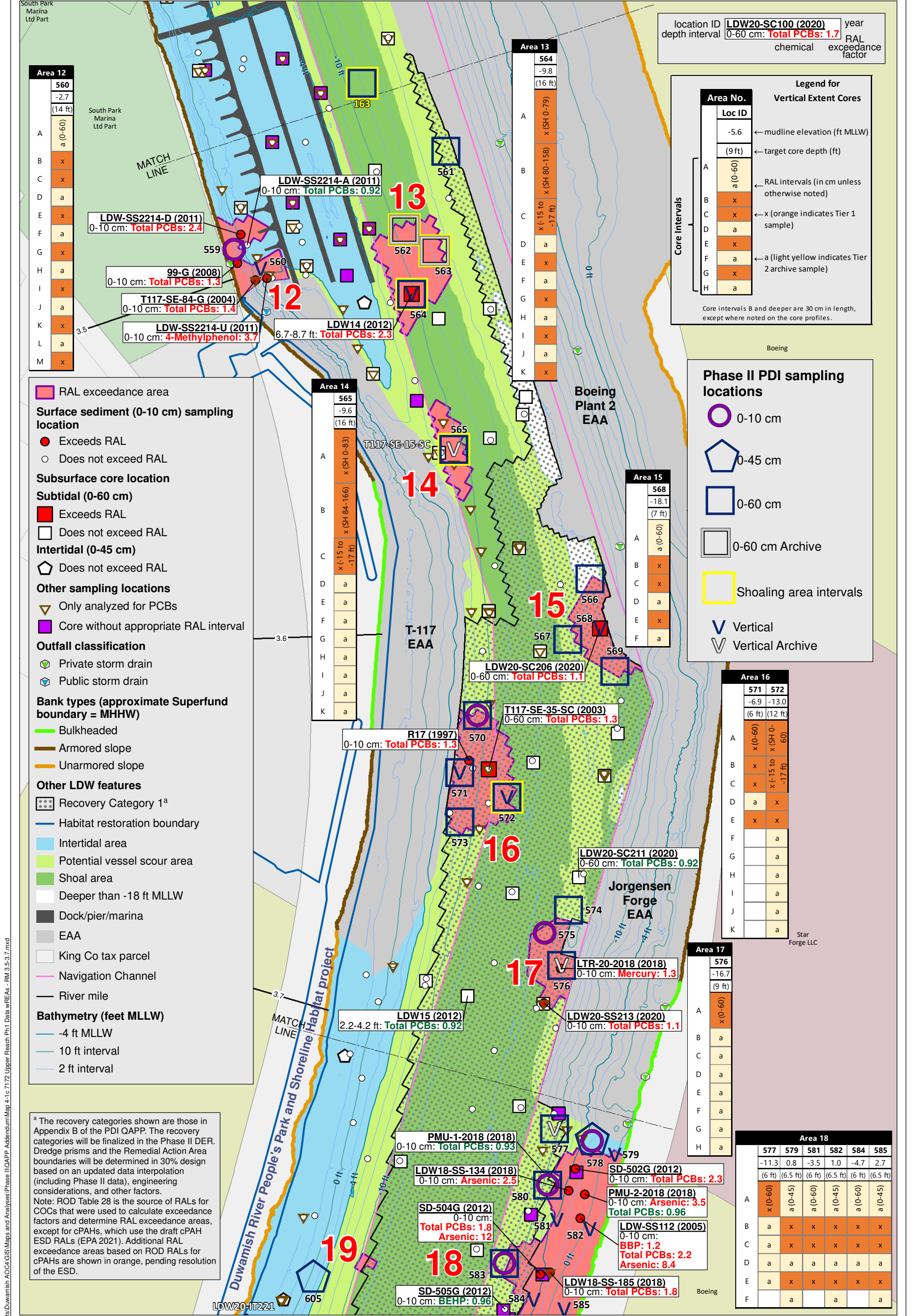
	531	532	533	534	535
	-17.0	-17.1	-16.5	-17.2	-18.2
	(8 ft)	(8 ft)	(9 ft)	(8 ft)	(7 ft)
A	a (0-60)	a (0-60)	a (0-60)	a (0-60)	a (0-60)
B	x	x	x	x	x
C	x	x	x	x	x
D	a	a	a	a	a
E	x	x	x	x	x
F	a	a	a	a	a
G	x	x	x	x	
H			a		

^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.





Prepared by craigh. 6/28/21. W:\Projects\Duwamish\AOC4\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 4-1b 7172 Upper Reach PH1 Data wREAs - RM 3.2-3.5.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 ID	Notes
	-5.6	← mudline elevation (ft MLLW)
	(9 ft)	← target core depth (ft)
A	a (0-60)	← RAL intervals (in cm unless otherwise noted)
B	x	← x (orange indicates Tier 1 sample)
C	x	
D	a	
E	x	
F	a	← a (light yellow indicates Tier 2 archive sample)
G	x	
H	a	

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

Phase II PDI sampling locations

- 0-10 cm
- ⬡ 0-45 cm
- ⬢ 0-60 cm
- ⬤ 0-60 cm Archive
- ⬢ Shoaling area intervals
- ∇ Vertical
- ∇ Vertical Archive

Area 12

560
-2.7
(14 ft)
A
a (0-60)
B
x
C
x
D
a
E
x
F
a
G
x
H
a
I
x
J
a
K
x
L
a
M
x

Area 13

564
-9.8
(16 ft)
A
x (SH 0-79)
B
x (SH 80-158)
C
x (-15 to -17 ft)
D
a
E
x
F
a
G
x
H
a
I
x
J
a
K
x

Area 14

565
-9.6
(16 ft)
A
x (SH 0-83)
B
x (SH 84-166)
C
x (-15 to -17 ft)
D
a
E
a
F
a
G
a
H
a
I
a
J
a
K
a

Area 15

568
-18.1
(7 ft)
A
a (0-60)
B
x
C
x
D
a
E
x
F
a

Area 16

571	572
-6.9	-13.0
(6 ft)	(12 ft)
A	x (SH 0-60)
B	x
C	x (-15 to -17 ft)
D	a
E	x
F	a
G	a
H	a
I	a
J	a
K	a

Area 17

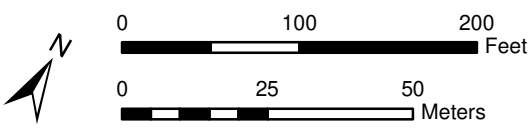
576
-16.7
(9 ft)
A
x (0-60)
B
a
C
a
D
a
E
a
F
a
G
a
H
a

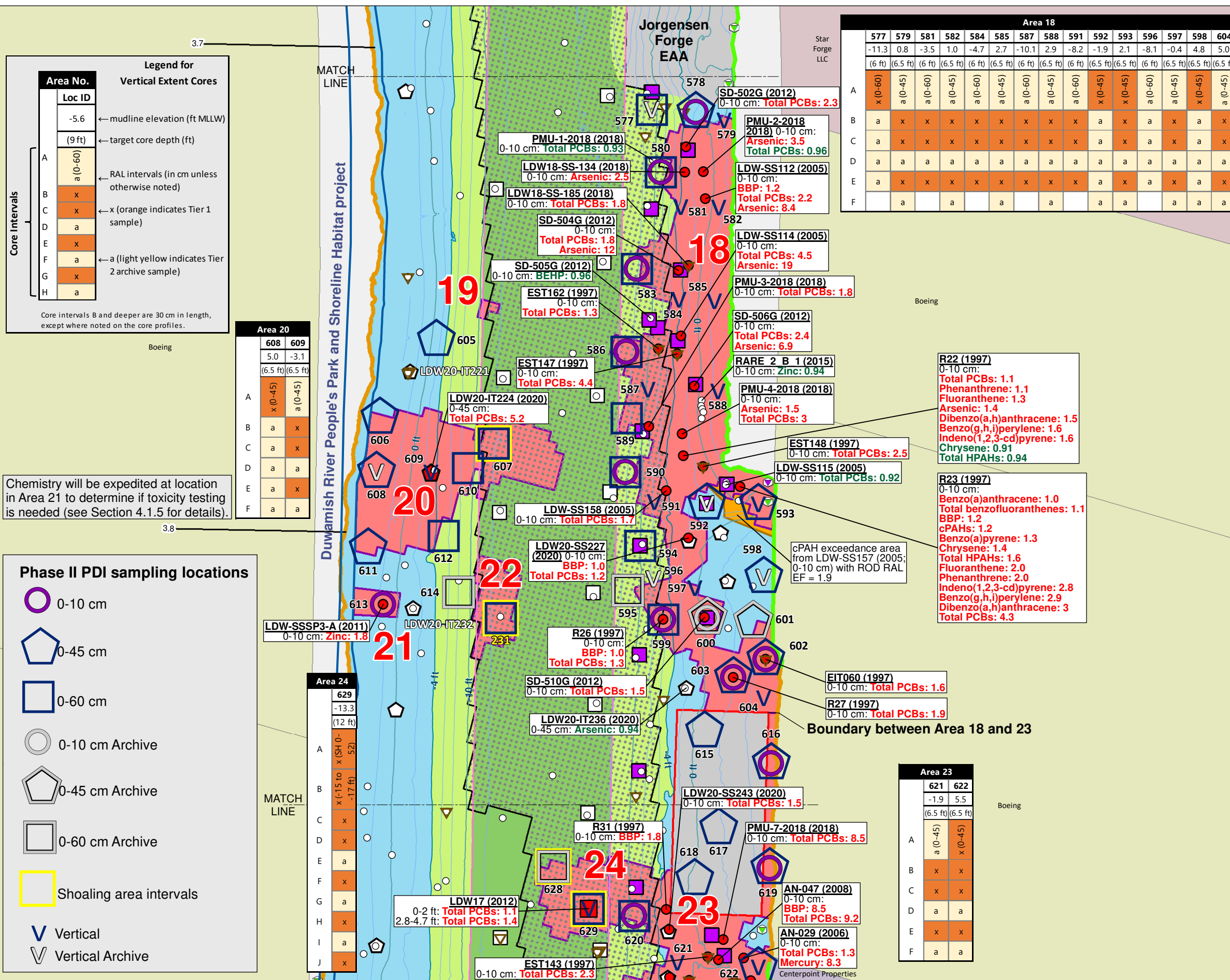
Area 18

577	579	581	582	584	585
-11.3	0.8	-3.5	1.0	-4.7	2.7
(6 ft)	(6.5 ft)	(6 ft)	(6.5 ft)	(6 ft)	(6.5 ft)
A	x (0-60)	a (0-45)	a (0-60)	a (0-45)	a (0-60)
B	a	x	x	x	x
C	a	x	x	x	x
D	a	a	a	a	a
E	a	x	x	x	x
F	a	a	a	a	a

- 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**
 - ∇ 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
- Other LDW features**
 - ⬢ Recovery Category 1^a
 - 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

^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.





Area 18														
577	579	581	582	584	585	587	588	591	592	593	596	597	598	604
-11.3	0.8	-3.5	1.0	-4.7	2.7	-10.1	2.9	-8.2	-1.9	2.1	-8.1	-0.4	4.8	5.0
(6 ft)	(6.5 ft)	(6 ft)	(6.5 ft)	(6 ft)	(6.5 ft)	(6 ft)	(6.5 ft)	(6 ft)	(6.5 ft)	(6.5 ft)	(6 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)
A	x (0-60)	a (0-45)	a (0-60)	a (0-45)	a (0-60)	a (0-45)	a (0-60)	a (0-45)	x (0-60)	x (0-45)	a (0-60)	a (0-45)	x (0-45)	a (0-45)
B	a	x	x	x	x	x	x	x	a	x	a	x	a	x
C	a	x	x	x	x	x	x	x	a	x	a	x	a	x
D	a	a	a	a	a	a	a	a	a	a	a	a	a	a
E	a	x	x	x	x	x	x	x	a	x	a	x	a	x
F		a		a		a		a		a		a		a

Area 20	
608	609
5.0	-3.1
(6.5 ft)	(6.5 ft)
A	x (0-45)
B	a
C	a
D	a
E	a
F	a

Area 24	
629	
-13.3	(12 ft)
A	x (SH 0-52)
B	x (-15 to -17 ft)
C	x
D	x
E	a
F	x
G	a
H	x
I	a
J	x

Area 23	
621	622
-1.9	5.5
(6.5 ft)	(6.5 ft)
A	a (0-45)
B	x
C	x
D	a
E	x
F	a

Legend for Vertical Extent Cores

Area No.	Loc ID	Notes
	-5.6	mudline elevation (ft MLLW)
	(9 ft)	target core depth (ft)
A	a (0-60)	RAL intervals (in cm unless otherwise noted)
B	x	x (orange indicates Tier 1 sample)
C	x	
D	a	
E	x	
F	a	a (light yellow indicates Tier 2 archive sample)
G	x	
H	a	

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

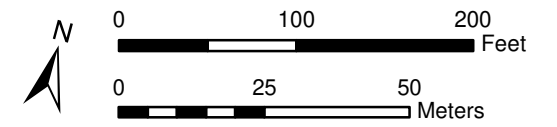
Phase II PDI sampling locations

- 0-10 cm
- ◡ 0-45 cm
- ◡ 0-60 cm
- 0-10 cm Archive
- ◡ 0-45 cm Archive
- ◡ 0-60 cm Archive
- ◡ Shoaling area intervals
- ∇ Vertical
- ∇ Vertical Archive

Legend

- RAL exceedance area
- Additional exceedance area using cPAH ROD RALs
- 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
 - ∇ 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
- Other LDW features
 - █ Recovery Category 1^a
 - █ King Co tax parcel
 - █ Habitat restoration boundary
 - █ Intertidal area
 - █ Potential vessel scour area
 - █ Shoal area
 - █ EAA
 - █ AC Pilot plots
 - █ Navigation Channel
 - █ River mile
 - █ Bathymetry (feet MLLW)
 - █ -4 ft MLLW
 - █ 10 ft interval
 - █ 2 ft interval

