Lower Duwamish Superfund Site

Waterway Remedial Investigation Approximate Boundaries of Early Action Areas as Presented in the Lower Duwamish Remedial Investigation Report

BOEING PLANT 2 FACILITY AND EARLY ACTION AREAS WITHIN THE LOWER DUWAMISH WATERWAY SUPERFUND SITE
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure Alternatives Study

Figure 1

Plot Date: 02/14/11 - 3:31pm, Plotted by: gary.maxwell
Drawing Path: P:\BOEING\ALTERNATIVES ANALYSIS\01 Technical Support\CAD\EPA SOB\, Drawing Name: EPA SOB 1.dwg

APPROXIMATE SCALE IN FEET

0 175 350 700

- Boeing Slip 4 Corrective Measure Area
- North Bank Area
- Transition Zone
- Duwamish Sediment Other Area
- Underbuilding Area
- Jorgensen Forge Early Action Area
- Lower Duwamish Superfund Site
- Waterway Remedial Investigation Approximate Boundaries of Early Action Areas as Presented in the Lower Duwamish Remedial Investigation Report

DUWAMISH SEDIMENT OTHER AREA AND SOUTHWEST BANK CORRECTIVE MEASURE
Duwamish Sediment Other Area and Southwest Bank Corrective Measure Alternatives Study

Figure 2

Plot Date: 02/16/11 - 8:56am, Plotted by: gary.maxwell
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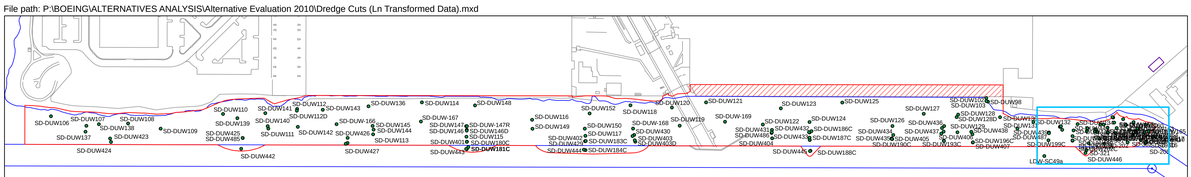
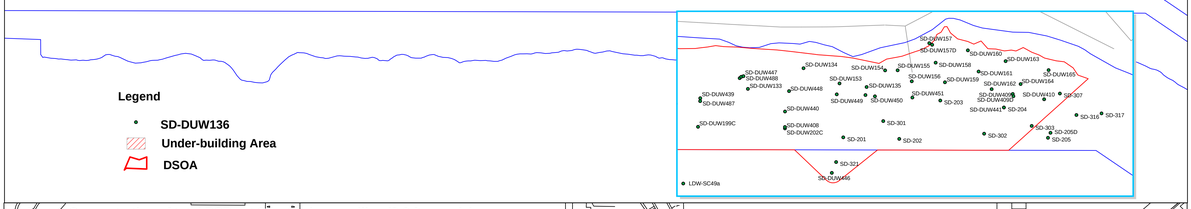
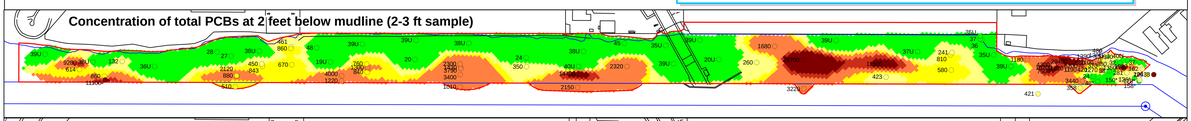
File path: P:\BOEING\ALTERNATIVES ANALYSIS\Alternative Evaluation 2010\Dredge Cuts (Ln Transformed Data).mxd

