

Owner: King County

Project: Lower Duwamish Waterway ENR/AC Pilot

Dates: December 12, 2016 to December 16, 2016

Weekly Progress Meeting Summary:

- No weekly meeting held this week. A visitor day was held on Tues, Dec 20th, instead. Next weekly meeting will occur on Dec 27th.

Construction Progress:

- Schedule (updated weekly by contractor – Attached)
- General progress with respect to schedule
 - Final placement of the GS at the Intertidal plot was completed on Monday, Dec 19th.
 - PPM mobilized equipment and personnel to the Scour plot the afternoon, Dec 19th.
 - Placement of the GS+AC at the Scour plot commenced on the morning of the Dec 20th. Placement in the GS+AC Scour subplot continued throughout the week. At end of shift Friday, Dec 23rd, the GS+AC subplot was approximately 90% complete.
 - Work scheduled for this week:
 - Complete GS+AC placement in Scour plot.
 - Start placement of the GS in the Scour Plot.
 - Daily hydrographic surveys at the end of each shift.

Problems Encountered (If Any) & Associated Action Items: None See Comments below:

Problems Encountered	Date	Required Action	Date Completed
Spuds are penetrating up to 20 feet below the mudline leaving deeper depressions than were observed at the Intertidal plot.	12/23/2016	No action is required. If any additional material remains after grid placement is complete, the remaining material will be used to fill in these depressions as practicable.	

Water Quality Monitoring:

- Observed non-construction-related events that impacted water quality.
 - None
- Summary of water quality criteria violations and actions taken.
 - No exceedances observed at the 300 foot compliance location.

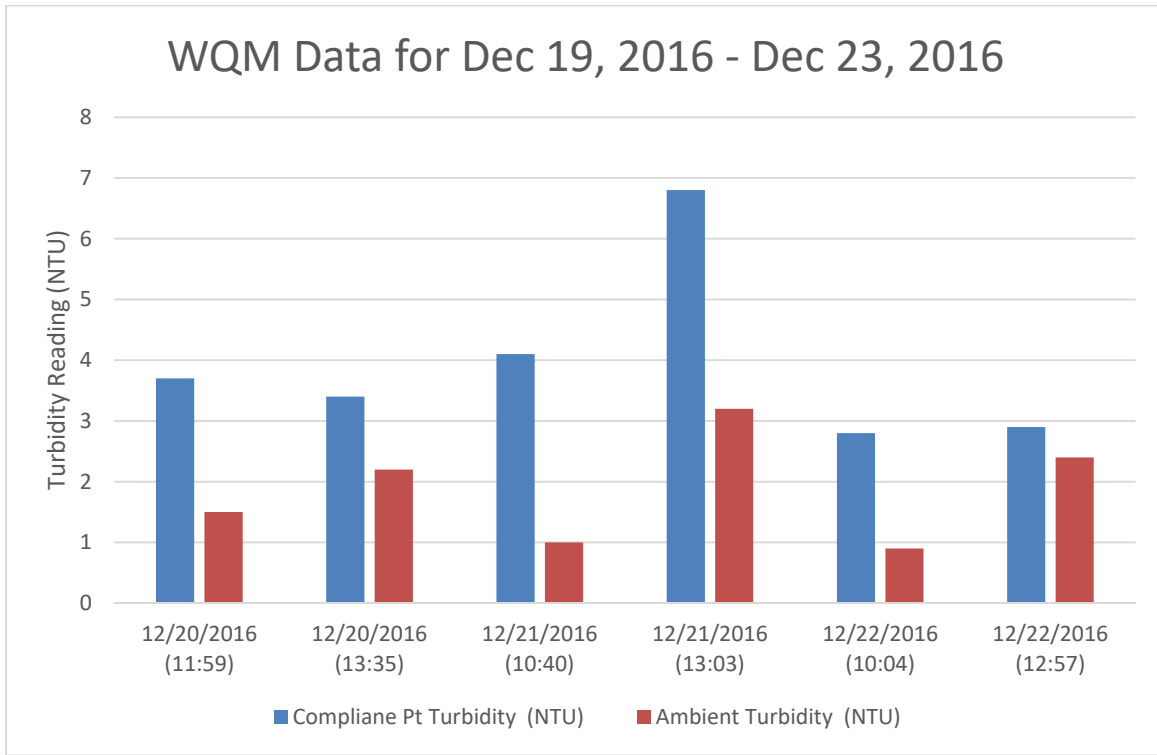


Figure 1: Water Quality Monitor Data Summary for Week Ending December 23, 2016

QA Inspections:

- Results:
 - QA Inspections:
 - None, next barge loading is not schedule to occur until the 1st week of January.
 - Surveying (Performed at the end of each shift. Attached is the Dec 23, 2016 survey)
 - Monitoring Activities:
 - No monitoring activities occurred this week. DOF and AMECFW representatives are scheduled to perform the final stake measurement of the Intertidal Plot during the next low tide below 0’ MLLW that is predicted to occur on Tuesday, Dec 27th.
- Out of Spec Conditions (if encountered) & Corrective Actions: None See Comments below:

Out of Spec condition	Date	Corrective Action	Date Completed

Weekly Photo Log – LDW ENR/AC Pilot



Photo 1-A: GS+AC barge prior to the start of placement at the Scour plot.



Photo 1-B: GS+AC barge after the material was spread out to submerge.

Weekly Photo Log – LDW ENR/AC Pilot



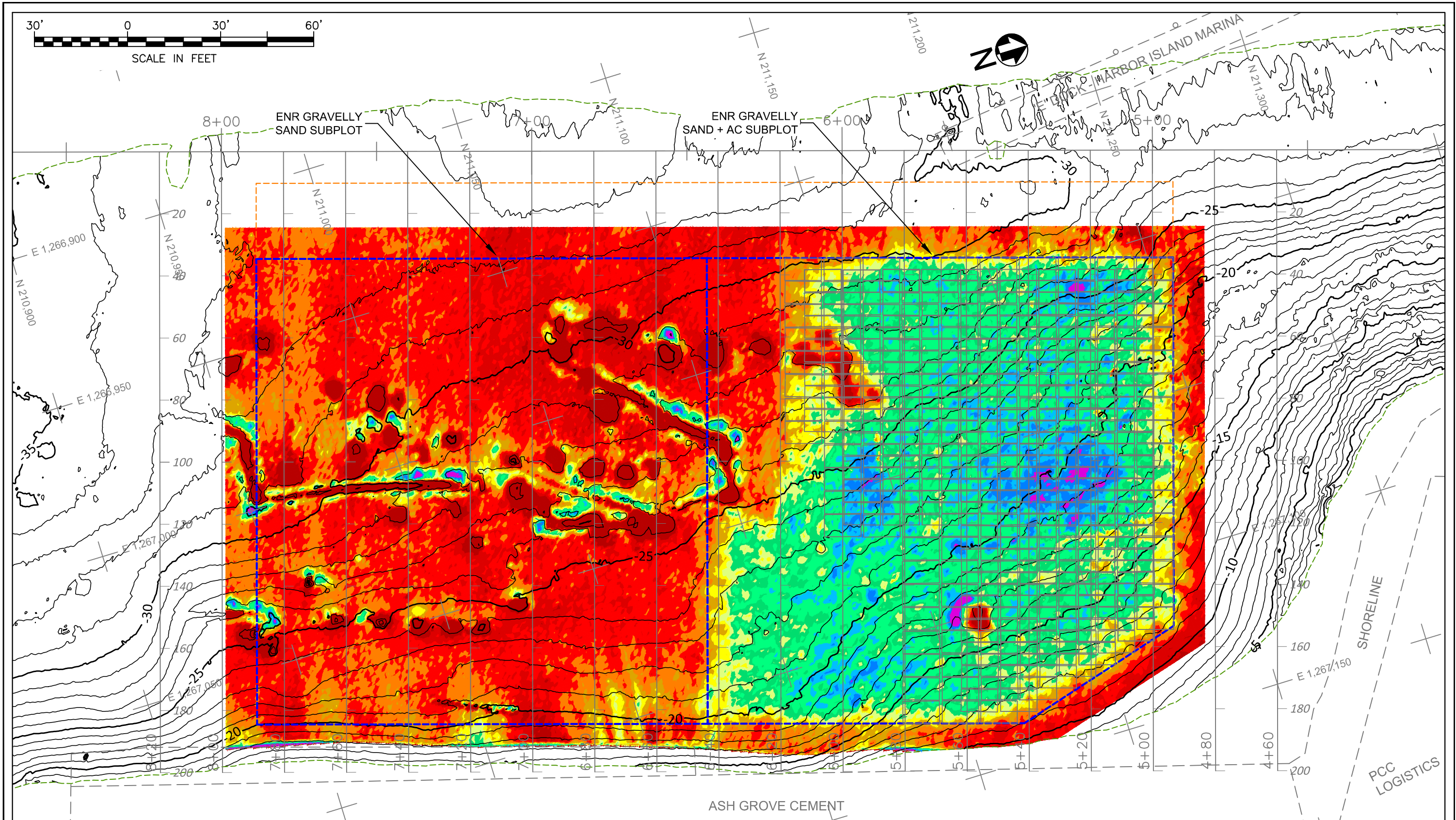
Photo 2-A: Placement within the GS+AC Scour subplot is adjacent to Western Towboat dock.