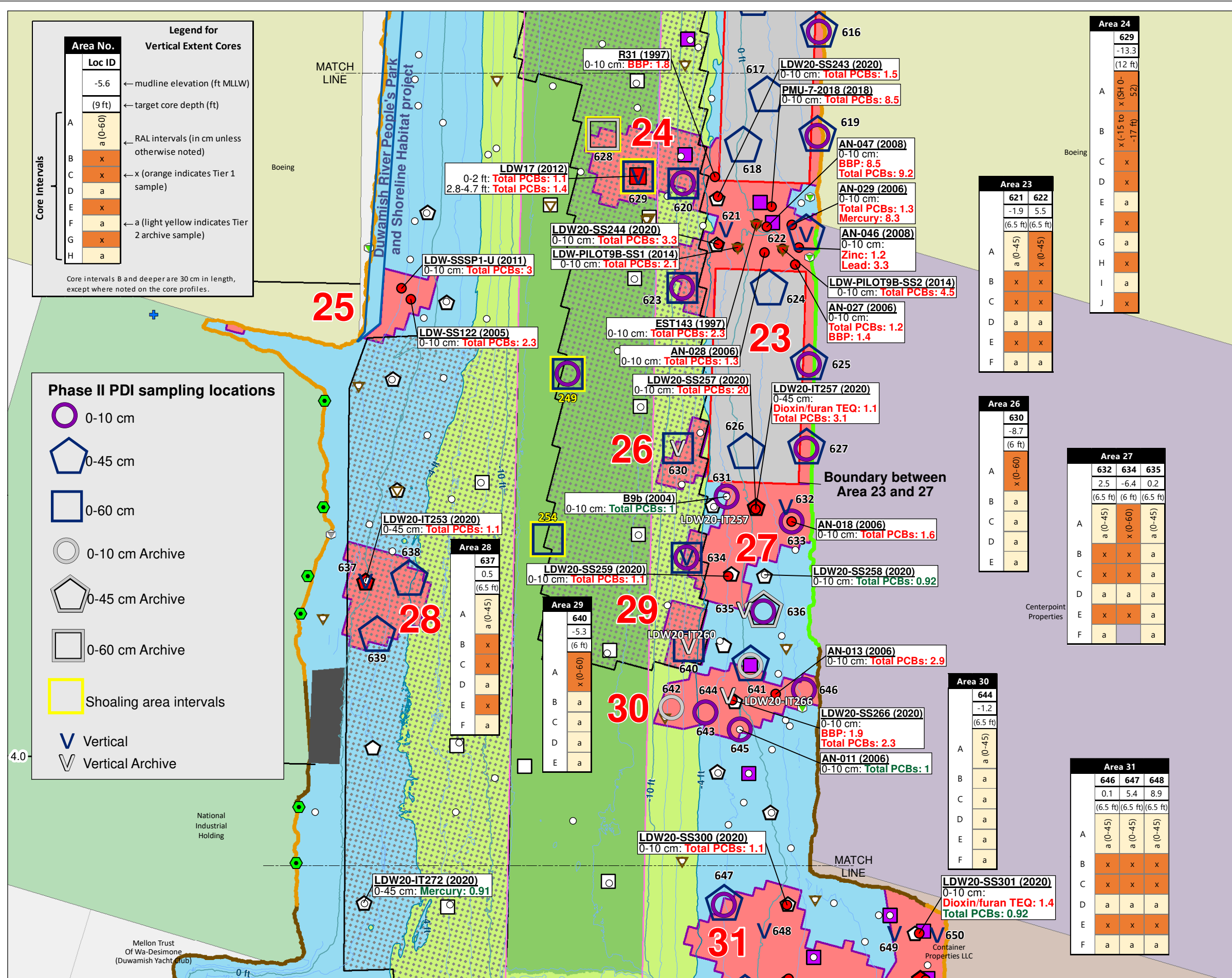
^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.



Map 4-1d. Design dataset with RAL exceedance areas, RM 3.7 to RM 3.85

PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH

Prepared by: craigh, 6/28/21; W:\Projects\Duwamish\ACCA\GIS\Maps and Analysis\Phase II QAPP Addendum\Map 4-1e 7172 Upper Reach Ph1 Data wFEAs - RM 3.85-4.05.mxd



Legend for Vertical Extent Cores

Area No.	Loc ID	Description
	-5.6	mudline elevation (ft MLLW)
	(9 ft)	target core depth (ft)
A	a (0-60)	RAL intervals (in cm unless otherwise noted)
B	x	x (orange indicates Tier 1 sample)
C	x	x (orange indicates Tier 1 sample)
D	a	a (light yellow indicates Tier 2 archive sample)
E	x	x (orange indicates Tier 1 sample)
F	a	a (light yellow indicates Tier 2 archive sample)
G	x	x (orange indicates Tier 1 sample)
H	a	a (light yellow indicates Tier 2 archive sample)

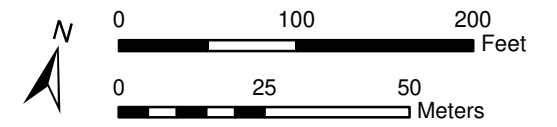
Core intervals B and deeper are 30 cm in length, except where noted on the core profiles.

Phase II PDI sampling locations

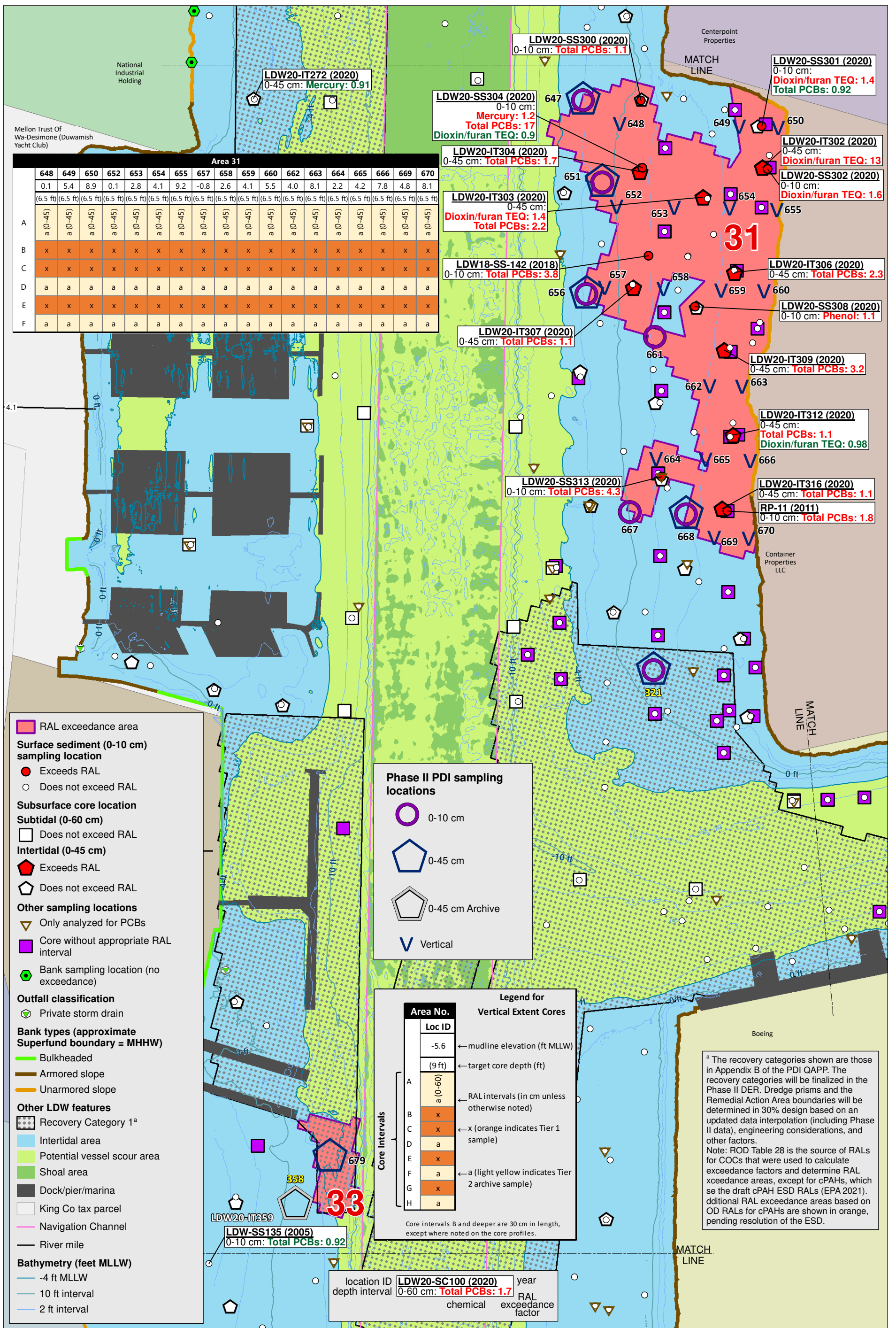
- 0-10 cm
- 0-45 cm
- 0-60 cm
- 0-10 cm Archive
- 0-45 cm Archive
- 0-60 cm Archive
- Shoaling area intervals
- Vertical
- Vertical Archive

- 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
 - 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
- Other LDW features
 - Recovery Category 1
 - Habitat restoration boundary
 - Intertidal area
 - Potential vessel scour area
 - Shoal area
 - Dock/pier/marina
 - AC Pilot plots
 - King Co tax parcel
 - Navigation Channel
 - River mile
 - Bathymetry (feet MLLW)
 - 4 ft MLLW
 - 10 ft interval
 - 2 ft interval

^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.



Map 4-1e. Design dataset with RAL exceedance areas, RM 3.85 to RM 4.05
PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH



Prepared by craigh. 6/28/21. W:\Projects\Duwamish AOC\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 4-1f\7172 Upper Reach PH1 Data wREAs - RM 4.05-4.3.mxd

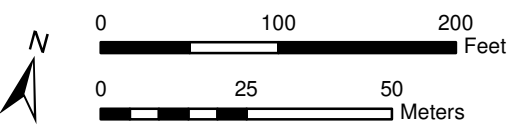
- RAL exceedance area
- Surface sediment (0-10 cm) sampling location**
- Exceeds RAL
- Does not exceed RAL
- Subsurface core location**
- Subtidal (0-60 cm)**
- Does not exceed RAL
- Intertidal (0-45 cm)**
- Exceeds RAL
- Does not exceed RAL
- Other sampling locations**
- Only analyzed for PCBs
- Core without appropriate RAL interval
- Bank sampling location (no exceedance)
- Outfall classification**
- Private storm drain
- Bank types (approximate Superfund boundary = MHHW)**
- Bulkheaded
- Armored slope
- Unarmored slope
- Other LDW features**
- Recovery Category 1^a
- 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

- Phase II PDI sampling locations**
- 0-10 cm
- 0-45 cm
- 0-45 cm Archive
- Vertical

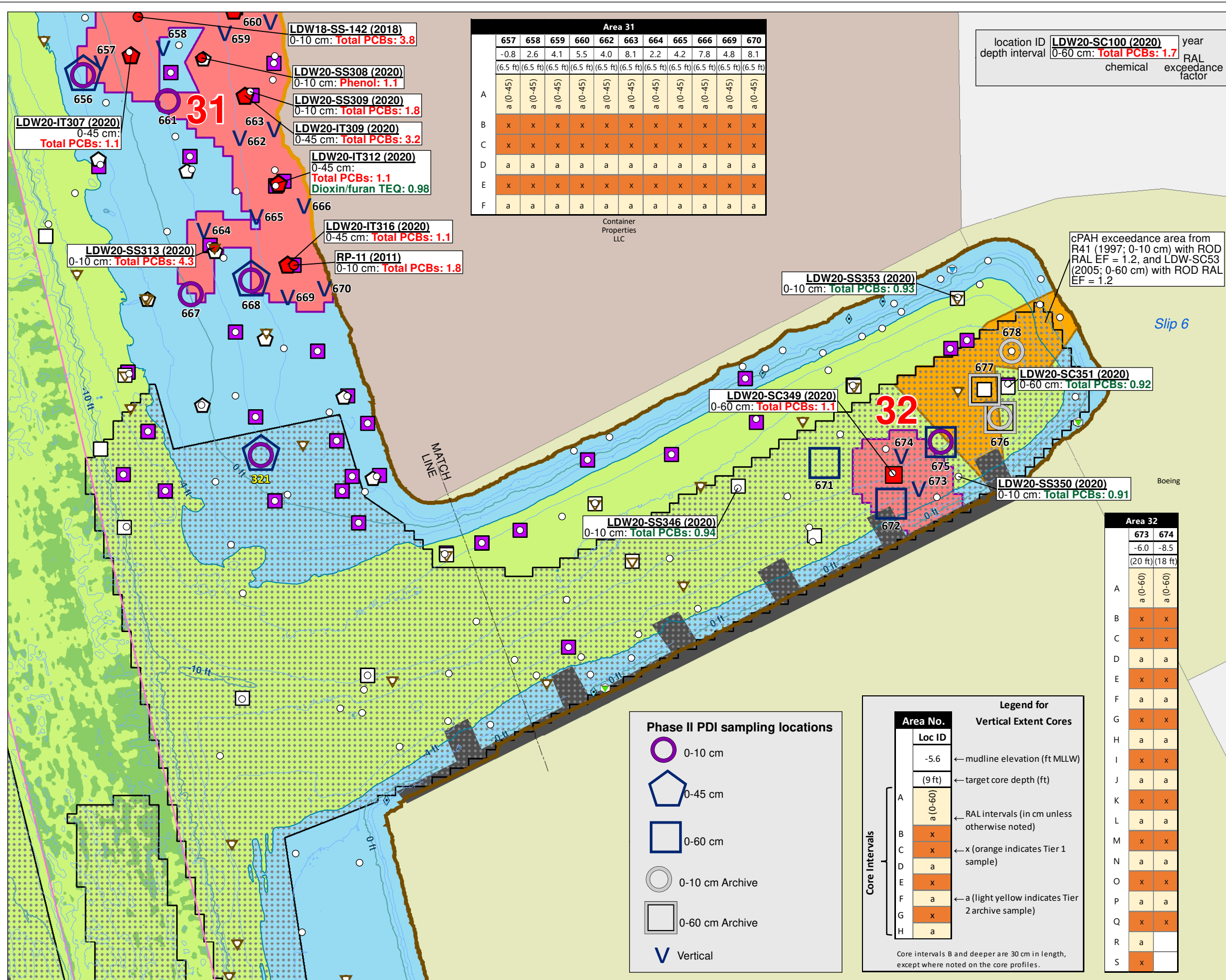
Area No.		Legend for Vertical Extent Cores	
Area No.	Loc ID		
	-5.6	←	mudline elevation (ft MLLW)
	(9 ft)	←	target core depth (ft)
A	a (0-60)	←	RAL intervals (in cm unless otherwise noted)
B	x	←	x (orange indicates Tier 1 sample)
C	x	←	
D	a	←	
E	x	←	
F	a	←	a (light yellow indicates Tier 2 archive sample)
G	x	←	
H	a	←	

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

^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on OD RALs for cPAHs are shown in orange, pending resolution of the ESD.