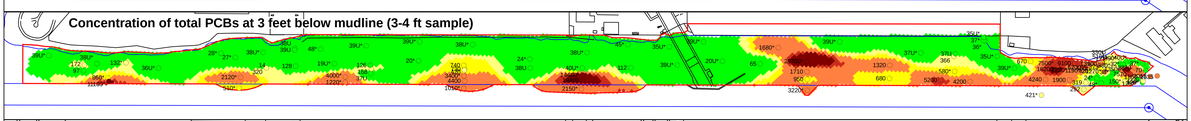


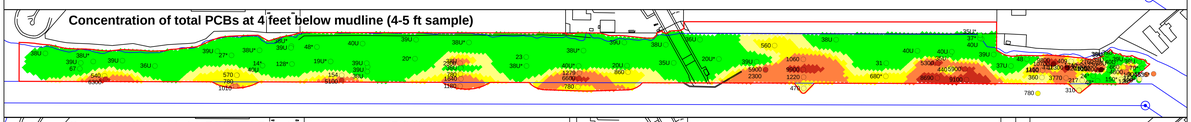


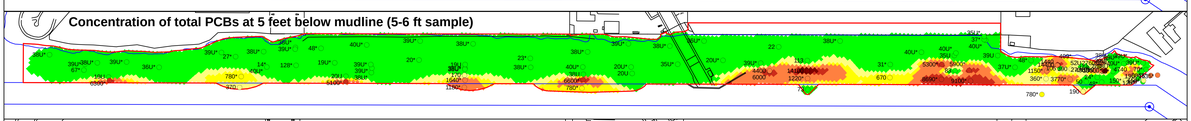
Legend

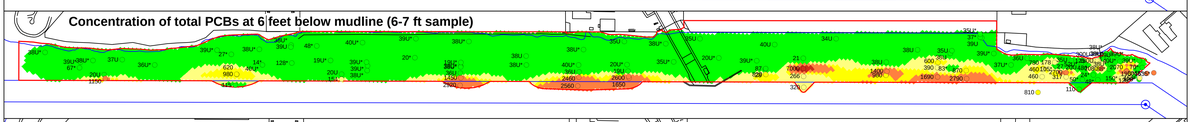
- SD-DUW136
- Under-building Area
- DSOA