ID	Task Mode	Task Name	Duration	Start	Finish	2016							2017						
						Dec 16			Jan 17				Jan 17				Jan 17		
						M	W	F	S	T	T	S	M	W	F	S	T		
1		ENR Material Loading	14 days	Tue 12/27/16	Tue 1/17/17														
2		Barge #5 (KP2): Sand + AC	0 days	Tue 1/3/17	Tue 1/3/17														
3		Barge #6 (KP3): Sand	0 days	Thu 1/12/17	Thu 1/12/17														
4		ENR Placement Activities	14 days	Tue 12/27/16	Tue 1/17/17														
5		Scour	8 days	Tue 12/27/16	Fri 1/6/17														
6		Place Gravelly Sand + AC	2 days	Tue 12/27/16	Wed 12/28/16														
7		Place Gravelly Sand	6 days	Thu 12/29/16	Fri 1/6/17														
8		Subtidal	6 days	Mon 1/9/17	Tue 1/17/17														
9		Place Sand + AC	6 days	Mon 1/9/17	Tue 1/17/17														
10		Survey Activities	13 days	Wed 12/28/16	Tue 1/17/17														
11		Subtidal: Pre-Placement Survey	0 days	Thu 12/29/16	Thu 12/29/16														
12		Scour: Post-Placement Survey	0 days	Fri 1/6/17	Fri 1/6/17														
13		Subtidal: Establish Basestation	0 days	Fri 1/6/17	Fri 1/6/17														

Project: 3-Week Look Ahead (12-2) Date: Tue 12/27/16	Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
	Split		External Tasks		Inactive Summary		Manual Summary		Progress	
	Milestone		External Milestone		Manual Task		Start-only			
	Summary		Inactive Task		Duration-only		Finish-only			

ID	Task Mode	Task Name	Duration	Start	Finish	Nov 20, '16			Dec 4, '16			Dec 18, '16			Jan 1, '17			Jan 15, '17			Jan 29, '17			Feb 12					
						S	T	M	F	T	S	W	S	T	M	F	T	S	W	S	T	M	F	T	S	W	S		
1		General	178 days	Wed 6/1/16	Fri 2/10/17																								
2		Contract Award	0 days	Wed 6/1/16	Wed 6/1/16																								
3		Phase 1 Notice to Proceed	0 days	Wed 6/1/16	Wed 6/1/16																								
4		Start In-Water Work	0 days	Tue 11/29/16	Tue 11/29/16																								
5		Phase 2 Substantial Completion	0 days	Wed 1/25/17	Wed 1/25/17																								
6		Punchlist	2 days	Thu 1/26/17	Fri 1/27/17																								
7		Closeout	10 days	Mon 1/30/17	Fri 2/10/17																								
8		Complete In-Water Work	0 days	Thu 2/9/17	Thu 2/9/17																								
9		Final Acceptance	0 days	Thu 2/9/17	Thu 2/9/17																								
10		Materials Placement	39 days	Tue 11/29/16	Wed 1/25/17																								
11		Test Placement	2 days	Tue 11/29/16	Wed 11/30/16																								
12		Test Placement Area- Sand + AC	1 day	Tue 11/29/16	Tue 11/29/16																								
13		Test Placement Area- Gravelly Sand + AC	1 day	Wed 11/30/16	Wed 11/30/16																								
14		Intertidal Plot	14 days	Thu 12/1/16	Tue 12/20/16																								
15		Intertidal Plot- Gravelly Sand + AC	6 days	Thu 12/1/16	Thu 12/8/16																								
16		Intertidal Plot- Gravelly Sand	7 days	Fri 12/9/16	Mon 12/19/16																								
17		Hydrographic As-Built Survey	0 days	Tue 12/20/16	Tue 12/20/16																								
18		Scour Plot	12 days	Tue 12/20/16	Fri 1/6/17																								
19		Scour Plot- Gravelly Sand + AC	6 days	Tue 12/20/16	Wed 12/28/16																								
20		Scour Plot- Gravelly Sand	6 days	Thu 12/29/16	Fri 1/6/17																								
21		Hydrographic As-Built Survey	0 days	Fri 1/6/17	Fri 1/6/17																								
22		Subtidal Plot	12 days	Mon 1/9/17	Wed 1/25/17																								
23		Subtidal Plot- Sand + AC	6 days	Mon 1/9/17	Tue 1/17/17																								
24		Subtidal Plot- Sand	6 days	Wed 1/18/17	Wed 1/25/17																								
25		Hydrographic As-Built Survey	0 days	Wed 1/25/17	Wed 1/25/17																								

Project: Baseline Schedule-Update Date: Tue 12/27/16	Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
	Split		External Tasks		Inactive Summary		Manual Summary		Progress	
	Milestone		External Milestone		Manual Task		Start-only			
	Summary		Inactive Task		Duration-only		Finish-only			



DATUM INFORMATION
 Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
 Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

- NOTES**
1. SURVEY FOR THE SCOUR AREA WAS CONDUCTED BY TERRASOND LIMITED ON DEC 23, 2016
 2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBeam, APPLANI WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE-SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
 3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 3"
 4. BACKGROUND INFORMATION IS FOR VISUAL REFERENCE ONLY

MATERIAL THICKNESS (PRE VS CURRENT) TARGET ONE	LEGEND 	SURVEY CONTROL ISLAND 1 N: 211,360.936 E: 1,266,399.95 17.47 ISLAND 2 N: 211,361.930 E: 1,266,775.350 17.97
---	-------------------	--

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
 801 NW 42nd Street, Suite 215 | Seattle, WA 98107

ENHANCED NATURAL RECOVERY
 ACTIVATED CARBON PILOT STUDY
 DUWAMISH WATERWAY
 CONTRACT # C00992C15

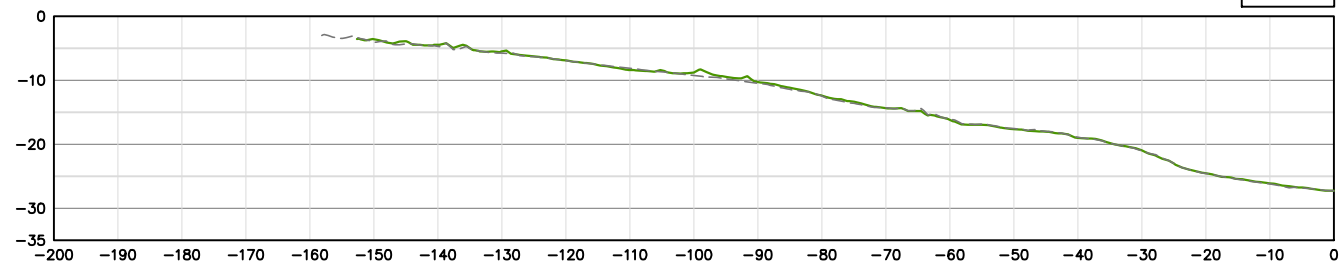
MULTIBEAM HYDROGRAPHIC SURVEY
 SCOUR PLOT PROGRESS

SHEET 1 OF 3

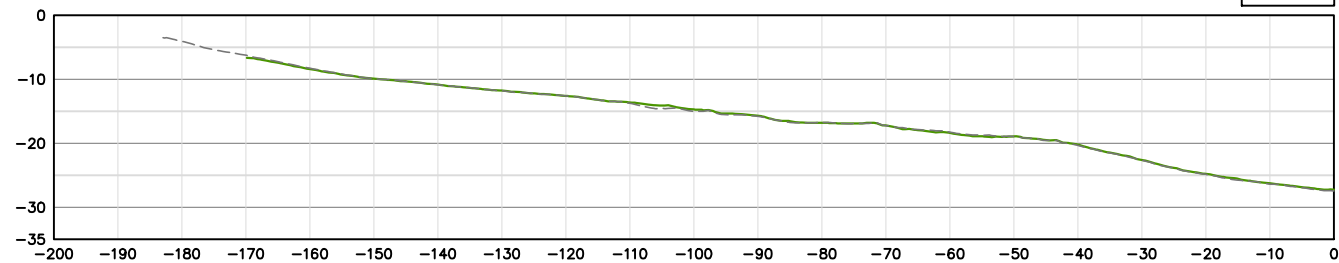
Drawn: MSK	Checked: LNL	Survey Date: DEC 23, 2016
Project No.: 2016-000	Draw Date: DEC 23, 2016	