Prepared by craig.h. @ 2/2/21; W:\Projects\Duwamish ACC\GIS\Maps and Analysis\Phase II QAPP Addendum\Map 4-1g 7/2 Upper Reach Ph1 Data wFEAs - Slip 6.mxd



Area 31											
	657	658	659	660	662	663	664	665	666	669	670
	-0.8	2.6	4.1	5.5	4.0	8.1	2.2	4.2	7.8	4.8	8.1
	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)
A	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)
B	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x
D	a	a	a	a	a	a	a	a	a	a	a
E	x	x	x	x	x	x	x	x	x	x	x
F	a	a	a	a	a	a	a	a	a	a	a

Container Properties LLC

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

cPAH exceedance area from R41 (1997; 0-10 cm) with ROD RAL EF = 1.2, and LDW-SC53 (2005; 0-60 cm) with ROD RAL EF = 1.2

Area 32		
Loc ID	673	674
	-6.0	-8.5
	(20 ft)	(18 ft)
A	a (0-60)	a (0-60)
B	x	x
C	x	x
D	a	a
E	x	x
F	a	a
G	x	x
H	a	a

- Phase II PDI sampling locations**
- 0-10 cm
 - 0-45 cm
 - 0-60 cm
 - 0-10 cm Archive
 - 0-60 cm Archive
 - Vertical

Legend for Vertical Extent Cores

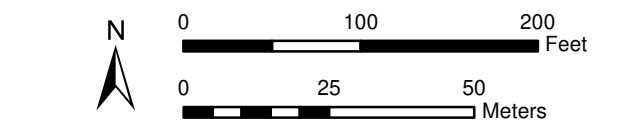
Area No.	Loc ID	Description
	-5.6	mudline elevation (ft MLLW)
	(9 ft)	target core depth (ft)
A	a (0-60)	RAL intervals (in cm unless otherwise noted)
B	x	x (orange indicates Tier 1 sample)
C	a	a (light yellow indicates Tier 2 archive sample)
D	x	
E	a	
F	x	
G	a	
H	a	

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

Area 32		
Core Intervals	673	674
	-6.0	-8.5
	(20 ft)	(18 ft)
A	a (0-60)	a (0-60)
B	x	x
C	x	x
D	a	a
E	x	x
F	a	a
G	x	x
H	a	a
I	x	x
J	a	a
K	x	x
L	a	a
M	x	x
N	a	a
O	x	x
P	a	a
Q	x	x
R	a	a
S	x	x

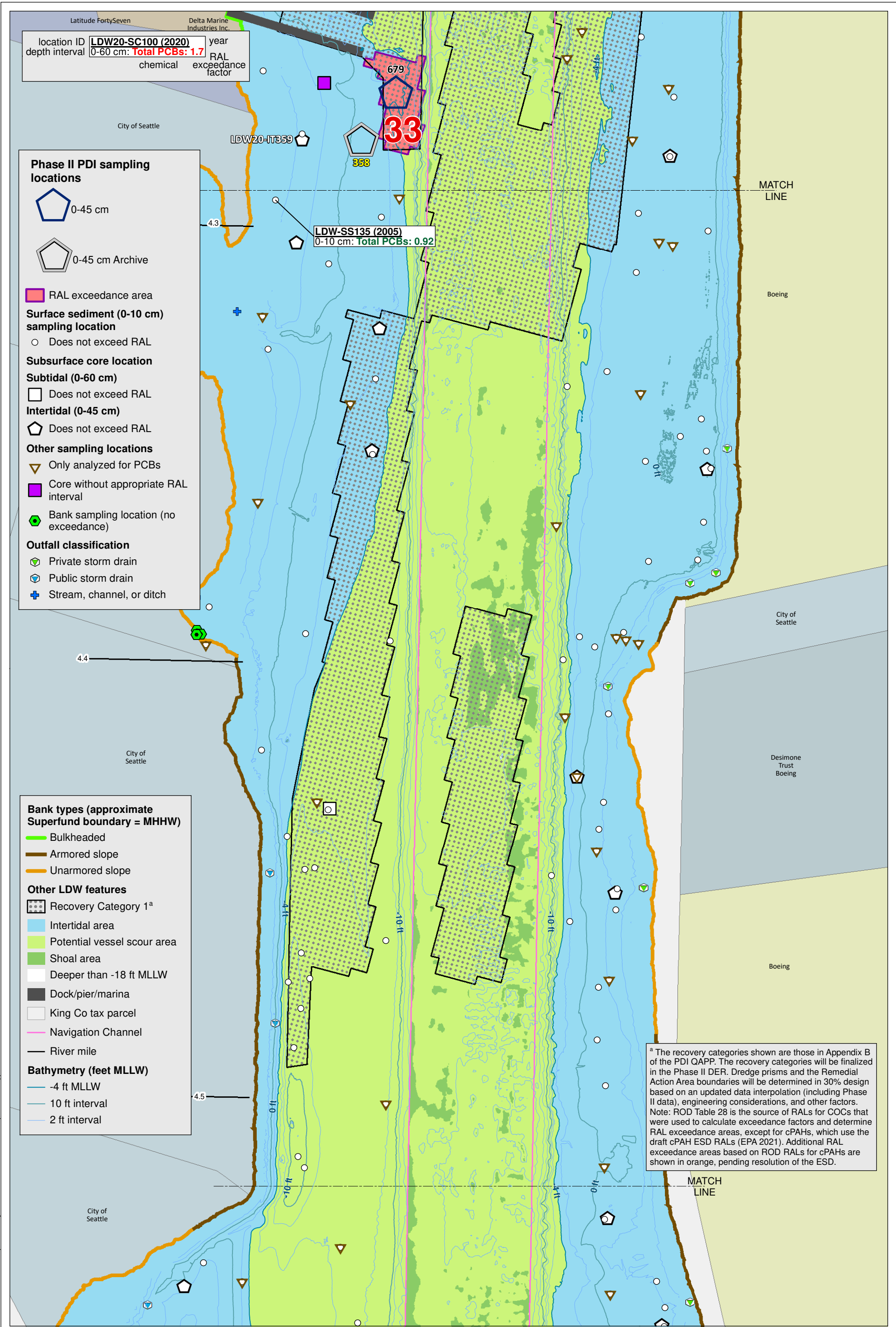
- RAL exceedance area
- Additional exceedance area using cPAH ROD RALs
- Surface sediment (0-10 cm) sampling location**
 - Exceeds RAL
 - Does not exceed RAL
- Subsurface core location**
 - Subtidal (0-60 cm)**
 - Exceeds RAL
 - Does not exceed RAL
 - Intertidal (0-45 cm)**
 - Exceeds RAL
 - Does not exceed RAL
- Other sampling locations**
 - 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^a
 - 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

^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.



Map 4-1g. Design dataset with RAL exceedance areas, Slip 6

PRE-DESIGN INVESTIGATION PHASE II QAPP
ADDENDUM FOR THE LDW UPPER REACH



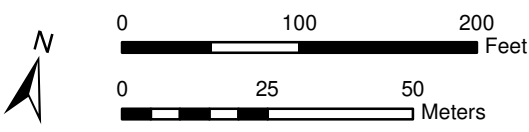
location ID **LDW20-SC100 (2020)** year
 depth interval 0-60 cm: **Total PCBs: 1.7** RAL
 chemical exceedance factor

- Phase II PDI sampling locations**
- 0-45 cm
 - 0-45 cm Archive
 - RAL exceedance area
- Surface sediment (0-10 cm) sampling location**
- 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**
- Only analyzed for PCBs
 - Core without appropriate RAL interval
 - Bank sampling location (no exceedance)
- Outfall classification**
- Private storm drain
 - Public storm drain
 - Stream, channel, or ditch

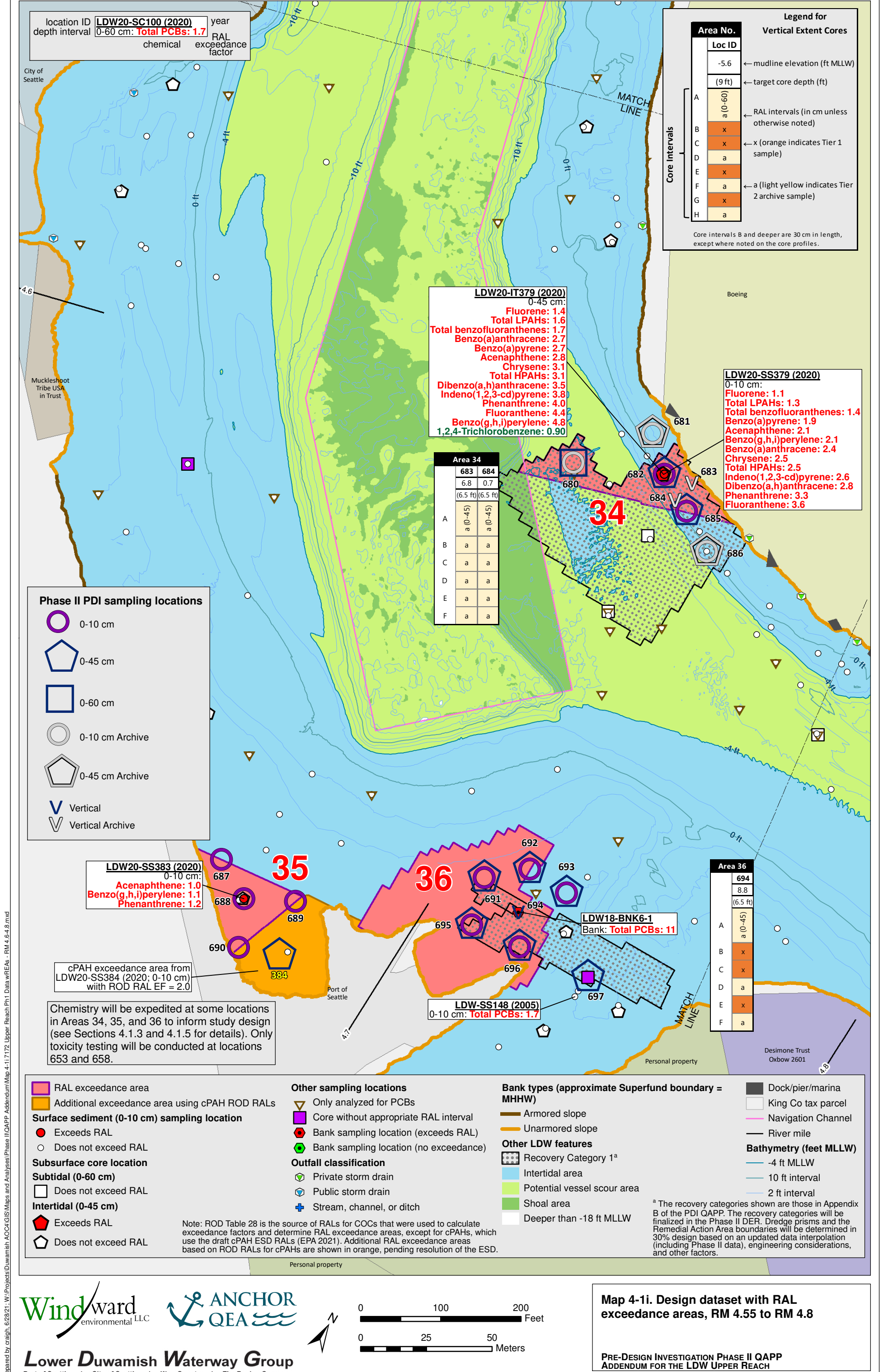
- Bank types (approximate Superfund boundary = MHHW)**
- Bulkheaded
 - Armored slope
 - Unarmored slope
- Other LDW features**
- Recovery Category 1^a
 - Intertidal area
 - Potential vessel scour area
 - Shoal area
 - Deeper than -18 ft MLLW
 - Dock/pier/marina
 - King Co tax parcel
 - Navigation Channel
 - River mile
- Bathymetry (feet MLLW)**
- 4 ft MLLW
 - 10 ft interval
 - 2 ft interval

^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.

Prepared by craigh. 6/28/21. W:\Projects\Duwamish ACC\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 4-1h 7172 Upper Reach Ph1 Data wREAs - RM 4.3-4.5.mxd



Map 4-1h. Design dataset with RAL exceedance areas, RM 4.3 to RM 4.55
 PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH



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

Area No.		Legend for Vertical Extent Cores	
Area No.	Loc ID		
	-5.6	←	mudline elevation (ft MLLW)
	(9 ft)	←	target core depth (ft)
A	a (0-60)	←	RAL intervals (in cm unless otherwise noted)
B	x	←	x (orange indicates Tier 1 sample)
C	x	←	
D	a	←	
E	x	←	
F	a	←	a (light yellow indicates Tier 2 archive sample)
G	x	←	
H	a	←	

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

LDW20-IT379 (2020)
 0-45 cm:
 Fluorene: 1.4
 Total LPAHs: 1.6
 Total benzofluoranthenes: 1.7
 Benzo(a)anthracene: 2.7
 Benzo(a)pyrene: 2.7
 Acenaphthene: 2.8
 Chrysene: 3.1
 Total HPAHs: 3.1
 Dibenzo(a,h)anthracene: 3.5
 Indeno(1,2,3-cd)pyrene: 3.8
 Phenanthrene: 4.0
 Fluoranthene: 4.4
 Benzo(g,h,i)perylene: 4.8
 1,2,4-Trichlorobenzene: 0.90

LDW20-SS379 (2020)
 0-10 cm:
 Fluorene: 1.1
 Total LPAHs: 1.3
 Total benzofluoranthenes: 1.4
 Benzo(a)pyrene: 1.9
 Acenaphthene: 2.1
 Benzo(g,h,i)perylene: 2.1
 Benzo(a)anthracene: 2.4
 Chrysene: 2.5
 Total HPAHs: 2.5
 Indeno(1,2,3-cd)pyrene: 2.6
 Dibenzo(a,h)anthracene: 2.8
 Phenanthrene: 3.3
 Fluoranthene: 3.6

Area 34	
683	684
6.8	0.7
(6.5 ft)	(6.5 ft)
A	a (0-45)
B	a
C	a
D	a
E	a
F	a

- Phase II PDI sampling locations**
- 0-10 cm
 - 0-45 cm
 - 0-60 cm
 - 0-10 cm Archive
 - 0-45 cm Archive
 - Vertical
 - Vertical Archive

LDW20-SS383 (2020)
 0-10 cm:
 Acenaphthene: 1.0
 Benzo(g,h,i)perylene: 1.1
 Phenanthrene: 1.2

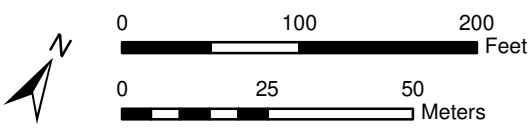
Area 36	
694	
8.8	
(6.5 ft)	
A	a (0-45)
B	x
C	x
D	a
E	x
F	a

cPAH exceedance area from LDW20-SS384 (2020; 0-10 cm) with ROD RAL EF = 2.0

Chemistry will be expedited at some locations in Areas 34, 35, and 36 to inform study design (see Sections 4.1.3 and 4.1.5 for details). Only toxicity testing will be conducted at locations 653 and 658.