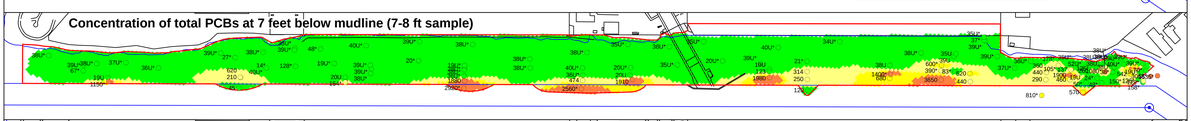


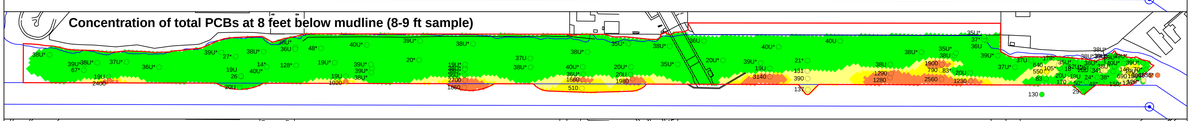


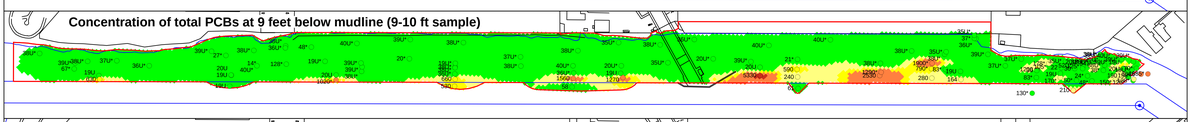


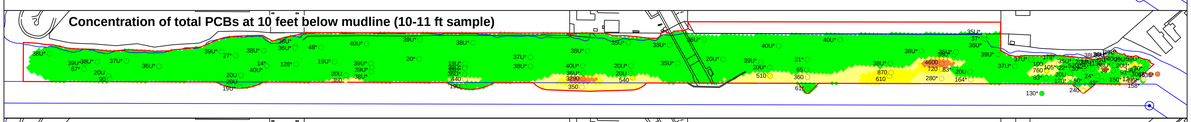


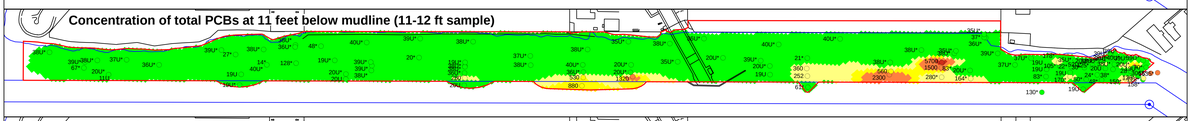


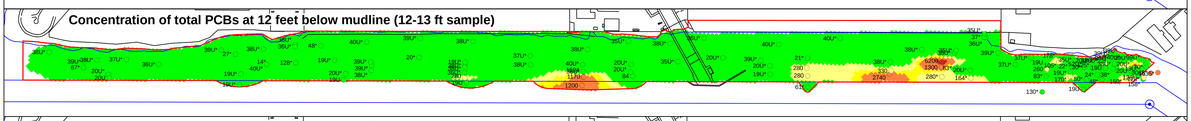


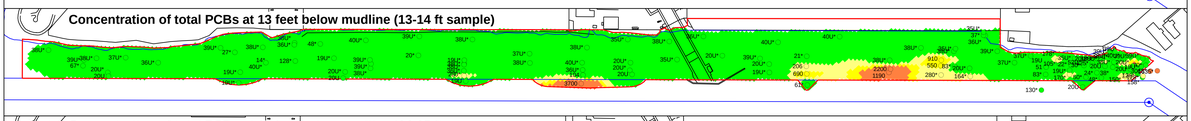


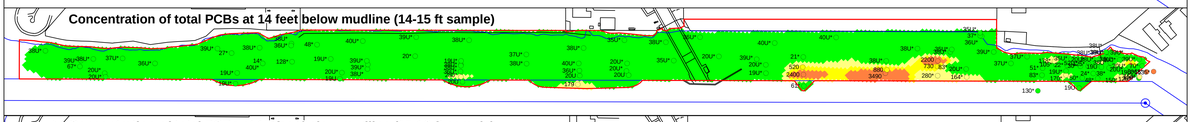


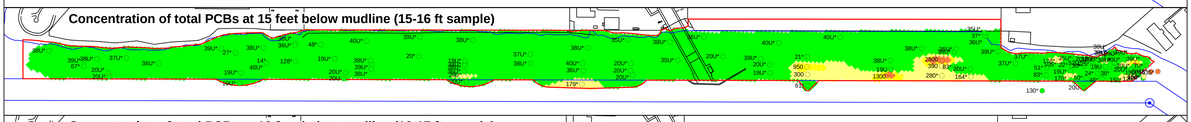


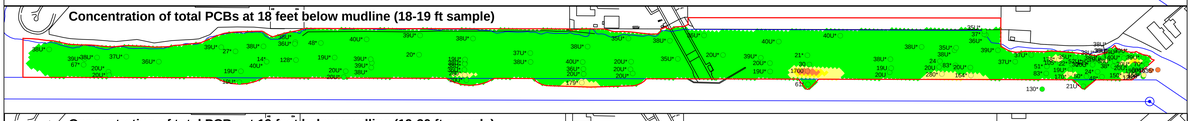


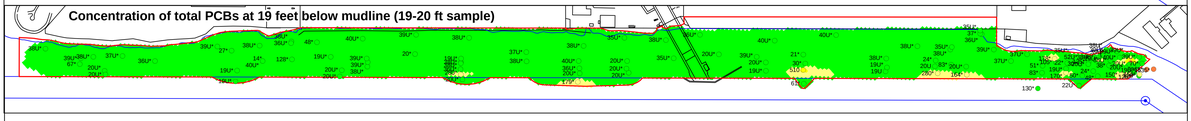












Total PCBs (ppb- dry weight)

- <130 ppb-dw
- ≥130 & <500 ppb-dw
- ≥500 & <1,000 ppb-dw
- ≥1,0001 & <5,000 ppb-dw
- ≥5,001 & <10,000 ppb-dw
- ≥10,000 ppb-dw
- DSOA

Geospatial Analysis

Inverse Distance Weighting on Log N transformed dry weight total PCB data with a Power of 4
Search ellipse is 200 ft by 75 ft with the major axis parallel to the river channel.