ENR GRAVELLY SAND + AC SUBPLOT

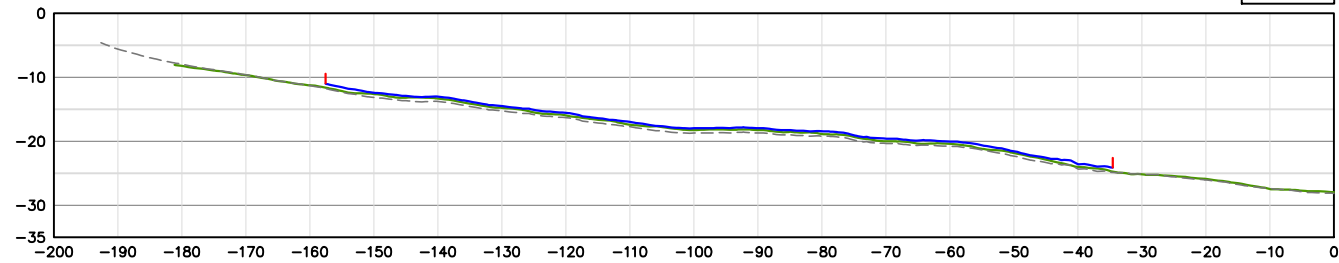
4+60



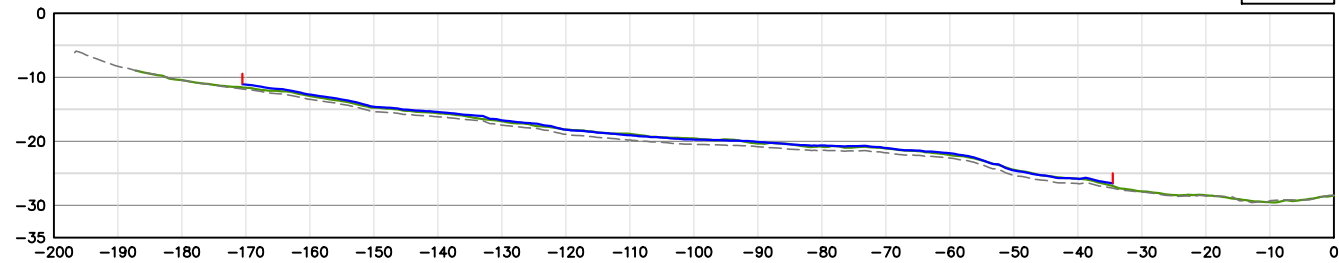
4+80



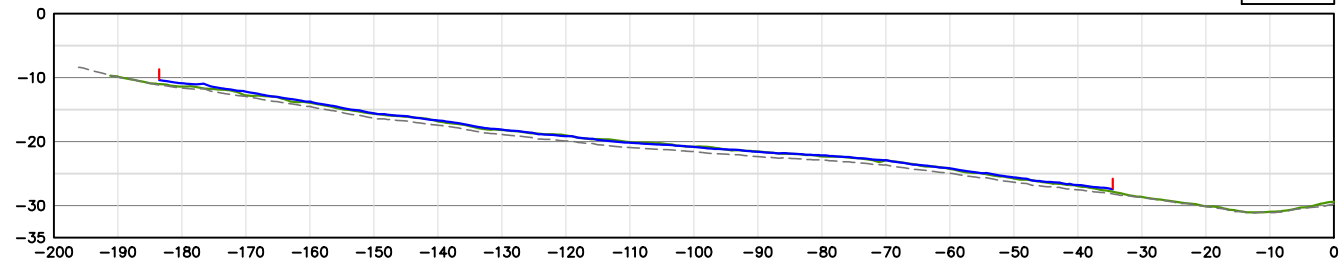
5+00



5+20

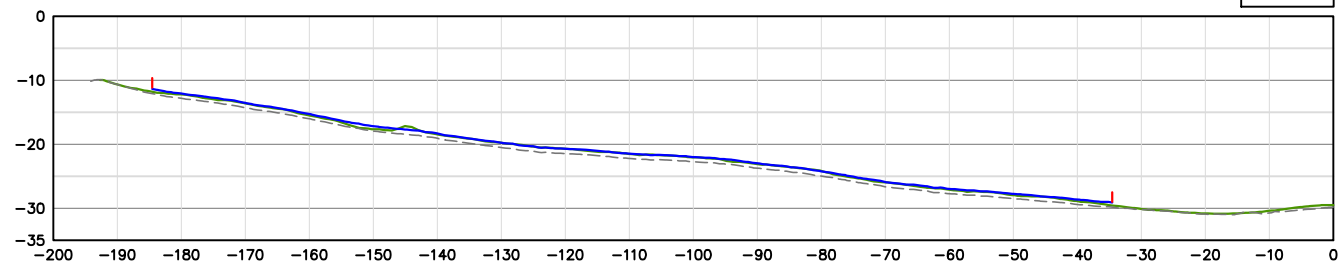


5+40

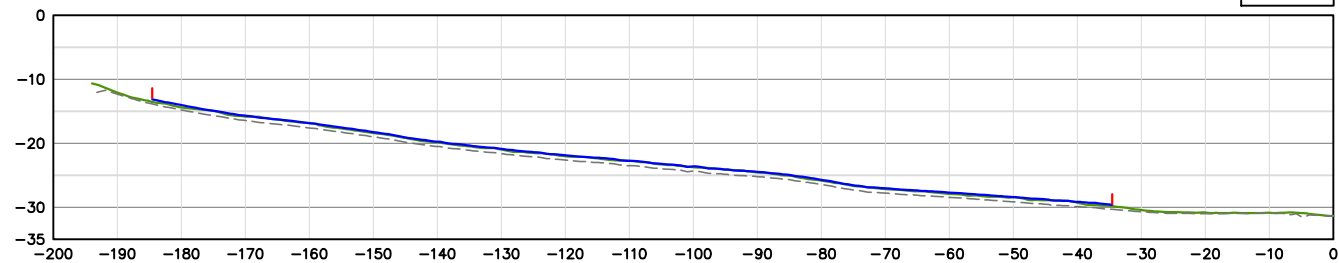


ENR GRAVELLY SAND + AC SUBPLOT

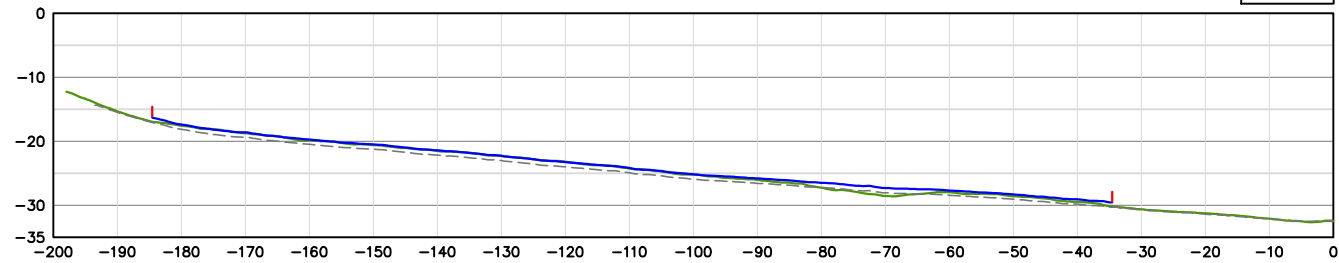
5+60



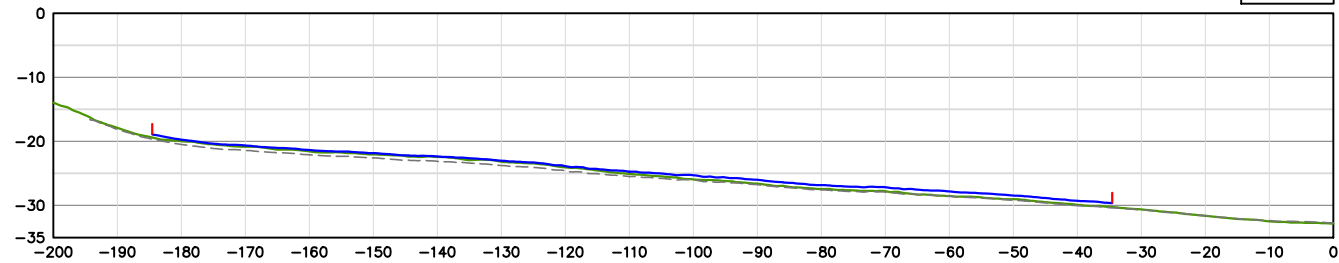
5+80



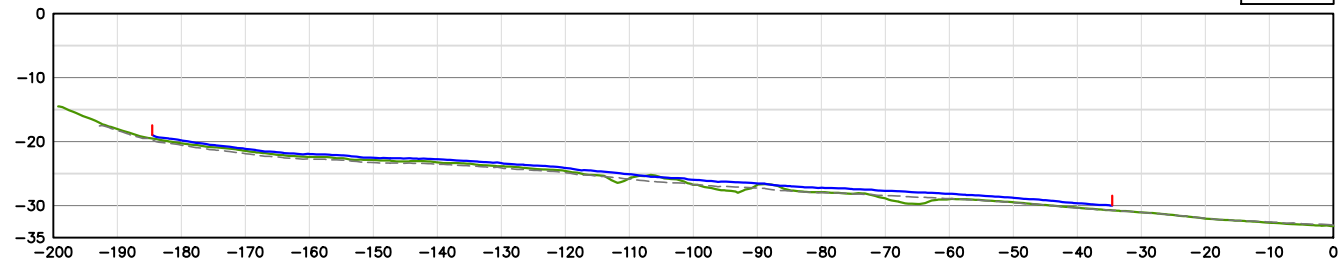
6+00



6+20



6+40



DATUM INFORMATION

Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES

1. SURVEY FOR THE SCOUR PLOT AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 23, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANT WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
4. PROFILE VERTICAL MAGNIFICATION IS 1.0