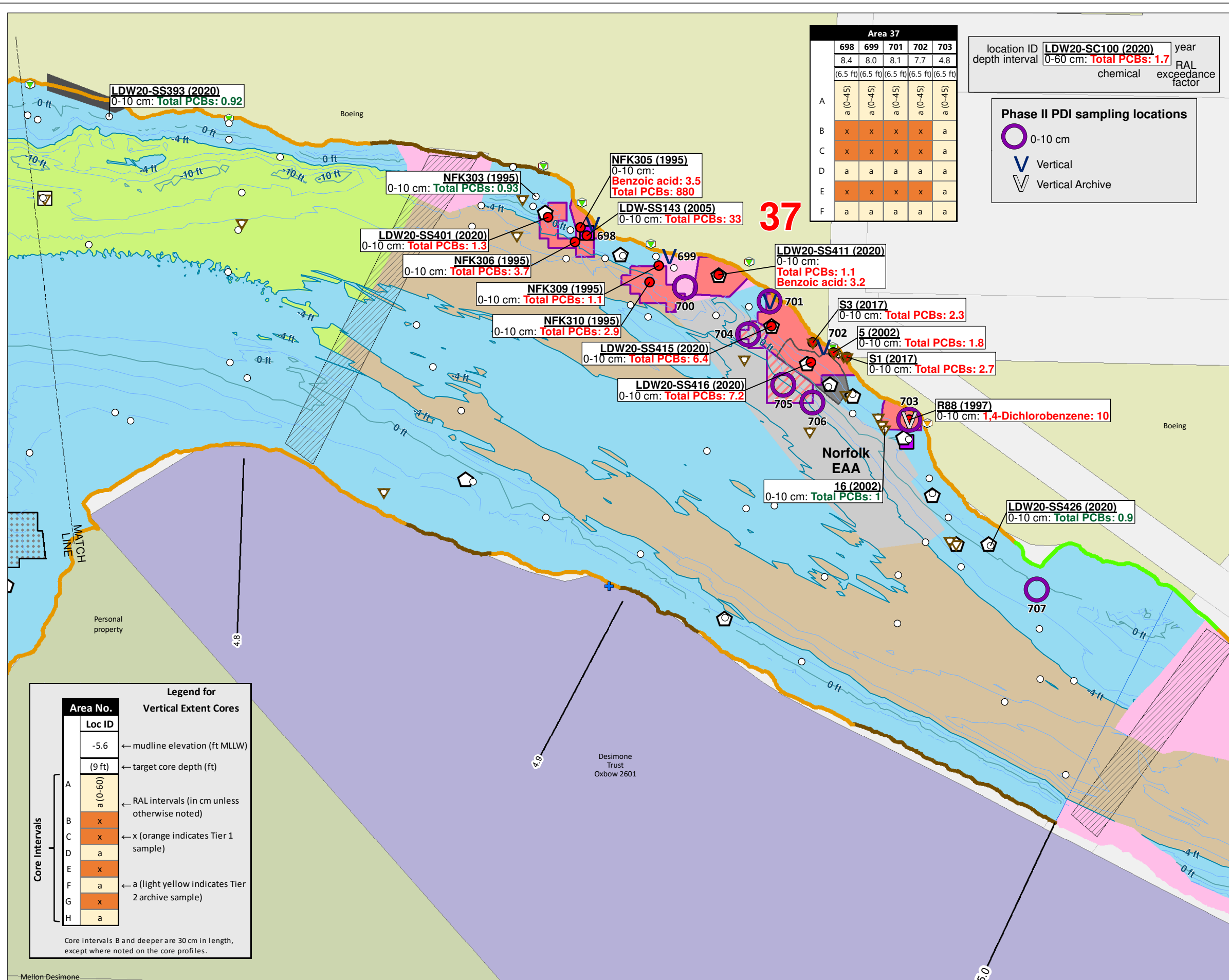
- RAL exceedance area
 - Additional exceedance area using cPAH ROD RALs
 - Surface sediment (0-10 cm) sampling location
 - Exceeds RAL
 - Does not exceed RAL
 - Subsurface core location
 - Subtidal (0-60 cm)
 - Does not exceed RAL
 - Intertidal (0-45 cm)
 - Exceeds RAL
 - Does not exceed RAL
 - Other sampling locations
 - Only analyzed for PCBs
 - Core without appropriate RAL interval
 - Bank sampling location (exceeds RAL)
 - Bank sampling location (no exceedance)
 - Outfall classification
 - Private storm drain
 - Public storm drain
 - Stream, channel, or ditch
 - Bank types (approximate Superfund boundary = MHHW)
 - Armored slope
 - Unarmored slope
 - Other LDW features
 - Recovery Category 1^a
 - Intertidal area
 - Potential vessel scour area
 - Shoal area
 - Deeper than -18 ft MLLW
 - Dock/pier/marina
 - King Co tax parcel
 - Navigation Channel
 - River mile
 - Bathymetry (feet MLLW)
 - 4 ft MLLW
 - 10 ft interval
 - 2 ft interval
- ^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.

Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.



Prepared by craigh.6/28/21: W:\Projects\Duwamish\AOC\GIS\Maps and Analyses\Phase II\QAPP\Addendum\Map 4-1\17172_Upper_Reach_Ph1_Data_wREAs - RM 4.55-4.8.mxd

Prepared by: craigh, 6/26/21; W:\Projects\Duwamish ACC4\GIS\Maps and Analysis\Phase II QAPP Addendum\Map 4-1\17172 Upper Reach Ph1 Data wFEAs - RM 4.8-5.0.mxd



Area 37					
	698	699	701	702	703
	8.4	8.0	8.1	7.7	4.8
	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)
A	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)
B	x	x	x	x	a
C	x	x	x	x	a
D	a	a	a	a	a
E	x	x	x	x	a
F	a	a	a	a	a

location ID	LDW20-SS100 (2020)	year	
depth interval	0-60 cm: Total PCBs: 1.7	chemical	RAL exceedance factor

Phase II PDI sampling locations

- 0-10 cm
- ∇ Vertical
- ∇ Vertical Archive

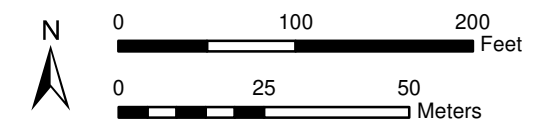
- RAL exceedance area
- ▨ RAL exceedance area on the Norfolk EAA
- Surface sediment (0-10 cm) sampling location**
 - Exceeds RAL
 - Does not exceed RAL
- Subsurface core location**
 - Subtidal (0-60 cm) Does not exceed RAL
 - ◻ Intertidal (0-45 cm) Does not exceed RAL
- Other sampling locations**
 - ∇ 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
- Other LDW features**
 - Recovery Category 1^a
 - Intertidal area
 - Potential vessel scour area
 - Subtidal with no subsurface RAL
 - Area not covered by bathymetric survey
 - Bridge
 - Dock/pier/marina
 - Boeing South Storm Drain removal area
 - EAA
- Bathymetry (feet MLLW)**
 - King Co tax parcel
 - River mile
 - -4 ft MLLW
 - 10 ft interval
 - 2 ft interval

^a The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors and determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.

Legend for Vertical Extent Cores

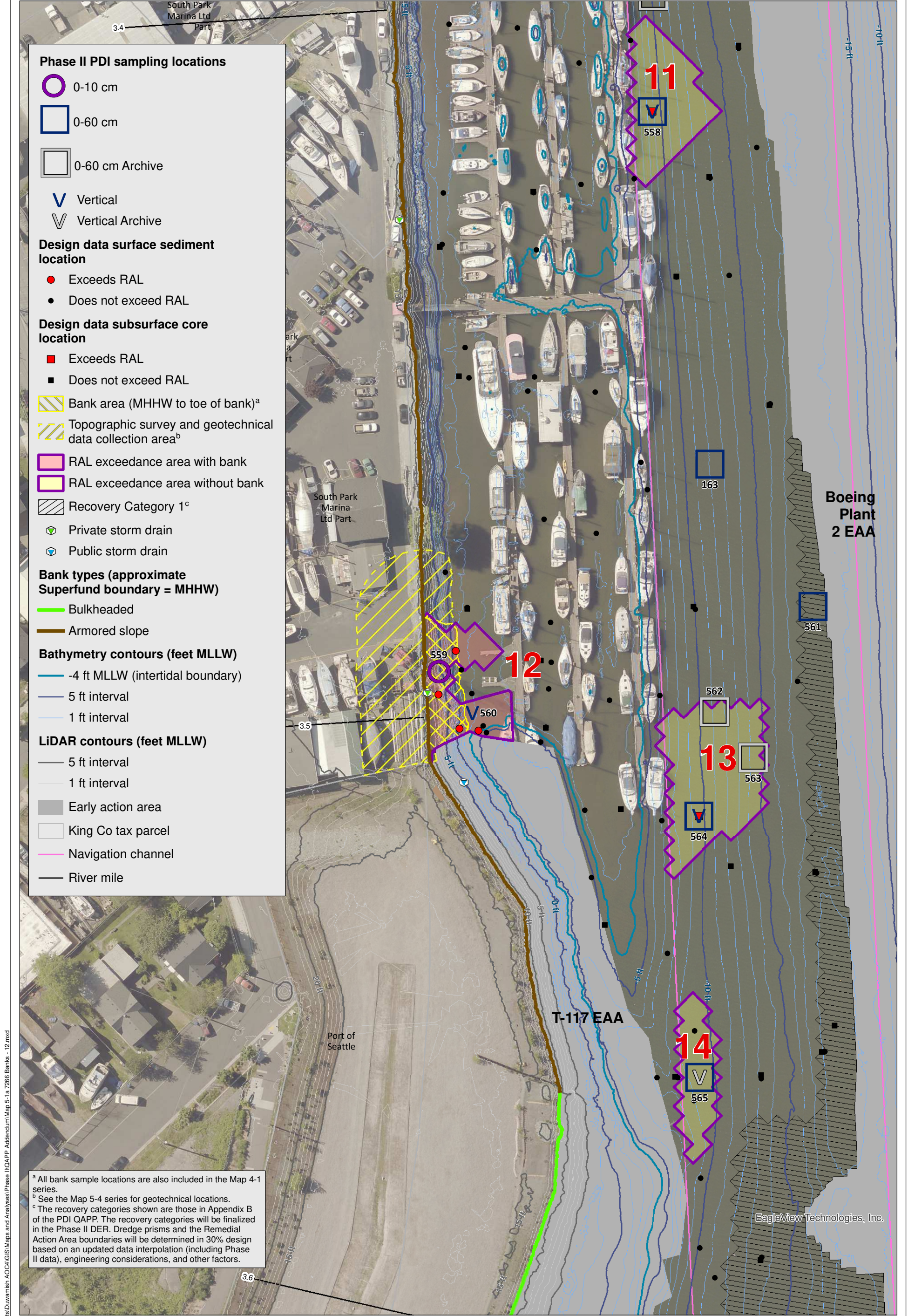
Area No.	Loc ID	Vertical Extent Cores
	-5.6	← mudline elevation (ft MLLW)
	(9 ft)	← target core depth (ft)
A	a (0-60)	← RAL intervals (in cm unless otherwise noted)
B	x	← x (orange indicates Tier 1 sample)
C	x	
D	a	
E	x	
F	a	← a (light yellow indicates Tier 2 archive sample)
G	x	
H	a	

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



Map 4-1j. Design dataset with RAL exceedance areas, RM 4.8 to RM 5.0

PRE-DESIGN INVESTIGATION PHASE II QAPP
ADDENDUM FOR THE LDW UPPER REACH



Phase II PDI sampling locations

- 0-10 cm
- 0-60 cm
- 0-60 cm Archive
- ∇ Vertical
- ∇ Vertical Archive

Design data surface sediment location

- Exceeds RAL
- Does not exceed RAL

Design data subsurface core location

- Exceeds RAL
- Does not exceed RAL

Bank area (MHHW to toe of bank)^a

- ▨ Topographic survey and geotechnical data collection area^b

RAL exceedance area with bank

- ▨ Recovery Category 1^c
- ∇ Private storm drain
- ∇ Public storm drain

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope

Bathymetry contours (feet MLLW)

- -4 ft MLLW (intertidal boundary)
- 5 ft interval
- 1 ft interval

LiDAR contours (feet MLLW)