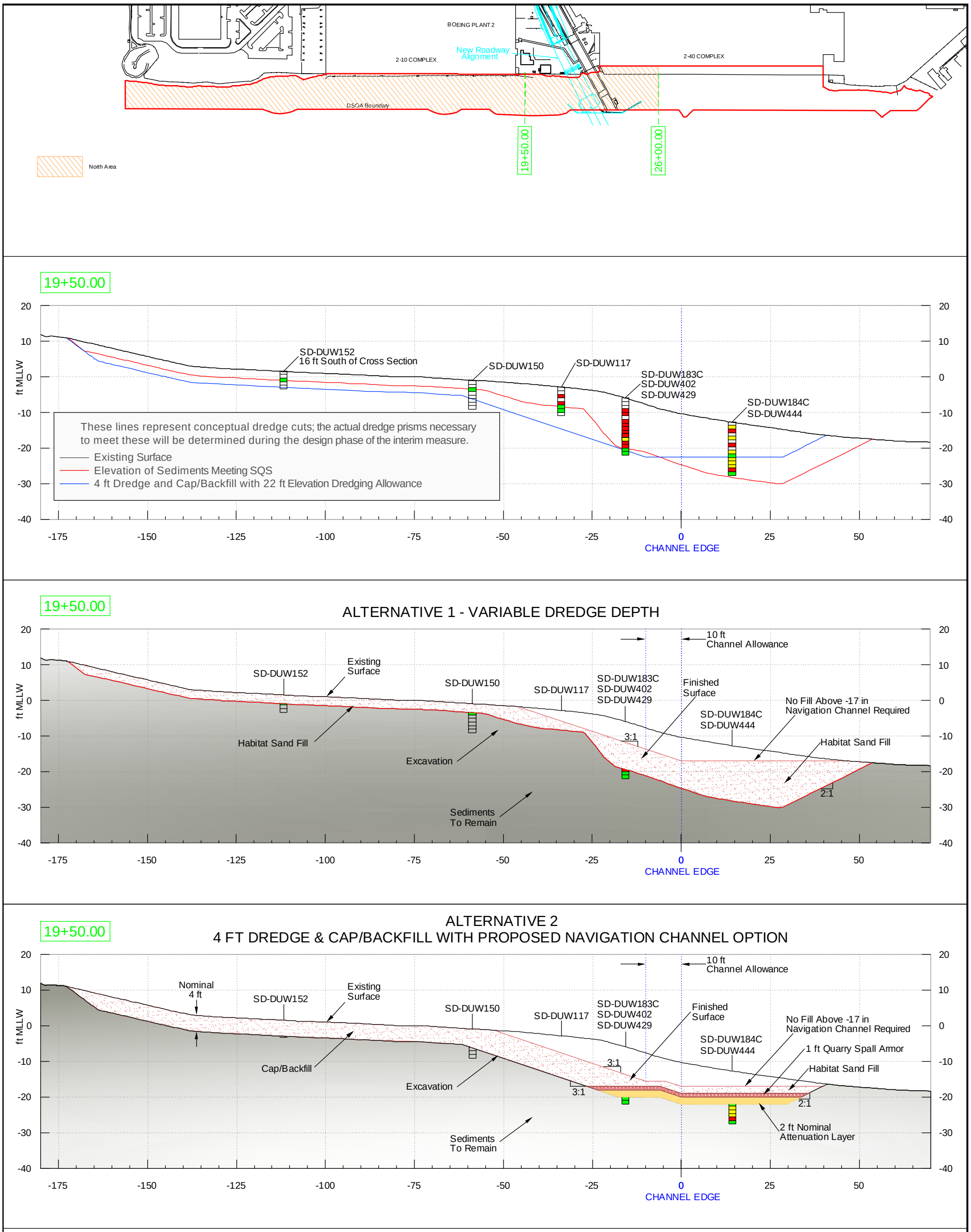
ppb = parts per billion
dw = dry weight
U = undetected at reporting concentration
* Value is filled-down from shallower sample

0 100 200 400 600 Feet

GEOSPATIAL ANALYSIS OF TOTAL PCB CONCENTRATIONS FOR THE DSOA

Duwamish Sediment Other Area and Southwest Bank Corrective Measure Alternatives Study

Figure 3



Cores Are Within 15 ft of Cross Section Unless Otherwise Noted

PCB Concentration Compared to SMS Criteria

- ≥CSL (≥1000 ppb or ≥65 ppm-OC)
- ≥SQS & <CSL (≥130 ppb & <1000 ppb or ≥12 ppm-OC & <65 ppm-OC)
- <SQS (<130 ppb or <12 ppm-OC)