PROFILES LEGEND

- SUBPLOT TENT (0.9 INCHES)
- CURRENT SURVEY
- PRE-SURVEY (DEC 12, 2016)

SURVEY CONTROL

ISLAND 1
N: 211,360.936
E: 1,266,339.995
E: 17.47

ISLAND 2
N: 211,361.930
E: 1,266,775.350
E: 17.97

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
801 NW 42nd Street, Suite 215 | Seattle, WA 98107

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
DUWAMISH WATERWAY
CONTRACT # C00992C15

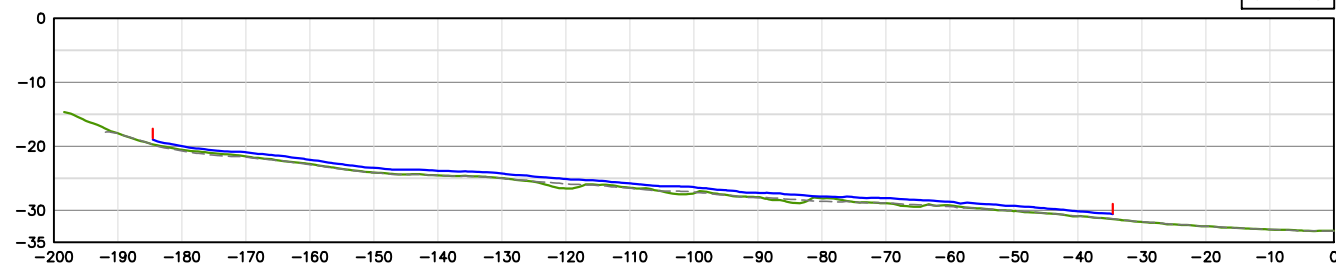
MULTIBEAM HYDROGRAPHIC SURVEY
SCOUR PLOT PROGRESS

SHEET 2 OF 3

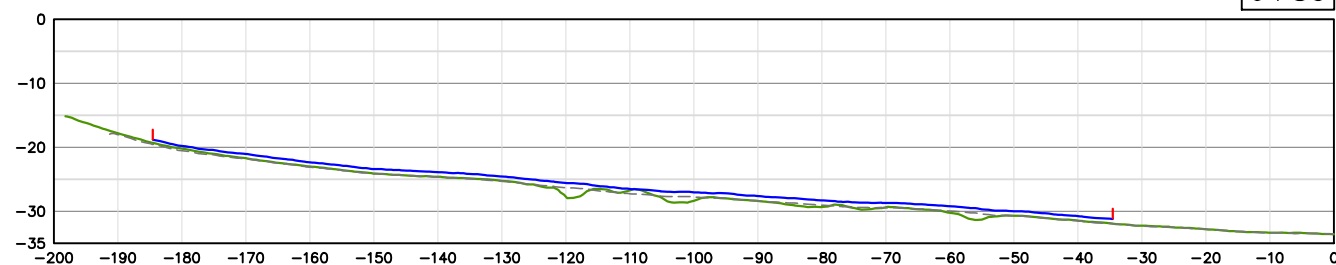
Drawn: MSK	Checked: LNL	Survey Date: DEC 23, 2016
Project No.: 2016-001	Draw Date: DEC 23, 2016	