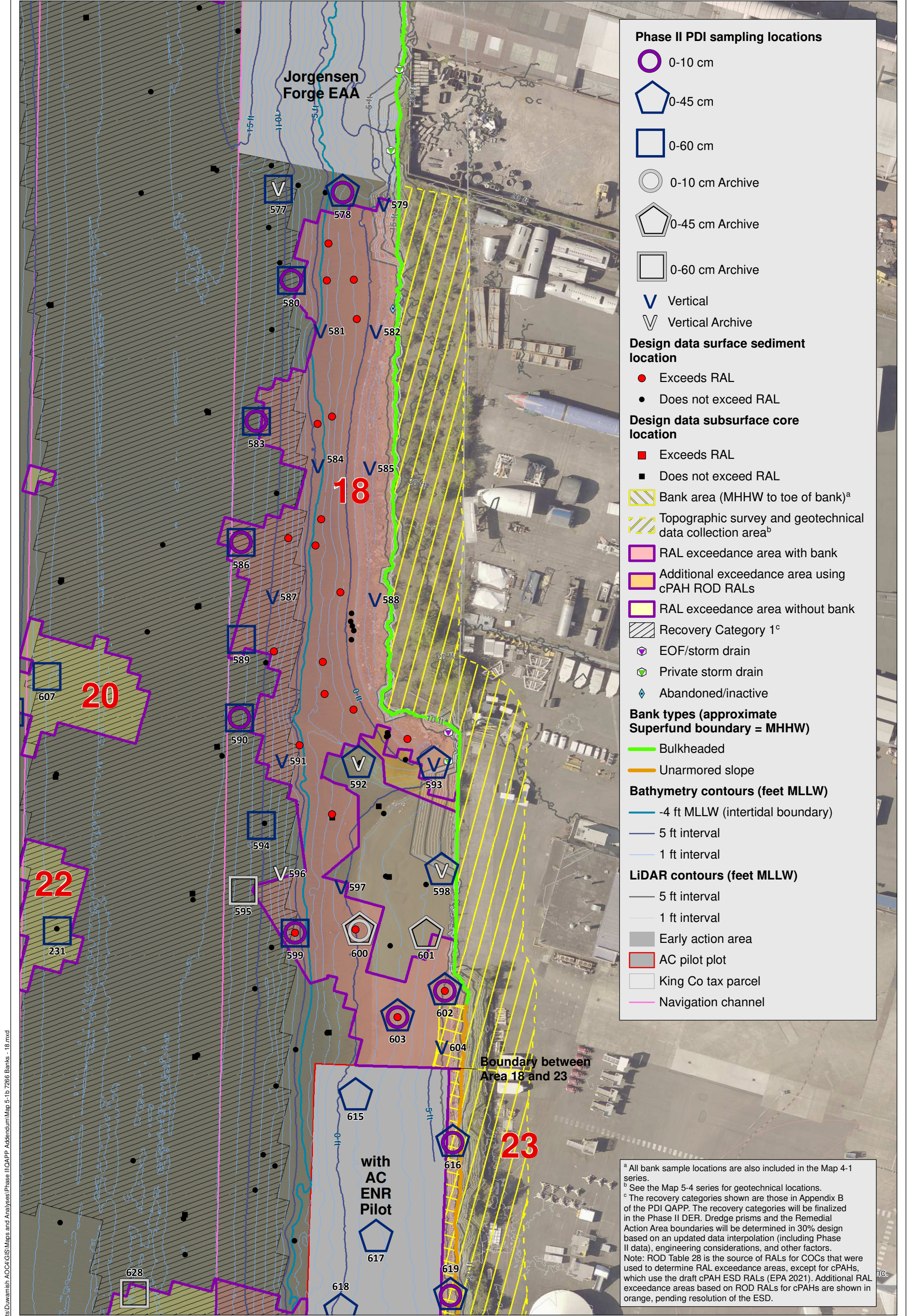
- 5 ft interval
- 1 ft interval
- Early action area
- King Co tax parcel
- Navigation channel
- River mile

^a All bank sample locations are also included in the Map 4-1 series.
^b See the Map 5-4 series for geotechnical locations.
^c The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.

Prepared by craigh. 6/28/21. W:\Projects\Duwamish AOC\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-1a 7266\Banks_12.mxd



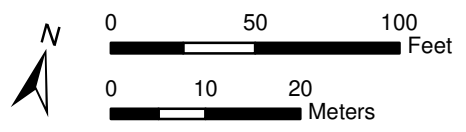
Map 5-1a. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 12
 PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH



- Phase II PDI sampling locations**
- 0-10 cm
 - 0-45 cm
 - 0-60 cm
 - 0-10 cm Archive
 - 0-45 cm Archive
 - 0-60 cm Archive
 - Vertical
 - Vertical Archive
- Design data surface sediment location**
- Exceeds RAL
 - Does not exceed RAL
- Design data subsurface core location**
- Exceeds RAL
 - Does not exceed RAL
- Bank types (approximate Superfund boundary = MHHW)**
- Bulkheaded
 - Unarmored slope
- Bathymetry contours (feet MLLW)**
- 4 ft MLLW (intertidal boundary)
 - 5 ft interval
 - 1 ft interval
- LiDAR contours (feet MLLW)**
- 5 ft interval
 - 1 ft interval
 - Early action area
 - AC pilot plot
 - King Co tax parcel
 - Navigation channel

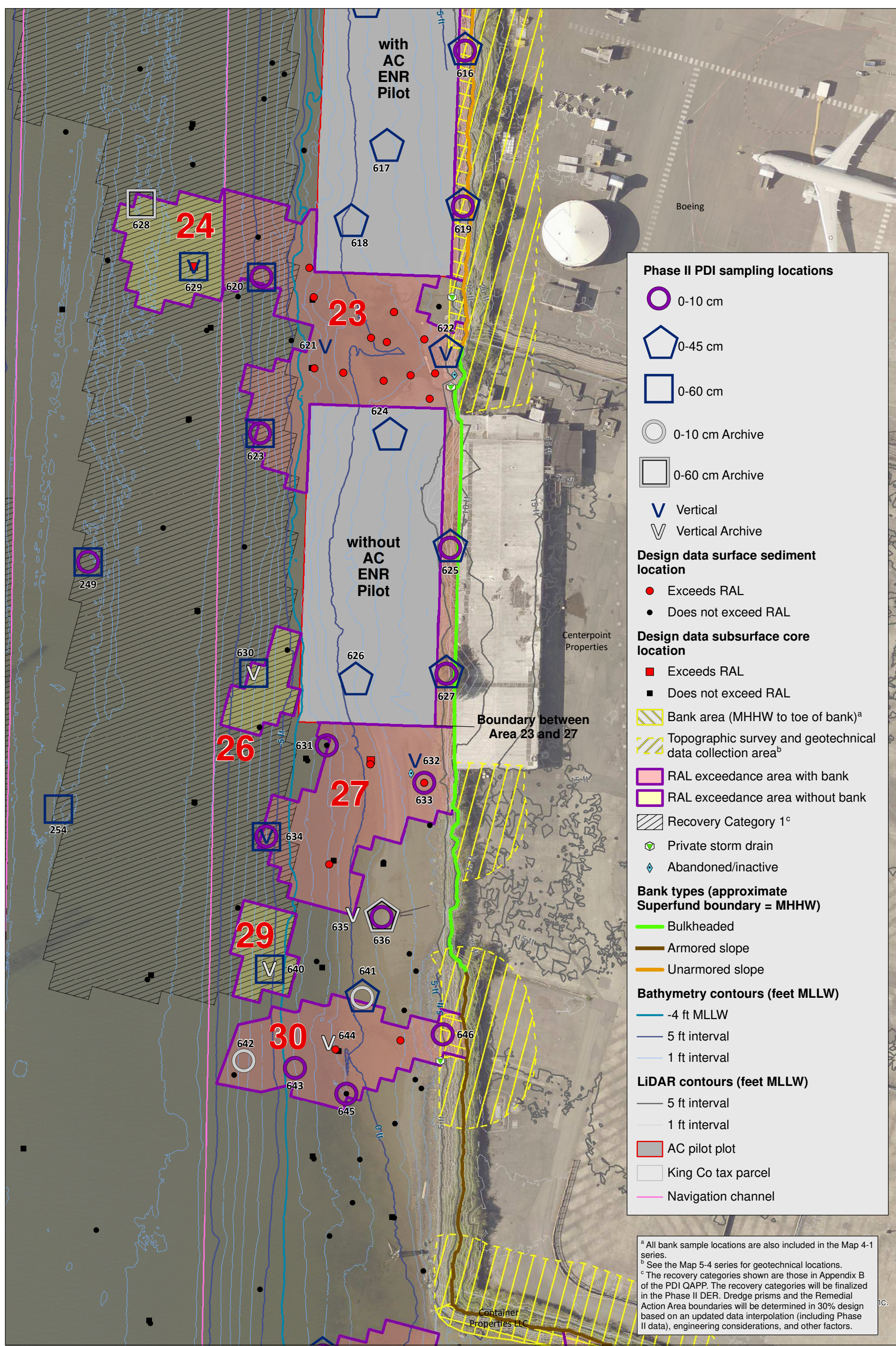
^a All bank sample locations are also included in the Map 4-1 series.
^b See the Map 5-4 series for geotechnical locations.
^c The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.
 Note: ROD Table 28 is the source of RALs for COCs that were used to determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.

Prepared by craigh. 6/28/21. W:\Projects\Duwamish ACC4\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-1b 7266 Banks - 18.mxd



Map 5-1b. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 18
 PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH

Prepared by craigh. 6/28/21. W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-1c 7666 Banks - 23-27-30.mxd



Phase II PDI sampling locations

- 0-10 cm
- 0-45 cm
- 0-60 cm
- 0-10 cm Archive
- 0-60 cm Archive
- ∇ Vertical
- ∇ Vertical Archive

Design data surface sediment location

- Exceeds RAL
- Does not exceed RAL

Design data subsurface core location

- Exceeds RAL
- Does not exceed RAL

Design data surface sediment location

- Bank area (MHHW to toe of bank)^a
- Topographic survey and geotechnical data collection area^b
- RAL exceedance area with bank
- RAL exceedance area without bank
- Recovery Category 1^c
- ◆ Private storm drain
- ◆ Abandoned/inactive

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope
- Unarmored slope

Bathymetry contours (feet MLLW)

- 4 ft MLLW
- 5 ft interval
- 1 ft interval

LiDAR contours (feet MLLW)

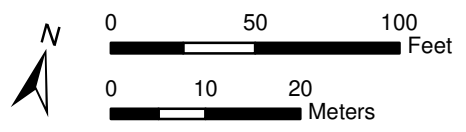
- 5 ft interval
- 1 ft interval

AC pilot plot

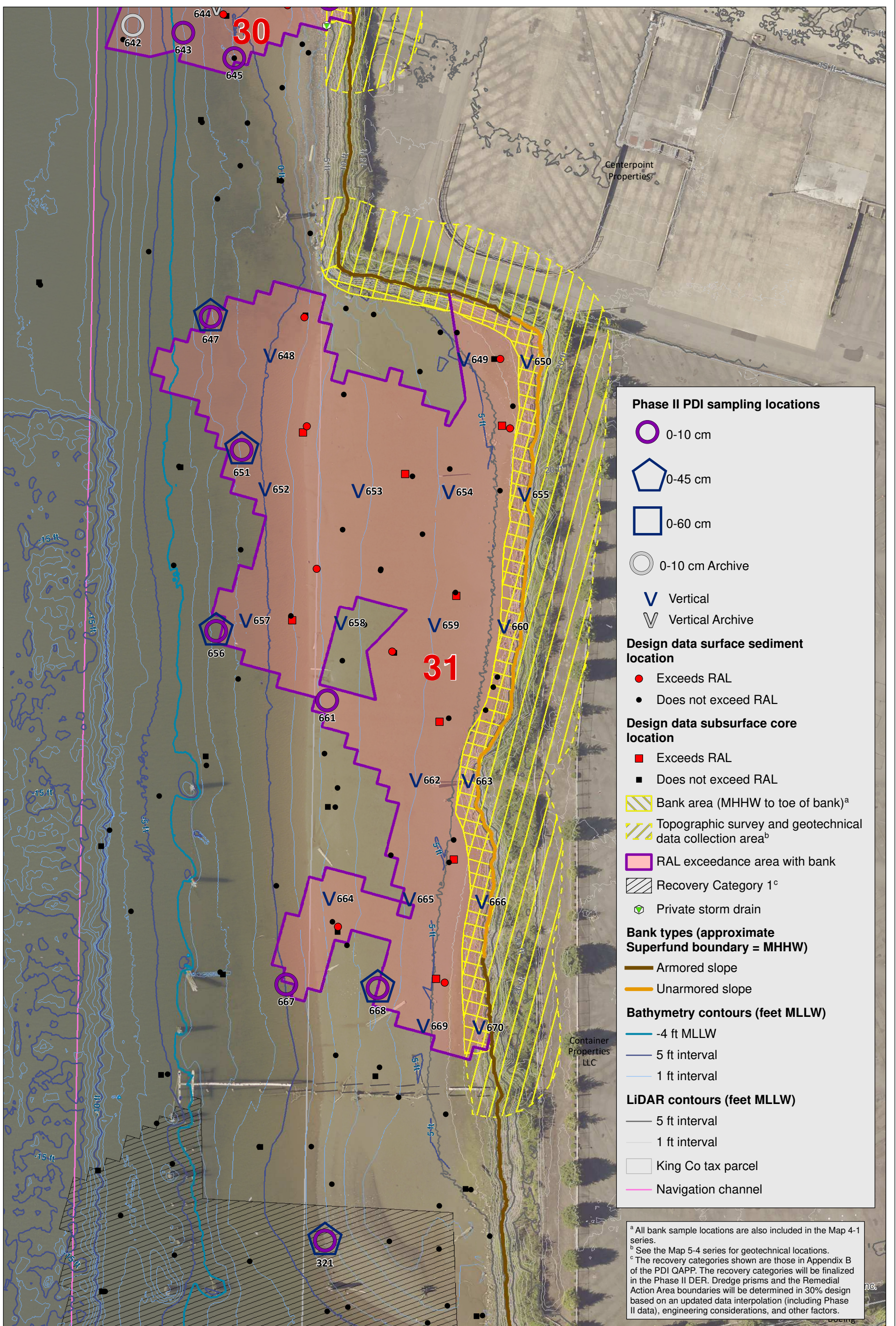
King Co tax parcel

Navigation channel

^a All bank sample locations are also included in the Map 4-1 series.
^b See the Map 5-4 series for geotechnical locations.
^c The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.



Map 5-1c. Area of potential surveying and bank sampling/investigation at RAL Exceedance Areas 23, 27, and 30
 PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH



Phase II PDI sampling locations

- 0-10 cm
- ◡ 0-45 cm
- 0-60 cm
- 0-10 cm Archive
- ∇ Vertical
- ∇ Vertical Archive

Design data surface sediment location

- Exceeds RAL
- Does not exceed RAL

Design data subsurface core location

- Exceeds RAL
- Does not exceed RAL

- ▨ Bank area (MHHW to toe of bank)^a
- ▨ Topographic survey and geotechnical data collection area^b
- ▨ RAL exceedance area with bank
- ▨ Recovery Category 1^c
- ⬇ Private storm drain

Bank types (approximate Superfund boundary = MHHW)

- Armored slope
- Unarmored slope

Bathymetry contours (feet MLLW)

- -4 ft MLLW
- 5 ft interval
- 1 ft interval

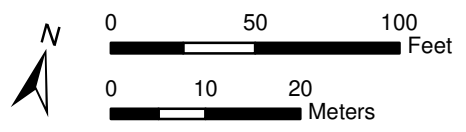
LiDAR contours (feet MLLW)

- 5 ft interval
- 1 ft interval

- King Co tax parcel
- Navigation channel

^a All bank sample locations are also included in the Map 4-1 series.
^b See the Map 5-4 series for geotechnical locations.
^c The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.