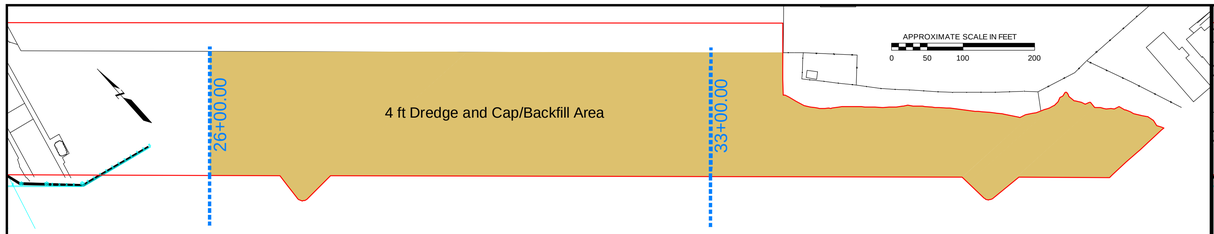
1 ft Intervals

NORTH AREA ALTERNATIVES

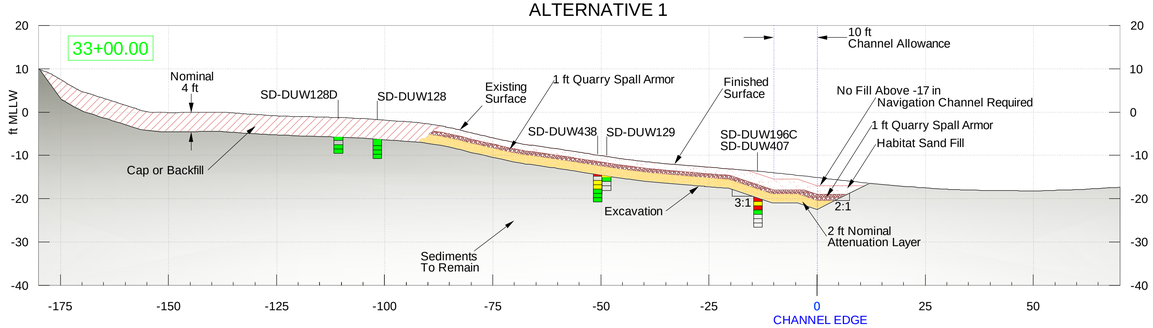
Duwamish Sediment Other Area and Southwest Bank Corrective Measure Alternatives Study

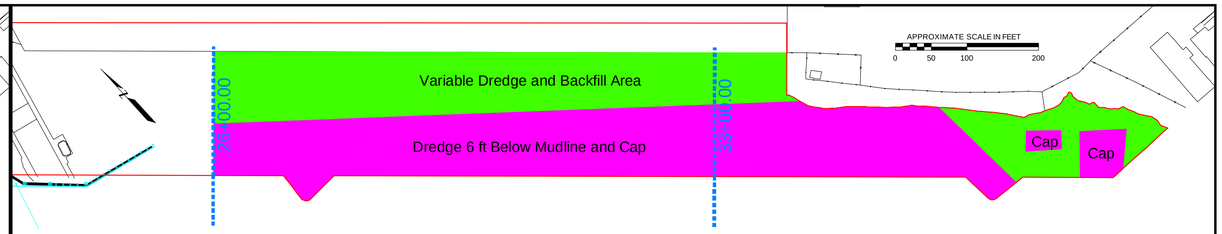
Figure 4

Plot Date: 02/14/11 - 2:51pm, Plotted by: gary.maxwell
Drawing Path: P:\BOEING\ALTERNATIVES ANALYSIS\01 Technical Support\CAD\EPA SOB\, Drawing Name: Armoring Options EPA-CORPS.dwg