ENR GRAVELLY SAND SUBPLOT

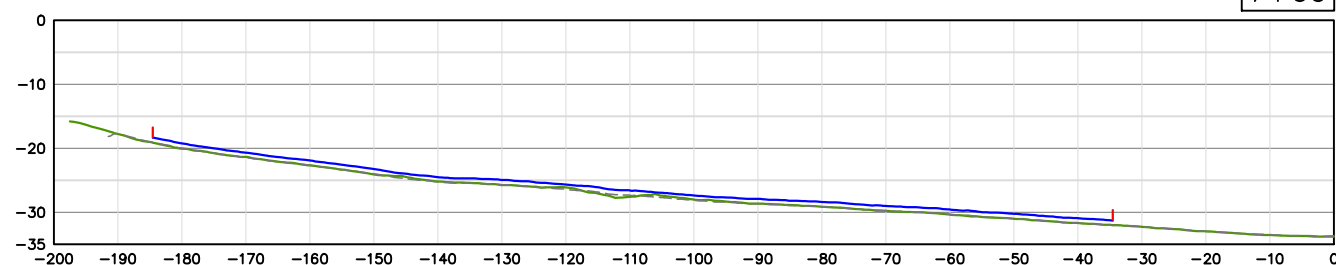
6+60



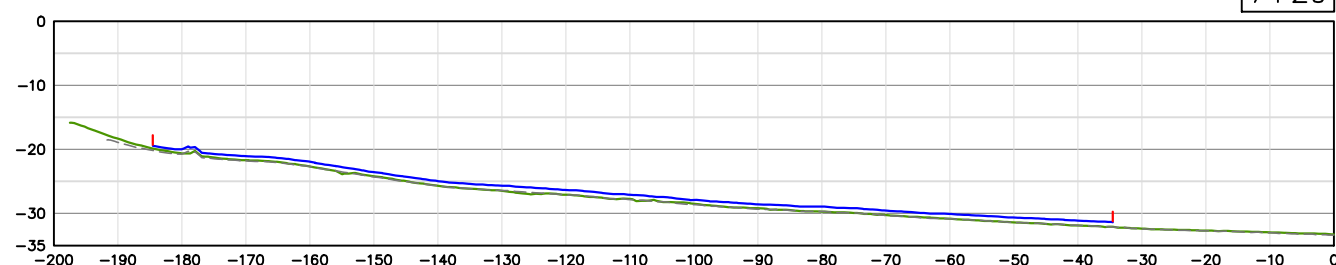
6+80



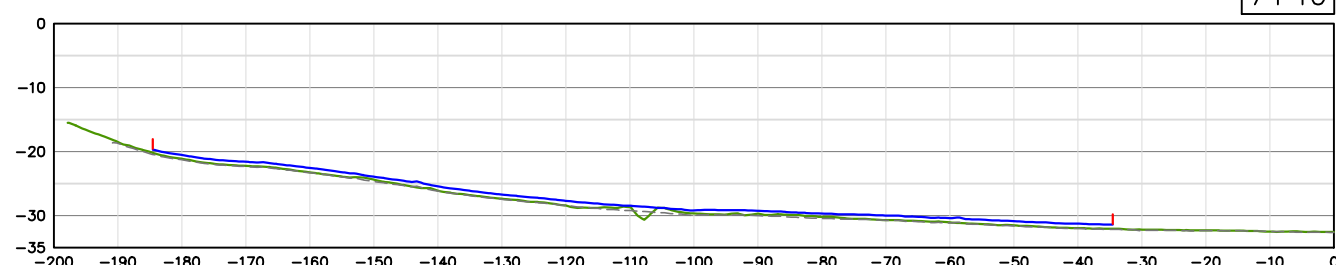
7+00



7+20

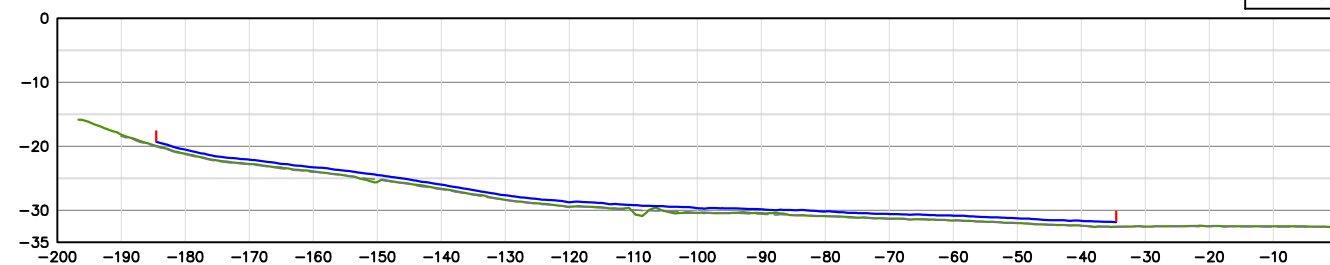


7+40

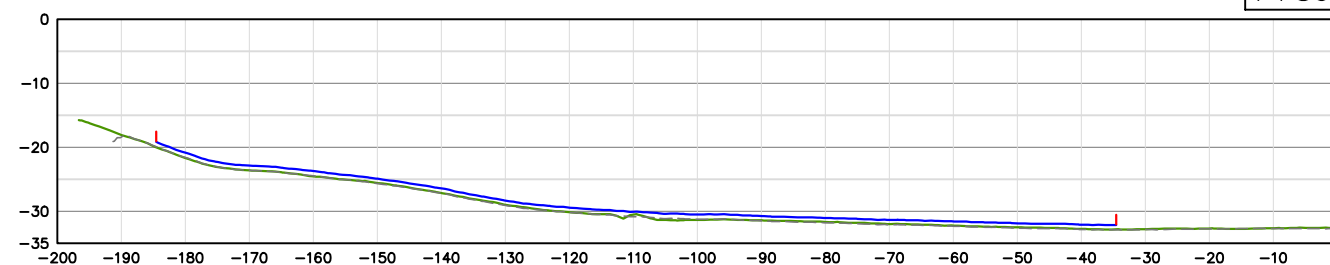


ENR GRAVELLY SAND SUBPLOT

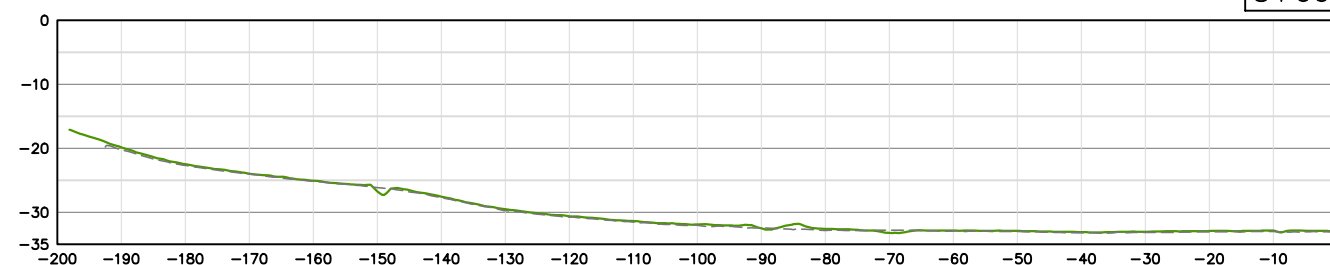
7+60



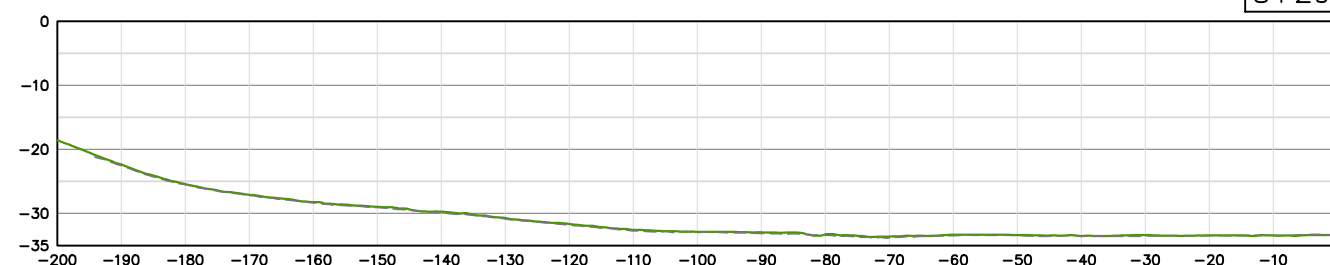
7+80



8+00



8+20



DATUM INFORMATION

Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES

1. SURVEY FOR THE SCOUR PLOT AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 23, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANT WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
4. PROFILE VERTICAL MAGNIFICATION IS 1.0

PROFILES LEGEND

- SUBPLOT EXTENT (39 INCHES)
- CURRENT SURVEY
- PRE-SURVEY (DEC 12, 2016)

SURVEY CONTROL

ISLAND 1
N: 211,360.936
E: 1,266,309.995
E: 17.47

ISLAND 2
N: 211,361.930
E: 1,266,775.350
E: 17.97

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
801 NW 42nd Street, Suite 215 | Seattle, WA 98107

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
DUWAMISH WATERWAY
CONTRACT # C00992C15

MULTIBEAM HYDROGRAPHIC SURVEY
SCOUR PLOT PROGRESS

SHEET 3 OF 3

Drawn: MSK	Checked: LNL	Survey Date: DEC 23, 2016
Project No.: 2016-001	Draw Date: DEC 23, 2016	

Owner: King County

Project: Lower Duwamish Waterway ENR/AC Pilot

Dates: December 26, 2016 to December 30, 2016

Weekly Progress Meeting Summary:

- Schedule:
 - Completed placement of the GS+AC at the Scour plot.
 - Started placement of the GS at the Scour Plot.
 - Loading of the Sand + AC was scheduled for Jan 3, 2017 but was moved up to Dec 30th (see Construction Progress below).
 - Scour plot is scheduled to be complete Jan 6th.
- Tribal Fishing:
 - Fishing window is open but no fishing activities have been observed.
- Issues:
 - No issues at this time. Working closely with Ash Grove and Western Towboat so as to not interfere with their operations during placement at Scour Plot.
 - Placement at Subtidal plot may pose logistical issues due to observed LDW vessel traffic and plot location within navigation channel. LDW traffic will be monitored closely.
- EPA did not indicate that there were any issues or concerns at the time of the weekly meeting. EPA has contacted local stake holders to determine if there is any interest in observing operations from Harbor Island but has not heard back from any one yet.

Construction Progress:

- Schedule (updated weekly by contractor – Attached)
- General progress with respect to schedule
 - Completed placement of the GS+AC at the Scour plot on Dec 28th and started placement of the GS at the Scour plot on Dec 29th. At end of shift on Dec 30th, approximately 40% of the GS subplot placement was complete.
 - The loading of the Sand + AC was moved up to Dec 30th from Jan 3 in anticipation of below freezing temperatures that were forecasted. Cal-Portland advised that blending of the AC when temperatures are below freezing may result in non-uniformly blended material.
 - Work scheduled for this week:
 - Complete GS+AC placement in Scour plot.
 - Start placement of the GS in the Scour Plot.
 - Daily hydrographic surveys at the end of each shift.

Problems Encountered (If Any) & Associated Action Items: None See Comments below:

Problems Encountered	Date	Required Action	Date Completed

Water Quality Monitoring:

- Observed non-construction-related events that impacted water quality.
 - None
- Summary of water quality criteria violations and actions taken.
 - No WQM activities to report.

QA Inspections:

- Results:
 - QA Inspections:
 - DOF representative was present during the Sand + AC barge loading that occurred on Dec 30th. One sample per 500 tons of material was collected for analysis.
 - Surveying (Performed at the end of each shift. Attached is the Dec 30, 2016 survey)
 - Monitoring Activities:
 - DOF and AMECFW representatives performed the final stake measurement and visual inspection of the Intertidal plot during the evening low tide on Tuesday, Dec 27th. Attached is an updated figure with stake measurements. During the inspection it was noted that there was a reduce quantity of activated carbon balls that had been observed during previous inspections. The cause of the reduction is unknown but it is believed that the activated carbon balls are migrating down slope towards the navigation channel where are they are no longer exposed during the low tide.
- Out of Spec Conditions (if encountered) & Corrective Actions: None See Comments below:

Out of Spec condition	Date	Corrective Action	Date Completed

Weekly Photo Log – LDW ENR/AC Pilot



Photo 1-A: Typical grade stake observation at the Intertidal plot. This stake extends approximately 8 inches out of the gravelly sand.



Photo 1-B: Undisturbed activated carbon balls (circled in red) were observed at the Intertidal plot during visual inspection.

Weekly Photo Log – LDW ENR/AC Pilot



Photo 2-A: KP-2 after the GS+AC placement was complete.