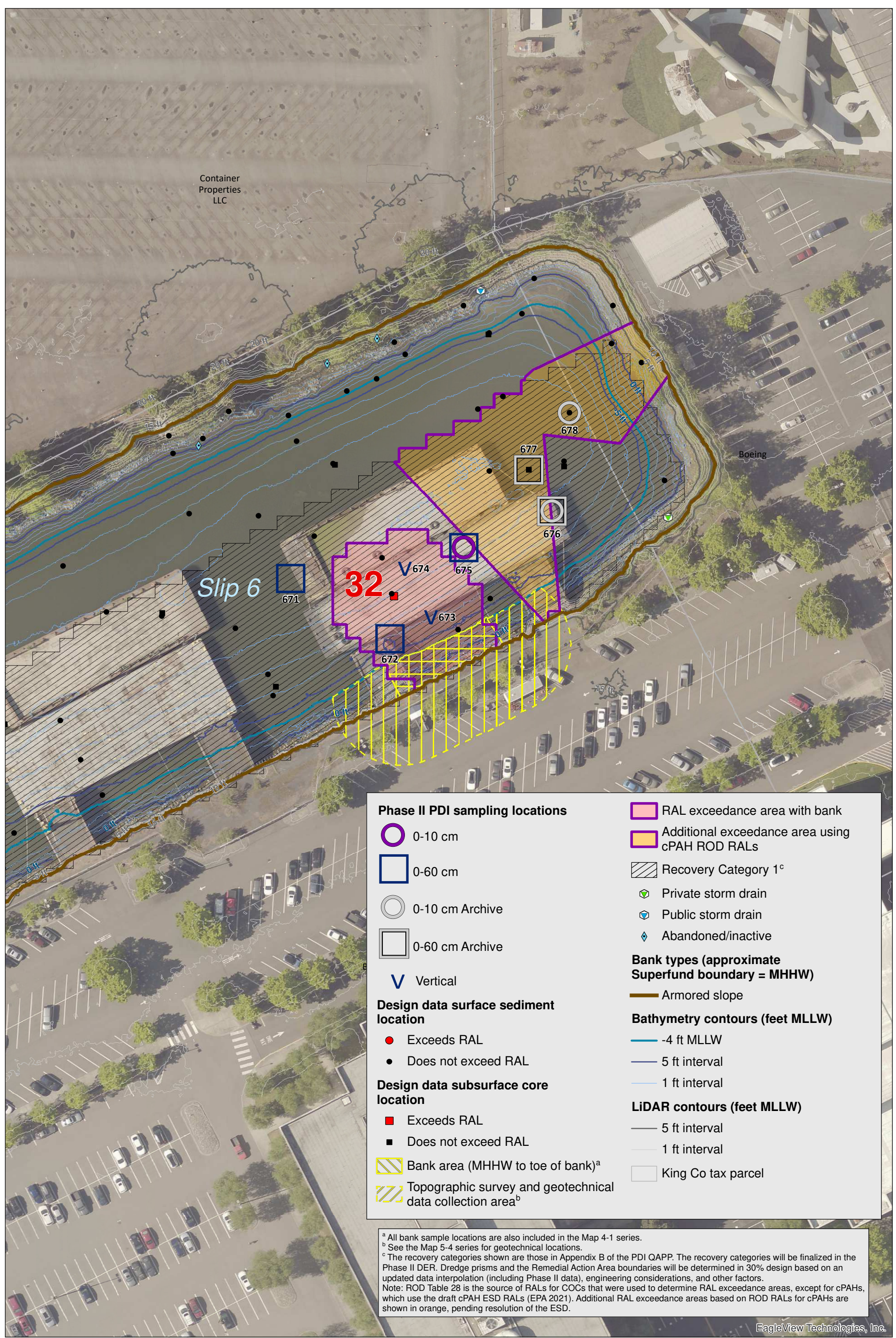
Prepared by craigh. 6/28/21. W:\Projects\Duwamish AOC\GIS\Maps and Analyses\Phase II QAPP Addendum\Map 5-1d 7266 Banks - 31.mxd



Map 5-1d. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 31

PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH

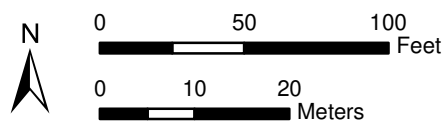
Prepared by craigh. 6/28/21. W:\Projects\Duwamish ACCA\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-1e 7266 Banks_32.mxd



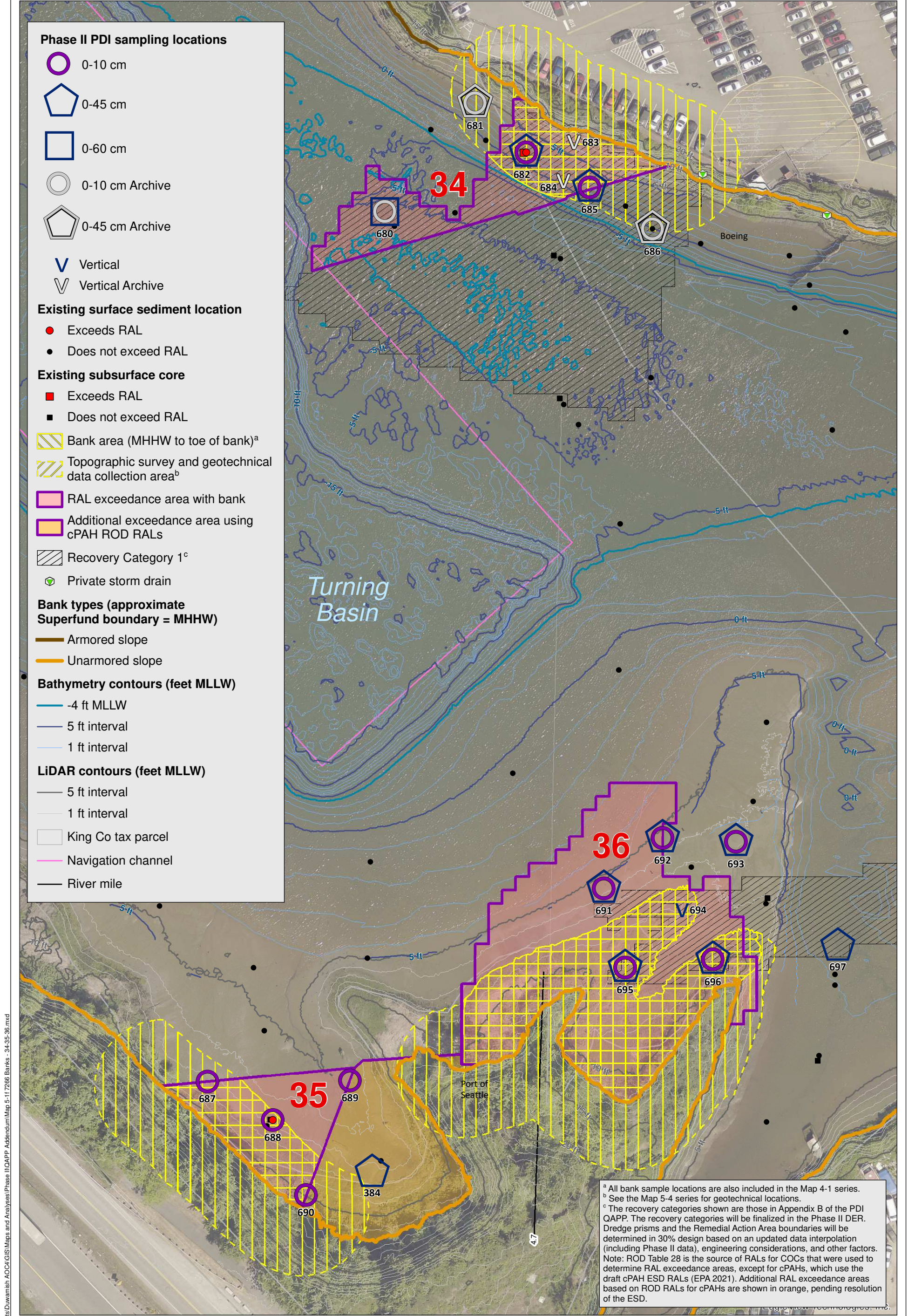
Phase II PDI sampling locations		RAL exceedance area with bank
	0-10 cm	Additional exceedance area using cPAH ROD RALs
	0-60 cm	Recovery Category 1 ^c
	0-10 cm Archive	
	0-60 cm Archive	Private storm drain
	Vertical	
	Exceeds RAL	Public storm drain
	Does not exceed RAL	
	Exceeds RAL	Abandoned/inactive
	Does not exceed RAL	
	Bank area (MHHW to toe of bank) ^a	Bank types (approximate Superfund boundary = MHHW)
	Topographic survey and geotechnical data collection area ^b	Armored slope
		Bathymetry contours (feet MLLW)
		-4 ft MLLW
		5 ft interval
		1 ft interval
		LiDAR contours (feet MLLW)
		5 ft interval
		1 ft interval
		King Co tax parcel

^a All bank sample locations are also included in the Map 4-1 series.
^b See the Map 5-4 series for geotechnical locations.
^c The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.
 Note: ROD Table 28 is the source of RALs for COCs that were used to determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.

EagleView Technologies, Inc.

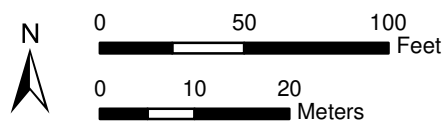


Map 5-1e. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 32
 PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH

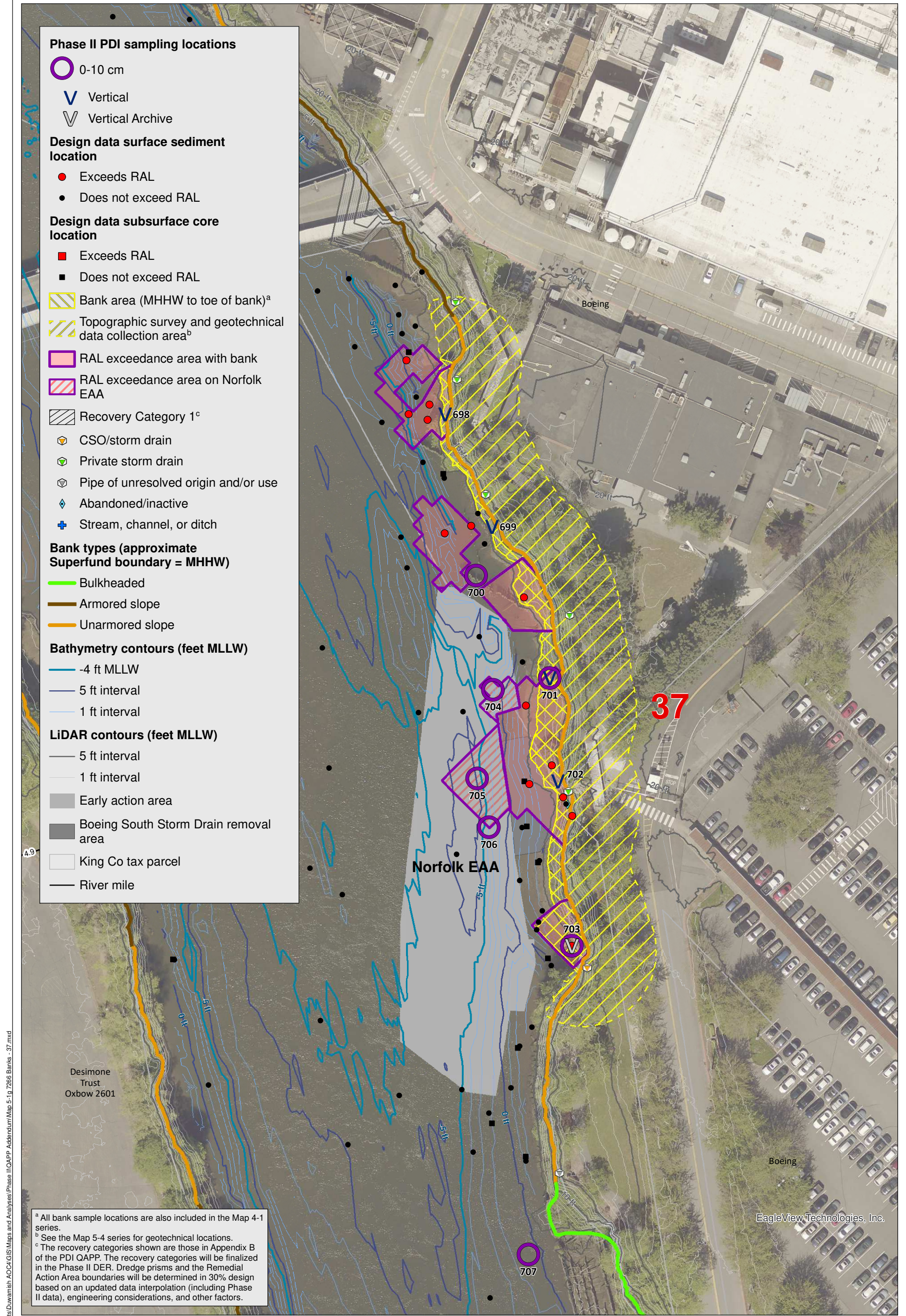


^a All bank sample locations are also included in the Map 4-1 series.
^b See the Map 5-4 series for geotechnical locations.
^c The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors. Note: ROD Table 28 is the source of RALs for COCs that were used to determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.