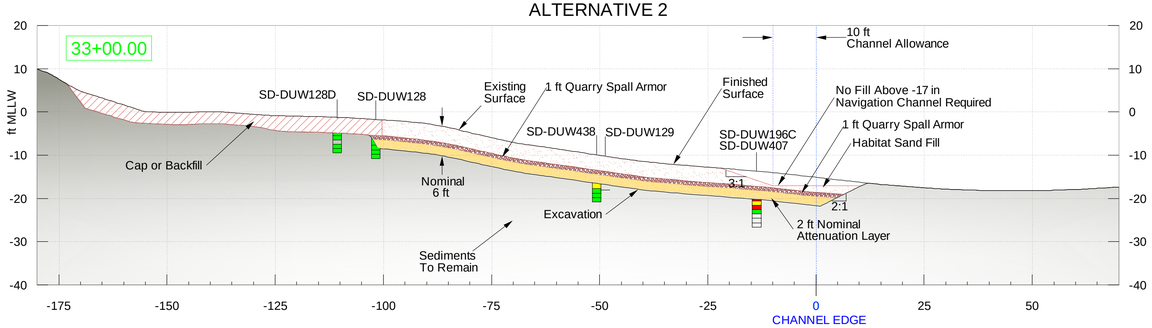


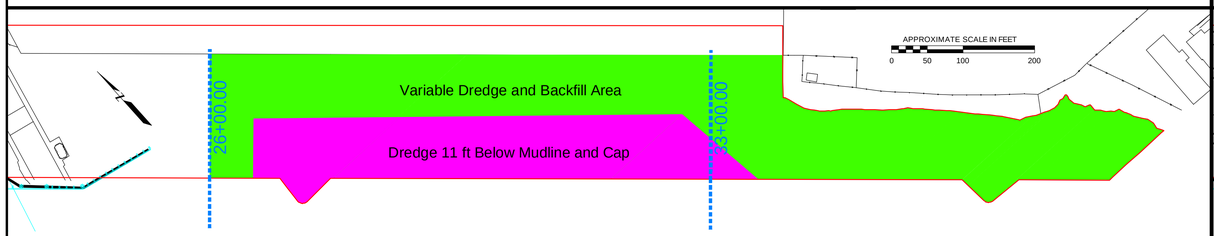
ALTERNATIVE 1



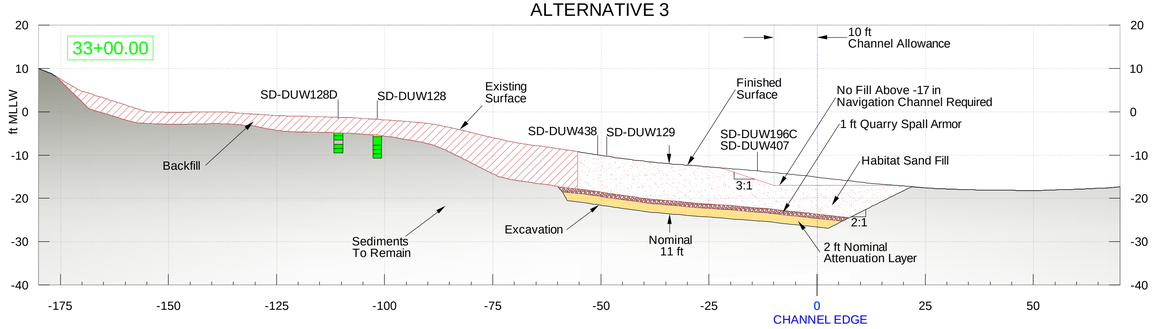


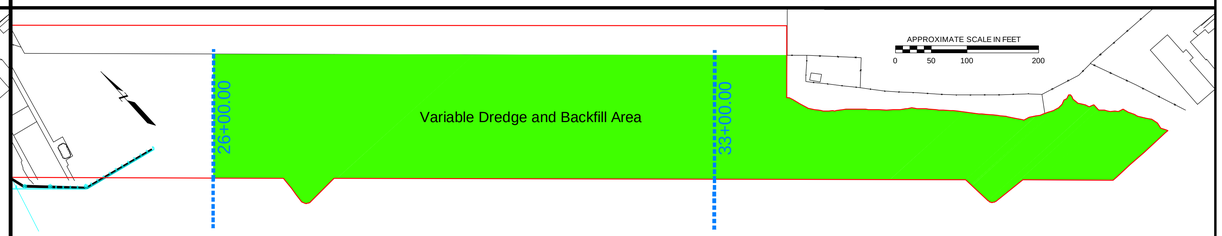
ALTERNATIVE 2



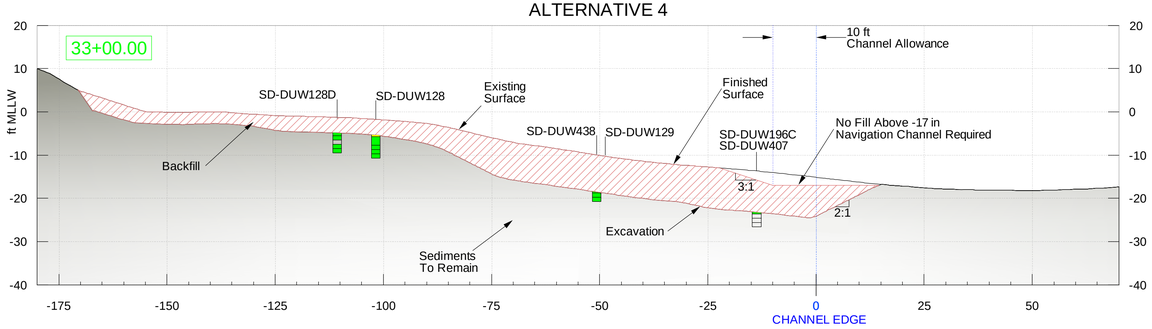


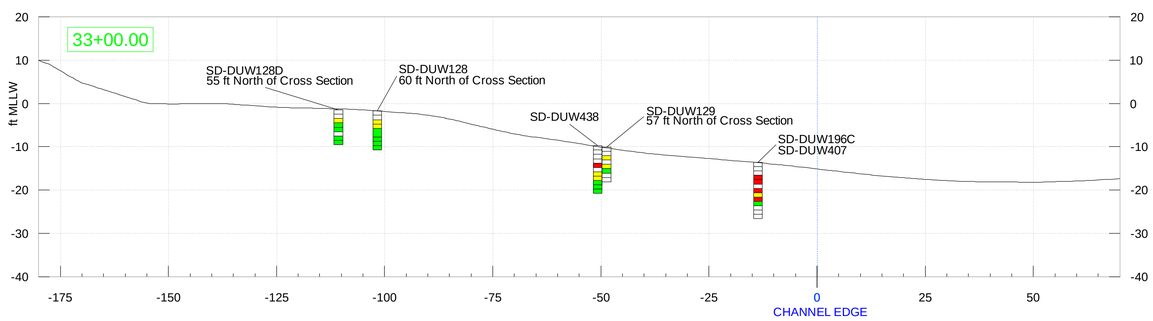
ALTERNATIVE 3





ALTERNATIVE 4





Cores Are Within 15 ft of Cross Section Unless Otherwise Noted

PCB Concentration Compared to SMS Criteria

1 ft Intervals
- ≥CSL (≥1000 ppb or ≥65 ppm-OC)
- ≥SQS & <CSL (≥130 ppb & <1000 ppb or ≥12 ppm-OC & <65 ppm-OC)
- <SQS (<130 ppb or <12 ppm-OC)