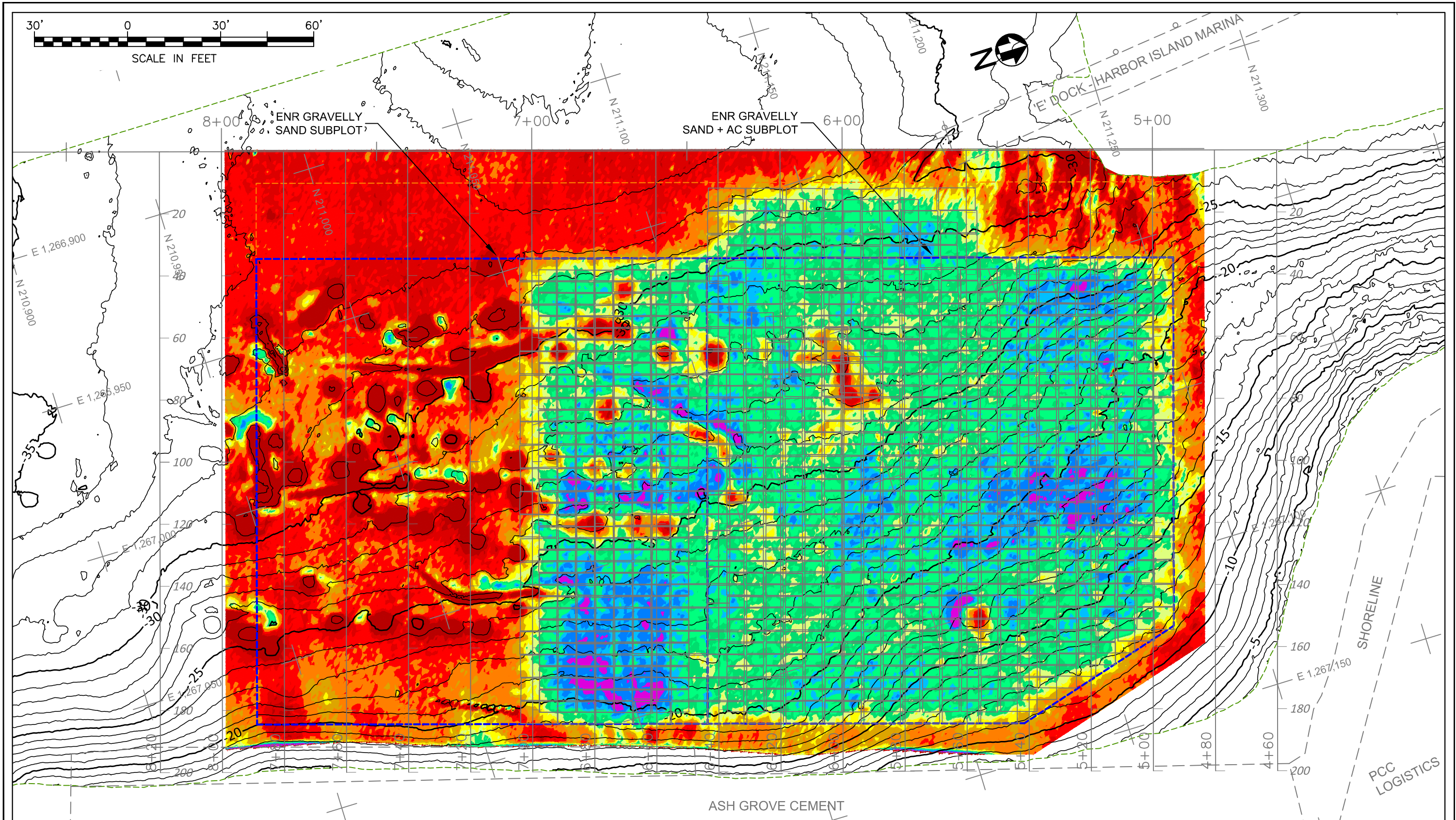
Photo 2-A: End of shift survey of the Scour plot.

ID	Task Mode	Task Name	Duration	Start	Finish	Nov 20, '16			Dec 4, '16			Dec 18, '16			Jan 1, '17			Jan 15, '17			Jan 29, '17			Feb 12		
						S	T	M	F	T	S	W	S	T	M	F	T	S	W	S	T	M	F	T	S	W
1		General	178 days	Wed 6/1/16	Fri 2/10/17																					
2		Contract Award	0 days	Wed 6/1/16	Wed 6/1/16																					
3		Phase 1 Notice to Proceed	0 days	Wed 6/1/16	Wed 6/1/16																					
4		Start In-Water Work	0 days	Tue 11/29/16	Tue 11/29/16																					
5		Phase 2 Substantial Completion	0 days	Wed 1/25/17	Wed 1/25/17																					
6		Punchlist	2 days	Thu 1/26/17	Fri 1/27/17																					
7		Closeout	10 days	Mon 1/30/17	Fri 2/10/17																					
8		Complete In-Water Work	0 days	Thu 2/9/17	Thu 2/9/17																					
9		Final Acceptance	0 days	Thu 2/9/17	Thu 2/9/17																					
10		Materials Placement	39 days	Tue 11/29/16	Wed 1/25/17																					
11		Test Placement	2 days	Tue 11/29/16	Wed 11/30/16																					
12		Test Placement Area- Sand + AC	1 day	Tue 11/29/16	Tue 11/29/16																					
13		Test Placement Area- Gravelly Sand + AC	1 day	Wed 11/30/16	Wed 11/30/16																					
14		Intertidal Plot	14 days	Thu 12/1/16	Tue 12/20/16																					
15		Intertidal Plot- Gravelly Sand + AC	6 days	Thu 12/1/16	Thu 12/8/16																					
16		Intertidal Plot- Gravelly Sand	7 days	Fri 12/9/16	Mon 12/19/16																					
17		Hydrographic As-Built Survey	0 days	Tue 12/20/16	Tue 12/20/16																					
18		Scour Plot	12 days	Tue 12/20/16	Fri 1/6/17																					
19		Scour Plot- Gravelly Sand + AC	6 days	Tue 12/20/16	Wed 12/28/16																					
20		Scour Plot- Gravelly Sand	6 days	Thu 12/29/16	Fri 1/6/17																					
21		Hydrographic As-Built Survey	0 days	Fri 1/6/17	Fri 1/6/17																					
22		Subtidal Plot	12 days	Mon 1/9/17	Wed 1/25/17																					
23		Subtidal Plot- Sand + AC	6 days	Mon 1/9/17	Tue 1/17/17																					
24		Subtidal Plot- Sand	6 days	Wed 1/18/17	Wed 1/25/17																					
25		Hydrographic As-Built Survey	0 days	Wed 1/25/17	Wed 1/25/17																					

Project: Baseline Schedule-Update Date: Tue 12/27/16	Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
	Split		External Tasks		Inactive Summary		Manual Summary		Progress	
	Milestone		External Milestone		Manual Task		Start-only			
	Summary		Inactive Task		Duration-only		Finish-only			

ID	Task Mode	Task Name	Duration	Start	Finish	Jan 1, '17				Jan 8, '17				Jan 15, '17			Jan 22, '17		
						W	F	S	T	T	S	M	W	F	S	T	T	S	M
1		ENR Material Loading	17 days	Fri 12/30/16	Wed 1/25/17														
2		Barge #5 (KP2): Sand + AC	0 days	Fri 12/30/16	Fri 12/30/16		◆ 12/30												
3		Barge #6 (KP3): Sand	0 days	Thu 1/12/17	Thu 1/12/17							◆ 1/12							
4		ENR Placement Activities	18 days	Thu 12/29/16	Wed 1/25/17														
5		Scour	6 days	Thu 12/29/16	Fri 1/6/17														
6		Place Gravelly Sand	6 days	Thu 12/29/16	Fri 1/6/17														
7		Subtidal	12 days	Mon 1/9/17	Wed 1/25/17														
8		Place Sand + AC	6 days	Mon 1/9/17	Tue 1/17/17														
9		Place Sand	6 days	Wed 1/18/17	Wed 1/25/17														
10		Survey Activities	18 days	Thu 12/29/16	Wed 1/25/17														
11		Subtidal: Pre-Placement Survey	0 days	Thu 12/29/16	Thu 12/29/16		◆ 12/29												
12		Scour: Post-Placement Survey	0 days	Fri 1/6/17	Fri 1/6/17														◆ 1/6
13		Subtidal: Establish Basestation	0 days	Fri 1/6/17	Fri 1/6/17														◆ 1/6
14		Subtidal: Post-Placement Survey	0 days	Wed 1/25/17	Wed 1/25/17														◆ 1/25

Project: 3-Week Look Ahead (1-3) Date: Fri 12/30/16	Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
	Split		External Tasks		Inactive Summary		Manual Summary		Progress	
	Milestone		External Milestone		Manual Task		Start-only			
	Summary		Inactive Task		Duration-only		Finish-only			



DATUM INFORMATION
 Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
 Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

- NOTES**
1. SURVEY FOR THE SCOUR AREA WAS CONDUCTED BY TERRASOND LIMITED ON DEC 30, 2016
 2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLIANCI WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE-SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
 3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
 4. BACKGROUND INFORMATION IS FOR VISUAL REFERENCE ONLY

MATERIAL THICKNESS (PRE VS CURRENT) TARGET ZONE	LEGEND 	SURVEY CONTROL ISLAND 1 N: 211,360.936 E: 1,266,399.95 17.47 ISLAND 2 N: 211,361.930 E: 1,266,775.350 17.97
--	-------------------	--

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
 801 NW 42nd Street, Suite 215 | Seattle, WA 98107