Prepared by craigh. 6/28/21. W:\Projects\Duwamish\AOC4\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-1f 7266 Banks - 34-35-36.mxd



Map 5-1f. Area of potential surveying and bank sampling/investigation at RAL Exceedance Areas 34, 35, and 36
 PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH



Phase II PDI sampling locations

- 0-10 cm
- ∇ Vertical
- ∇ Vertical Archive

Design data surface sediment location

- Exceeds RAL
- Does not exceed RAL

Design data subsurface core location

- Exceeds RAL
- Does not exceed RAL

Bank area (MHHW to toe of bank)^a

- ▨ Topographic survey and geotechnical data collection area^b

RAL exceedance area with bank

- ▨ RAL exceedance area on Norfolk EAA

Recovery Category 1^c

- CSO/storm drain
- ∇ Private storm drain
- ∇ Pipe of unresolved origin and/or use
- ◇ Abandoned/inactive
- ⊕ Stream, channel, or ditch

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope
- Unarmored slope

Bathymetry contours (feet MLLW)

- -4 ft MLLW
- 5 ft interval
- 1 ft interval

LiDAR contours (feet MLLW)

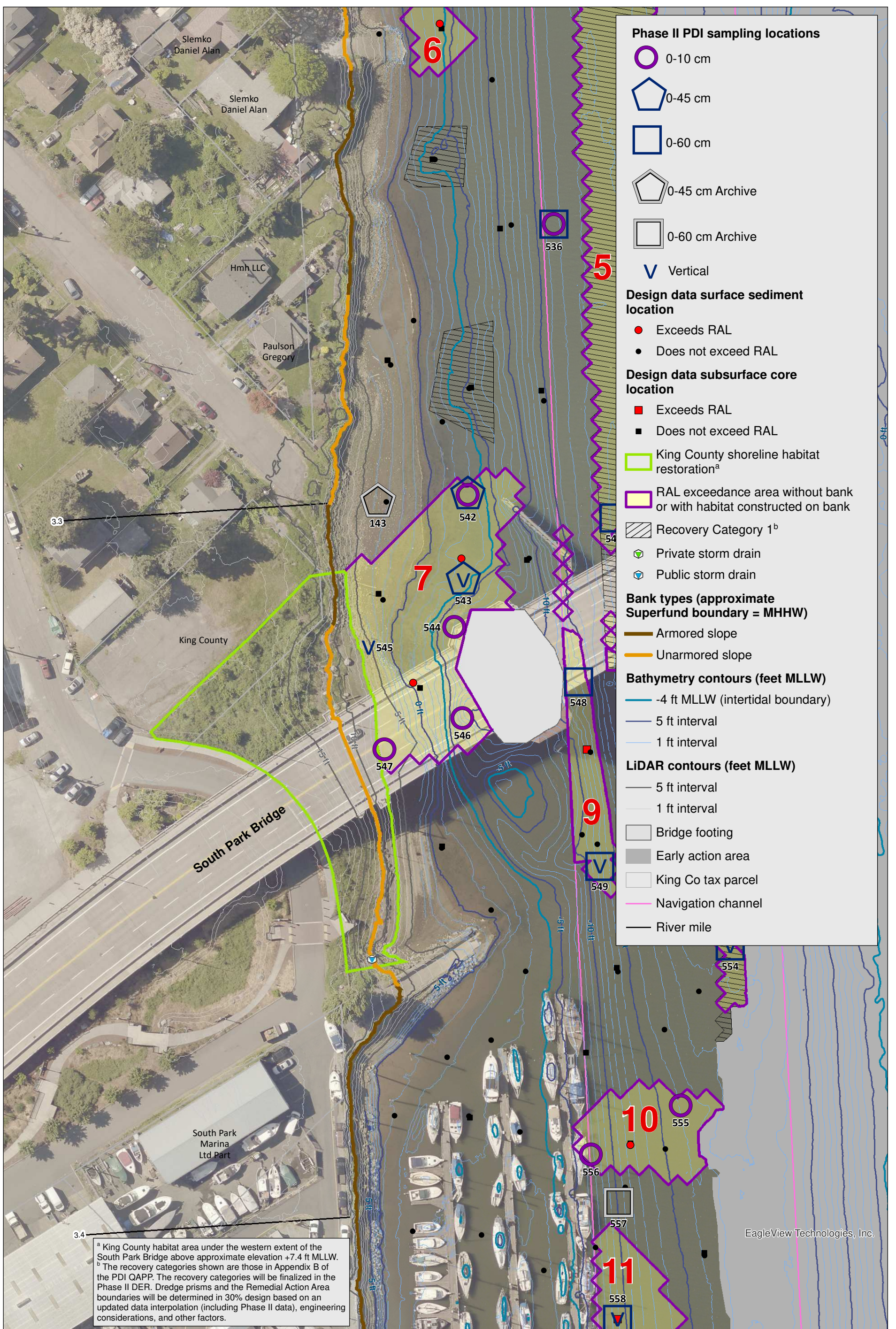
- 5 ft interval
- 1 ft interval
- Early action area
- Boeing South Storm Drain removal area
- King Co tax parcel
- River mile

^a All bank sample locations are also included in the Map 4-1 series.
^b See the Map 5-4 series for geotechnical locations.
^c The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.

Prepared by craigh. 6/28/21: W:\Projects\Duwamish ACCA\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-1g 7266 Banks - 37.mxd

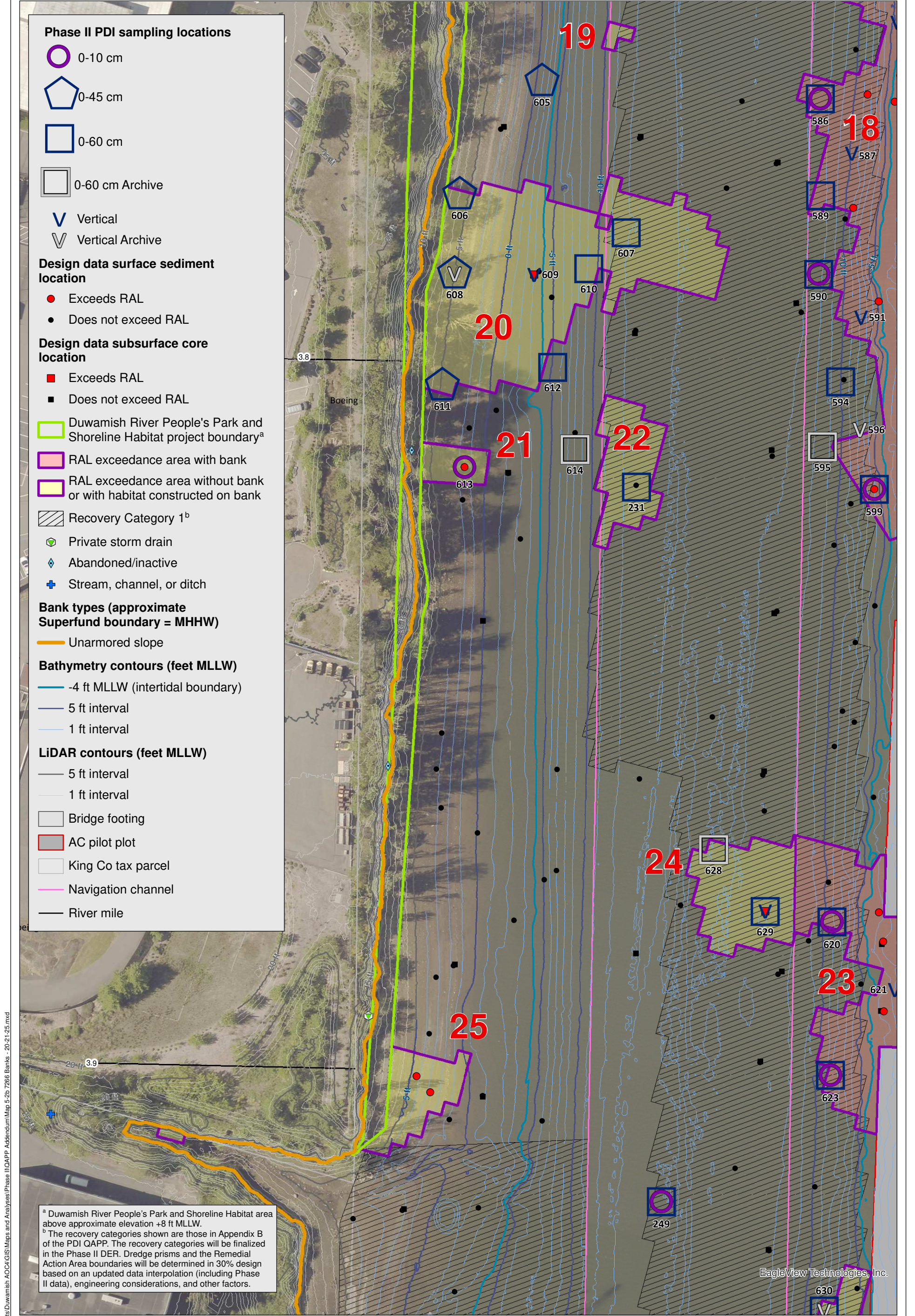


Map 5-1g. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 37
 PRE-DESIGN INVESTIGATION PHASE II QAPP
 ADDENDUM FOR THE LDW UPPER REACH



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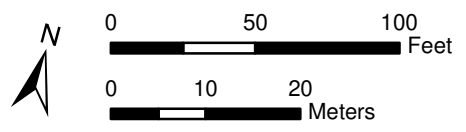
^a Duwamish River People's Park and Shoreline Habitat area above approximate elevation +8 ft MLLW.
^b The recovery categories shown are those in Appendix B of the PDI QAPP. The recovery categories will be finalized in the Phase II DER. Dredge prisms and the Remedial Action Area boundaries will be determined in 30% design based on an updated data interpolation (including Phase II data), engineering considerations, and other factors.

EagleView Technologies, Inc.

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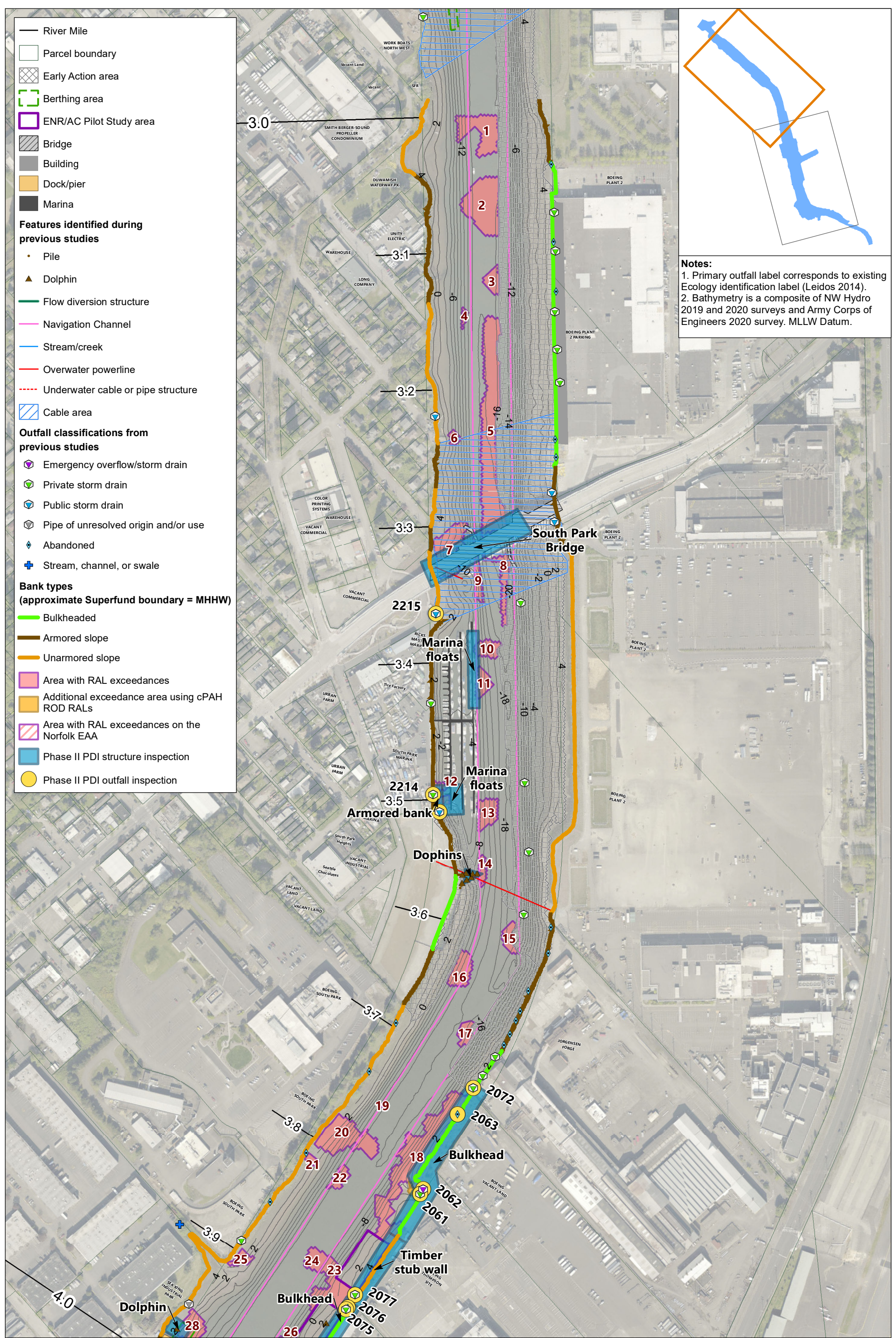


Lower Duwamish Waterway Group
 Port of Seattle / City of Seattle / King County / The Boeing Company



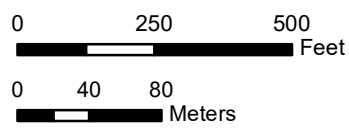
Map 5-2b. Area of habitat restoration at RAL Exceedance Areas 20, 21, and 25

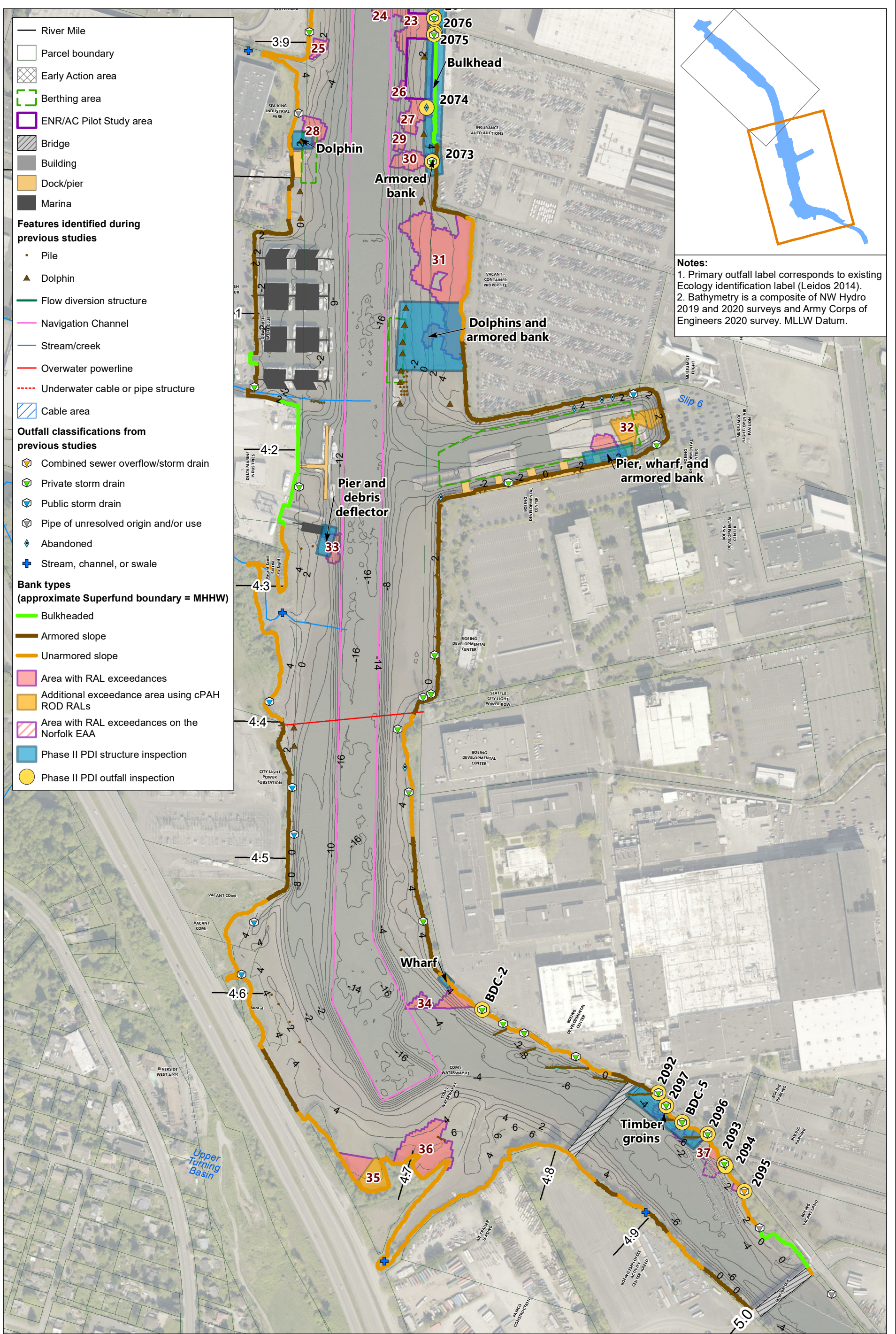
PRE-DESIGN INVESTIGATION PHASE II QAPP
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Notes:
 1. Primary outfall label corresponds to existing Ecology identification label (Leidos 2014).
 2. Bathymetry is a composite of NW Hydro 2019 and 2020 surveys and Army Corps of Engineers 2020 survey. MLLW Datum.