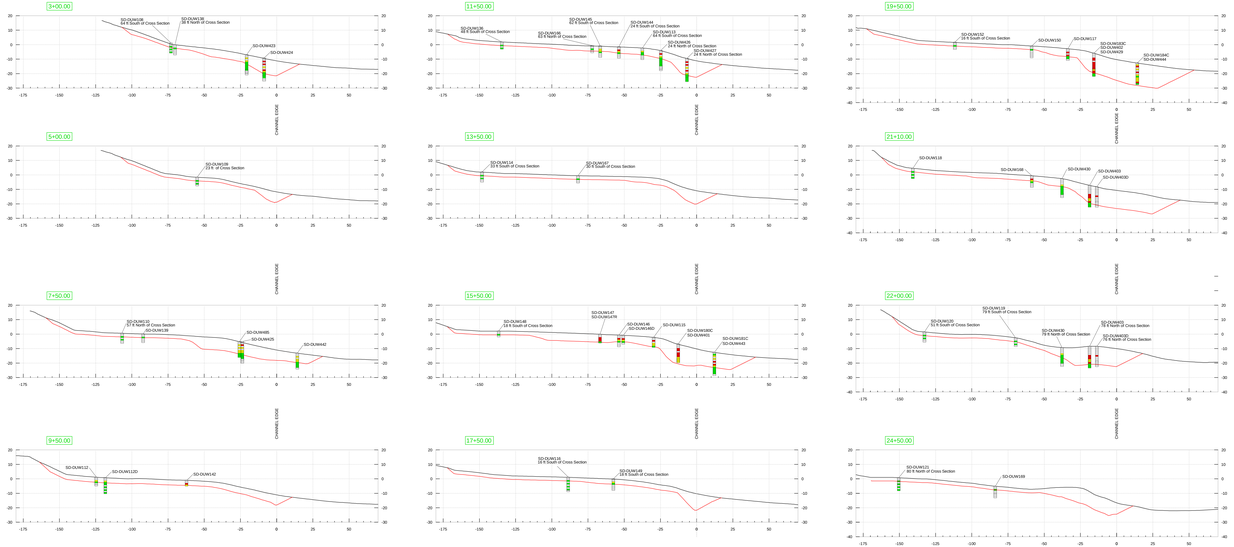
SOUTH AREA ALTERNATIVES

Duwamish Sediment Other Area and Southwest Bank
Corrective Measure Alternatives Study