ENHANCED NATURAL RECOVERY
 ACTIVATED CARBON PILOT STUDY
 DUWAMISH WATERWAY
 CONTRACT # C00992C15

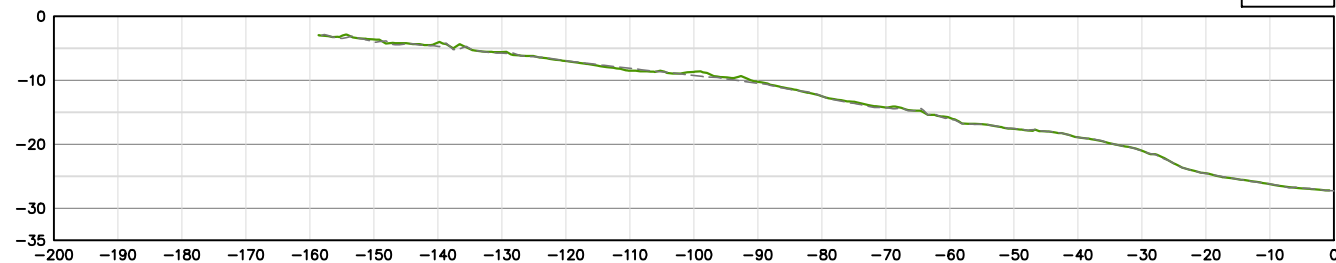
MULTIBEAM HYDROGRAPHIC SURVEY
 SCOUR PLOT PROGRESS

SHEET 1 OF 3

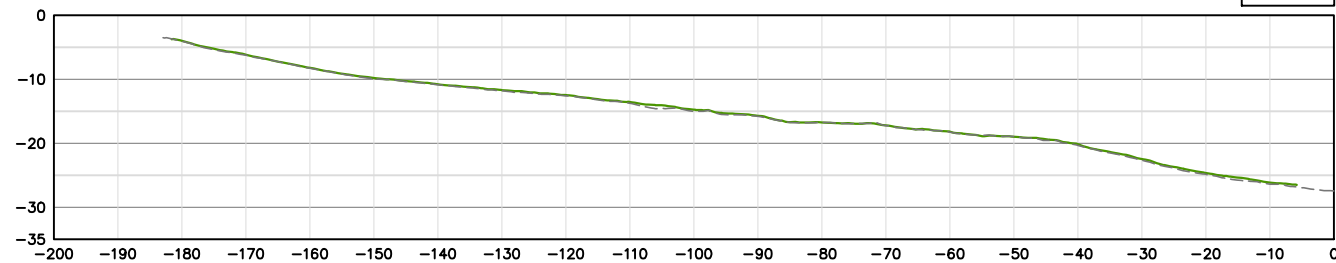
Drawn: MSK	Checked: LNL	Survey Date: DEC 30, 2016
Parer Site: ANSI	Project No.: 2016-0	DraI Date: DEC 30, 2016