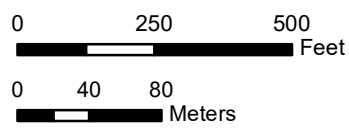
Prepared by adowell | 6/22/2021 | Vercaas\gis\Jobs\KingCounty_0067\LDWM\Maps\Data\Evaluation\Report\LDW_AG_DER_Figs_3_ProposedPhaseII\StructureOutfall\Inspection.mxd

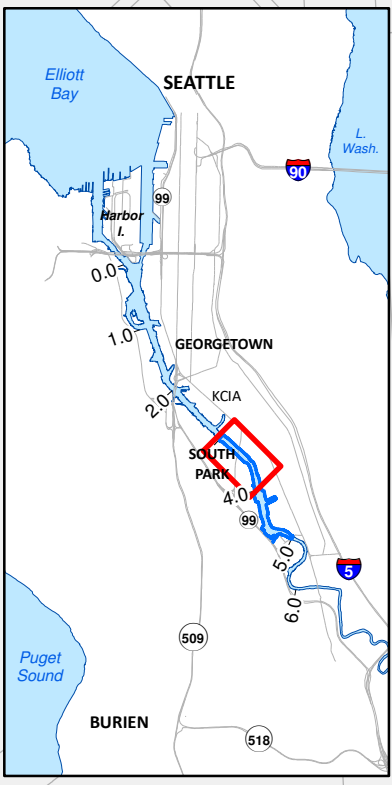
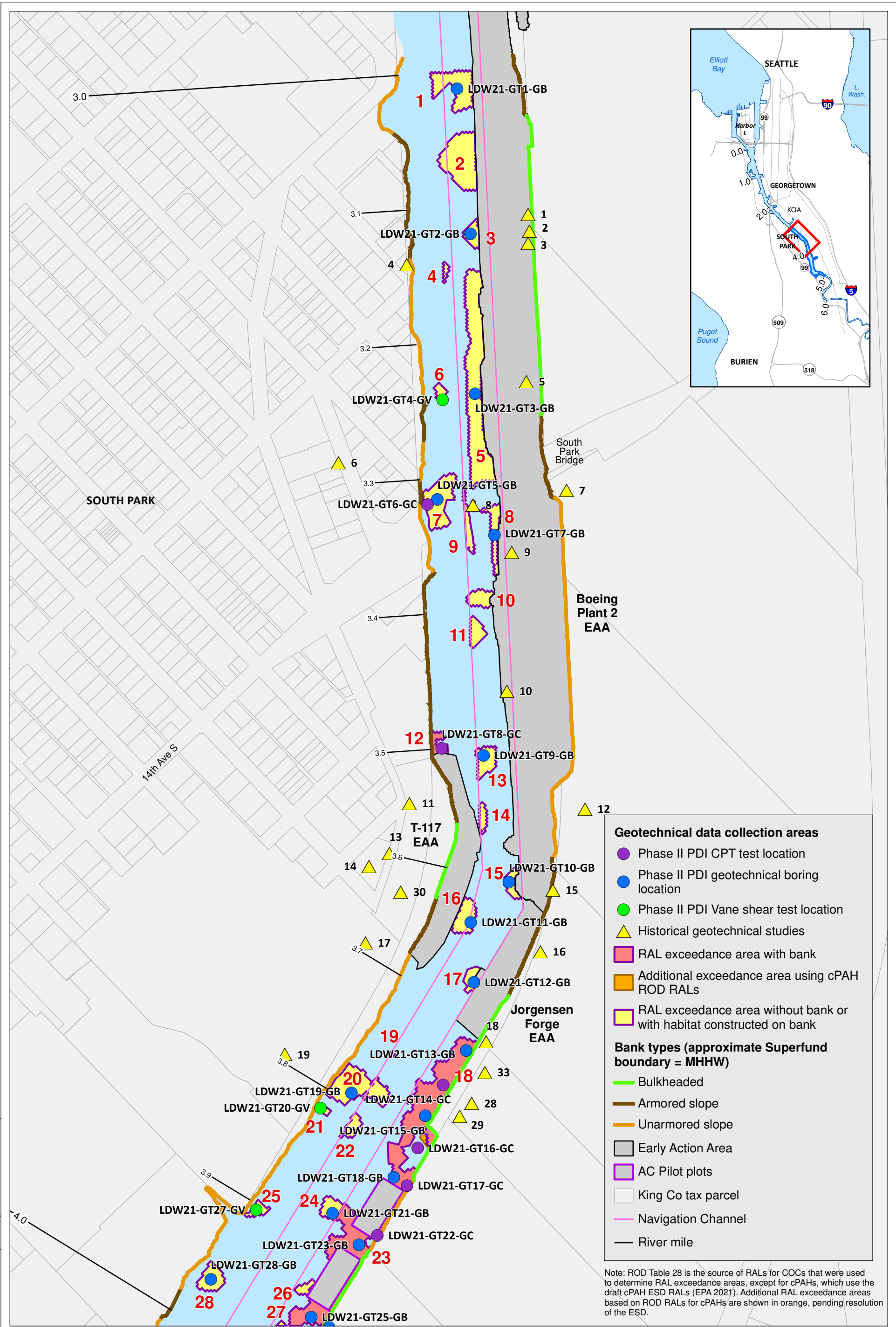




Notes:
 1. Primary outfall label corresponds to existing Ecology identification label (Leidos 2014).
 2. Bathymetry is a composite of NW Hydro 2019 and 2020 surveys and Army Corps of Engineers 2020 survey. MLLW Datum.

Prepared by adowell | 6/22/2021 | Vercaslo\Jobs\KingCounty_0067\LDWM\Maps\Data\EvaluationReport\LDW_AG_DER_Figs_3_ProposedPhaseIIStructureOutfallInspection.mxd





Geotechnical data collection areas

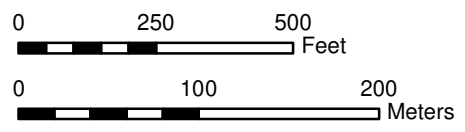
- Phase II PDI CPT test location
- Phase II PDI geotechnical boring location
- Phase II PDI Vane shear test location
- ▲ Historical geotechnical studies
- RAL exceedance area with bank
- Additional exceedance area using cPAH ROD RALs
- RAL exceedance area without bank or with habitat constructed on bank

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope
- Unarmored slope
- Early Action Area
- AC Pilot plots
- King Co tax parcel
- Navigation Channel
- River mile

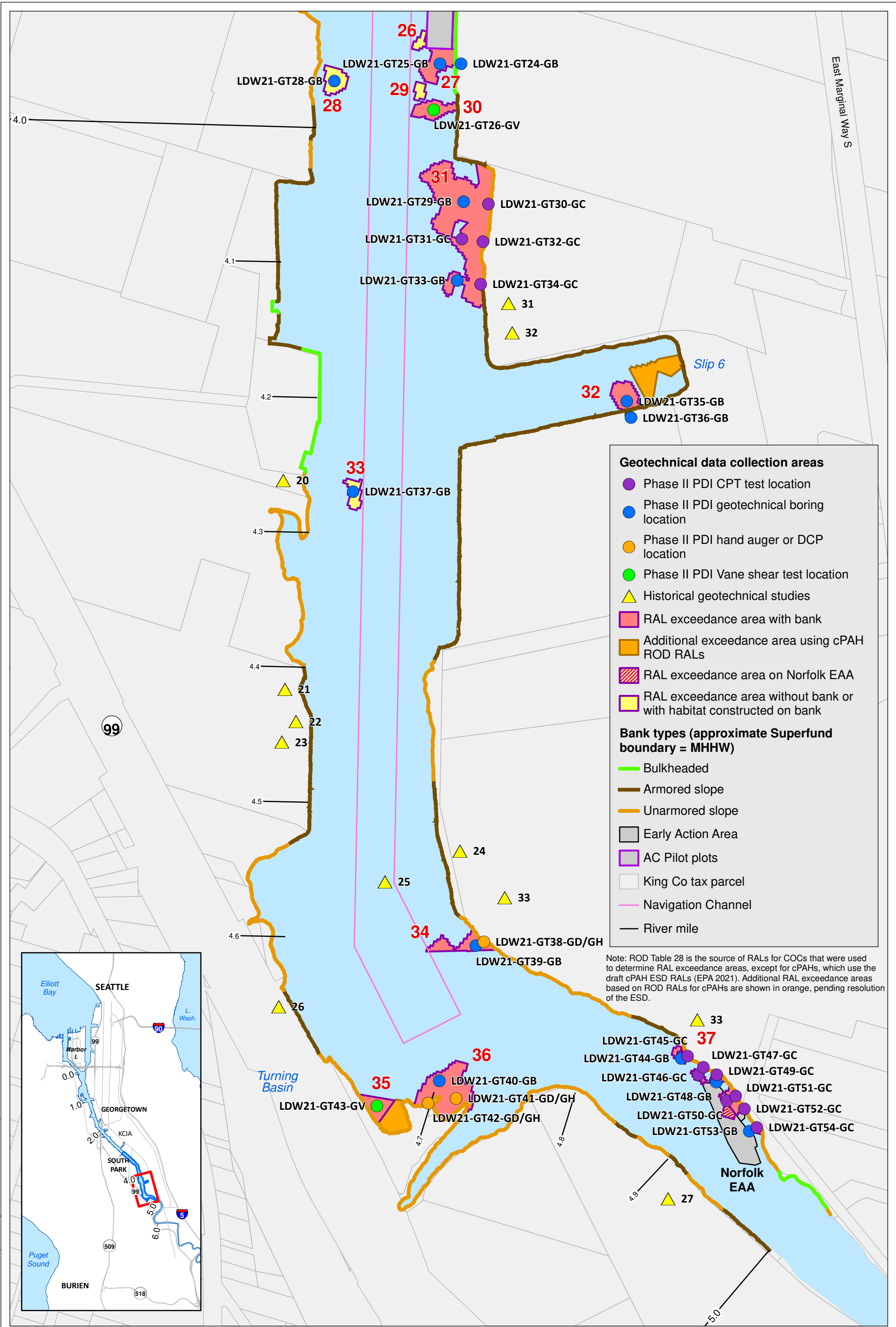
Note: ROD Table 28 is the source of RALs for COCs that were used to determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.

Prepared by craigh. 6/28/21: W:\Projects\Duwamish\ACCA\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-4a 7281 Geotech locations RM3-4.mxd



Map 5-4a. Phase II Geotechnical data collection areas, RM 3.0 to RM 4.0

PRE-DESIGN INVESTIGATION PHASE II QAPP
ADDENDUM FOR THE LDW UPPER REACH



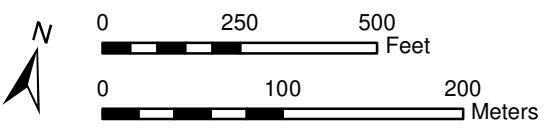
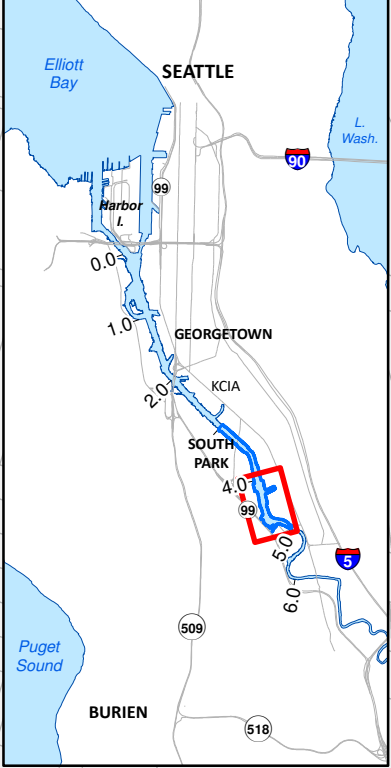
Geotechnical data collection areas

- Phase II PDI CPT test location
- Phase II PDI geotechnical boring location
- Phase II PDI hand auger or DCP location
- Phase II PDI Vane shear test location
- ▲ Historical geotechnical studies
- RAL exceedance area with bank
- Additional exceedance area using cPAH ROD RALs
- RAL exceedance area on Norfolk EAA
- RAL exceedance area without bank or with habitat constructed on bank

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope
- Unarmored slope
- Early Action Area
- AC Pilot plots
- King Co tax parcel
- Navigation Channel
- River mile

Note: ROD Table 28 is the source of RALs for COCs that were used to determine RAL exceedance areas, except for cPAHs, which use the draft cPAH ESD RALs (EPA 2021). Additional RAL exceedance areas based on ROD RALs for cPAHs are shown in orange, pending resolution of the ESD.



Prepared by craigh. 6/28/21. W:\Projects\Duwamish AOC\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-4b 7281 Geotech locations RM4-5.mxd