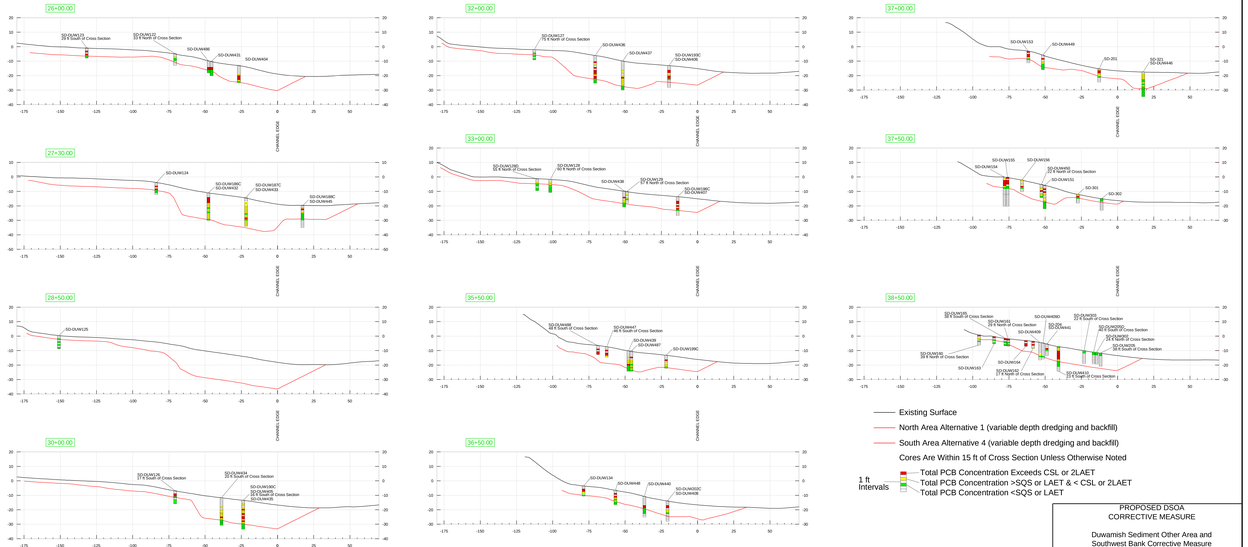
Figure 5

Plot Date: 02/14/11 - 2:32pm, Plotted by: gary.stewart
Drawing Path: P:\BESN\CAD\ALTERNATIVES\ALTERNATIVES\Technical Support\CAD\EPA_SOB_ Drawing Name: Existing Options EPA-CORPS.dwg

VARIABLE DEPTH DREDGING AND BACKFILL (0+00.00 to 26+00.00)



VARIABLE DREDGING DEPTH AND BACKFILL (26+00.00 to 38+50.00)



Existing Surface

North Area Alternative 1 (variable depth dredging and backfill)

South Area Alternative 4 (variable depth dredging and backfill)

Cores Are Within 15 ft of Cross Section Unless Otherwise Noted

1 ft Intervals

- Total PCB Concentration Exceeds CSL or 2LAET
- Total PCB Concentration >SQS or LAET & < CSL or 2LAET
- Total PCB Concentration <SQS or LAET

PROPOSED DSOA CORRECTIVE MEASURE

Duwamish Sediment Other Area and Southwest Bank Corrective Measure Alternatives Study

Figure 6

Drawn: dlong1 Office: Seattle Plotted by: dlong1 Plot Date: Wed, Jun 12, 2019 Layout: Figure 6 (Alt 4) File Name: N:\Duwamish\Sediment\Figures\Alternatives\Alternatives Study\Figure 6 (Alternatives Study).dwg

Stormwater Features

DSOA Boundary

APPROXIMATE SCALE IN FEET

0 30 60 120

LOCATION OF SOUTHWEST BANK
AND OUTFALLS

Duwamish Sediment Other Area and Southwest Bank
Corrective Measure Alternatives Study

Figure 7

Plot Date: 02/14/11 - 2:36pm, Plotted by: gary.maxwell
Drawing Path: P:\BOEING\ALTERNATIVES ANALYSIS\01 Technical Support\CAD\EPA SOB\, Drawing Name: EPA SOB 1.dwg

TABLE 1

POST-RFI SAMPLING EVENTS WITH DATA WITHIN OR ADJACENT TO THE DSOA

Duwamish Sediment Other Area and Southwest Bank Corrective Measure Alternatives Study
Boeing Plant 2, Seattle/Tukwila, Washington

Event Description	Event Name	Event Start	Event Stop
Pentec Boeing Plant 2 Duwamish Outfall 12 sediment sampling	Outfall 12 Data Collection	6/4/2001	6/19/2001
Pentec Boeing Plant 2 Duwamish sediment sampling (excluding Outfall 12)	Vertical Characterization	6/7/2001	6/18/2001
Boeing Plant 2 DSOA Additional Vertical Characterization 2003	DSOA AA	8/12/2003	8/20/2003
Boeing Plant 2 Transformer Investigation Duwamish Sediment Other Area	Transformer PCB	8/20/2003	9/12/2003
Duwamish Sediment Other Area Upriver (Area 1) Sediment Characterization	Upriver Area 1	4/20/2004	4/23/2004
Boeing Plant 2 DSOA Additional Vertical Characterization 2004 Sampling	DSOA AA - 2004	4/22/2004	4/23/2004
Lower Duwamish Triad Sediment Sampling	Lower Duwamish Triad	8/16/2004	8/27/2004
Round 1 Surface Sediment Sampling for Chemical Analyses and Toxicity Testing Data Report (Final on Oct 21, 2005)	LDWRI-SurfSedRnd1	1/17/2005	8/31/2005
Subsurface Sediment Sampling for Chemical Analyses Data Report (Final on Jan 29, 2007)	LDWRI-SubSurfSed06	2/6/2006	6/7/2007
2007 Western Boundary Sediment Sampling Event	WBSed07	4/2/2007	7/13/2007
2008 DSOA Additional Characterization	WBAddChar08	7/24/2007	7/31/2008
2009 Additional Characterization	BP2-DSOA.2009	11/2/2009	12/15/2009

Abbreviations:
- DSOA = Duwamish Sediment Other Area
- PCB = polychlorinated biphenyl
- RCRA = Resource Conservation and Recovery Act
- RFI = RCRA Facility Investigation