ENR GRAVELLY SAND + AC SUBPLOT

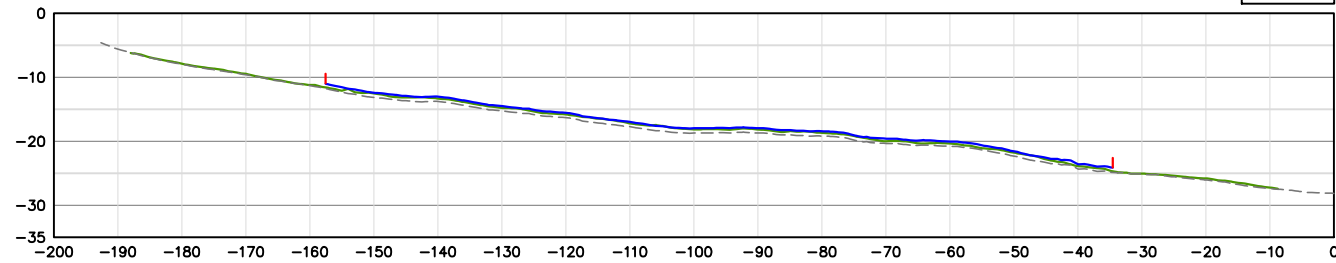
4+60



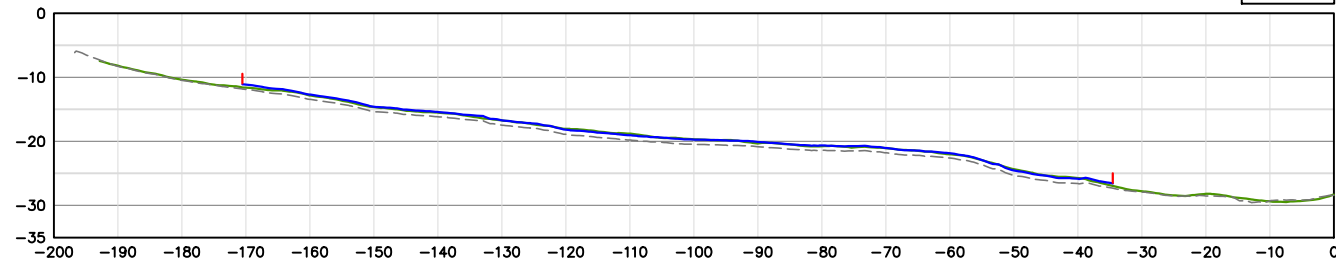
4+80



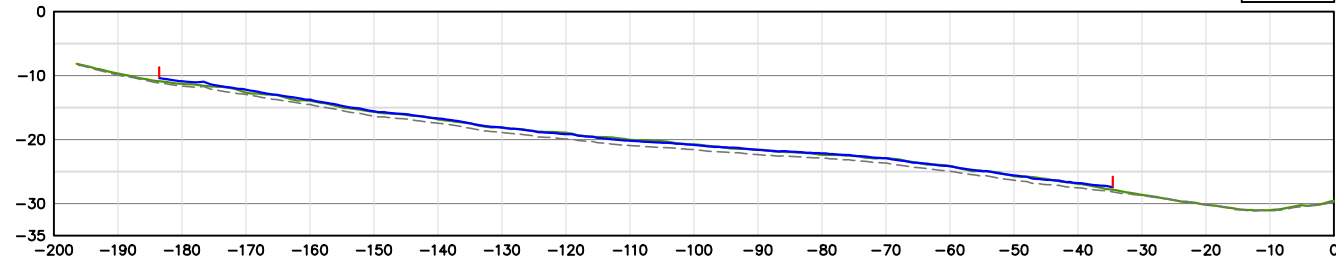
5+00



5+20

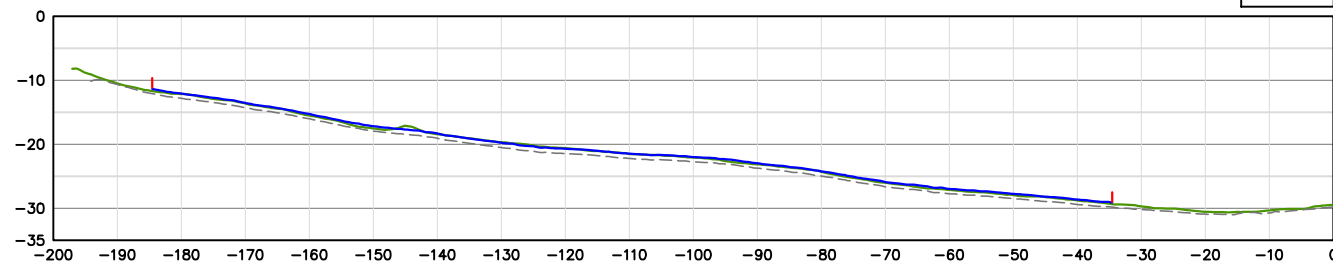


5+40

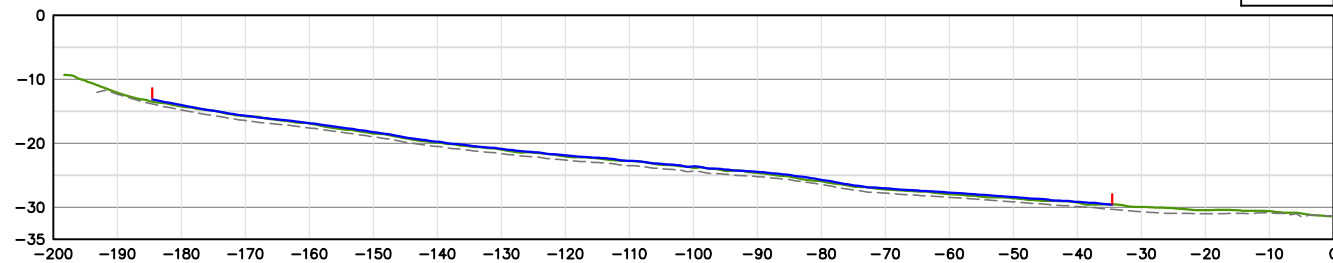


ENR GRAVELLY SAND + AC SUBPLOT

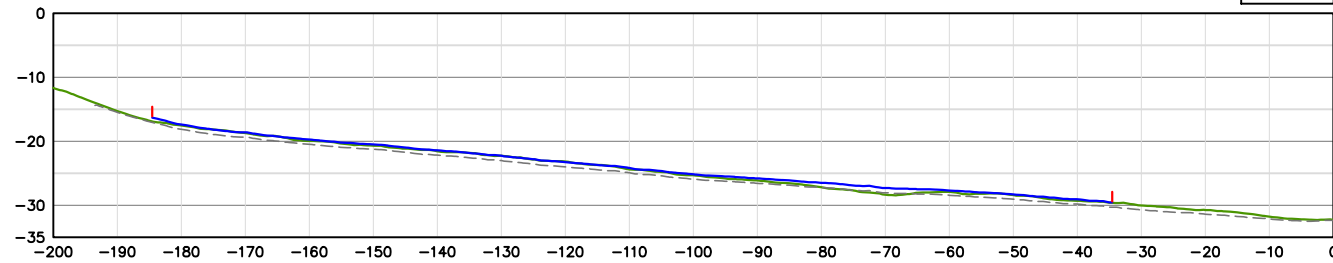
5+60



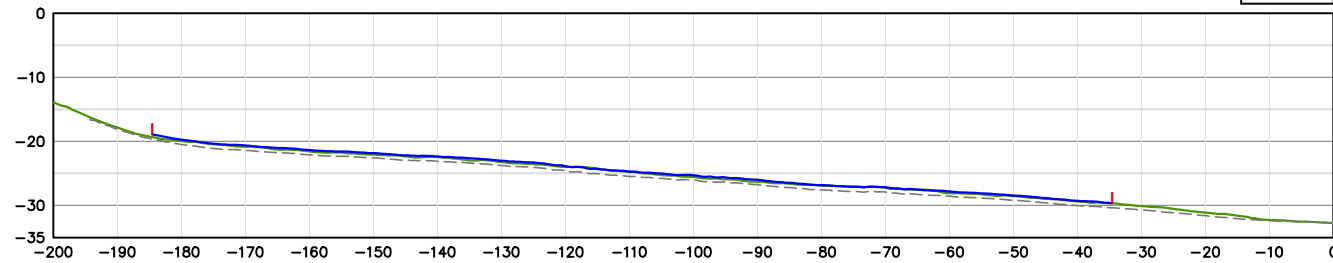
5+80



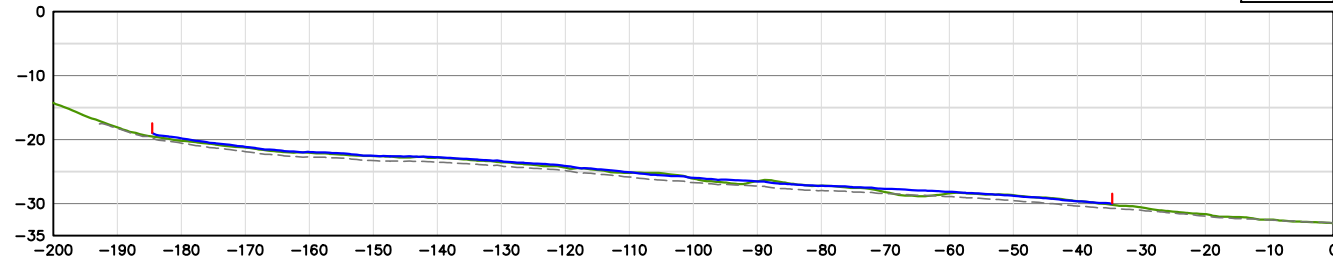
6+00



6+20



6+40



DATUM INFORMATION

Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES

1. SURVEY FOR THE SCOUR PLOT AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 30, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANT WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
4. PROFILE VERTICAL MAGGGERATION IS 1.0

PROFILES LEGEND

- SUBPLOT TENT (0.9 INCHES)
- CURRENT SURVEY
- PRE-SURVEY (DEC 12, 2016)

SURVEY CONTROL

ISLAND 1
N: 211,360.936
E: 1,266,339.995
17.47

ISLAND 2
N: 211,361.930
E: 1,266,775.350
17.97

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
801 NW 42nd Street, Suite 215 | Seattle, WA 98107

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
DUWAMISH WATERWAY
CONTRACT # C00992C15

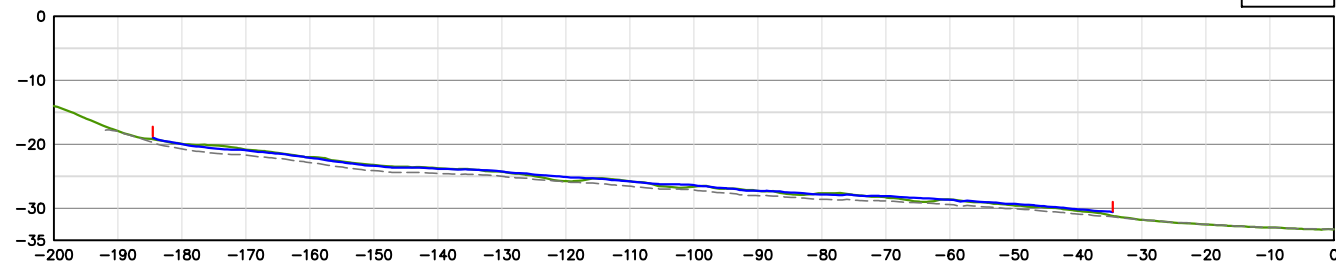
MULTIBEAM HYDROGRAPHIC SURVEY
SCOUR PLOT PROGRESS

SHEET 2 OF 3

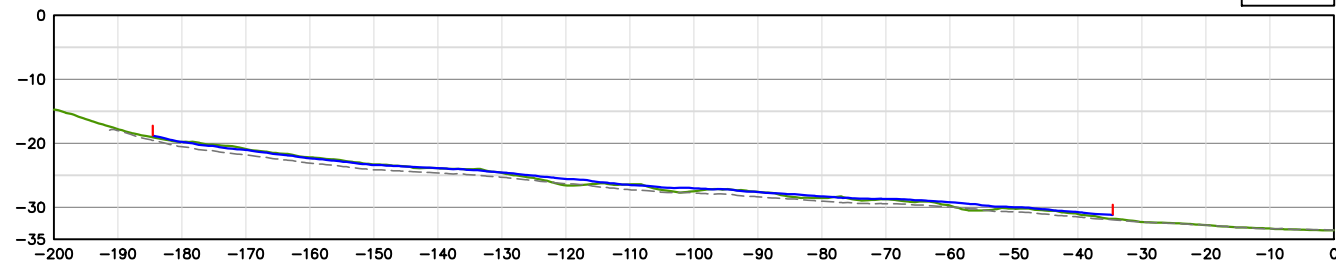
Drawn: MSK	Checked: LNL	Survey Date: DEC 30, 2016
Project No.: 2016-001	Draw Date: DEC 30, 2016	

ENR GRAVELLY SAND SUBPLOT

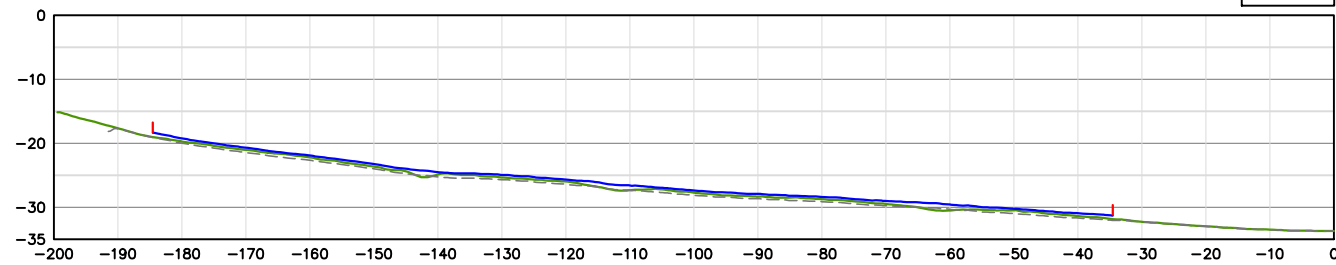
6+60



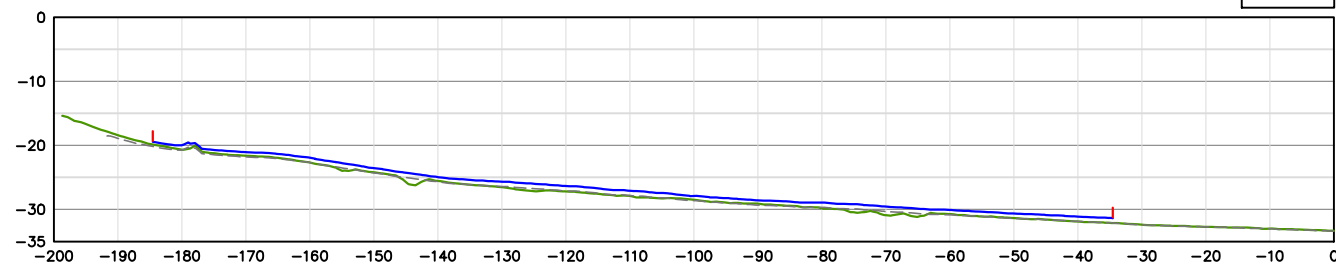
6+80



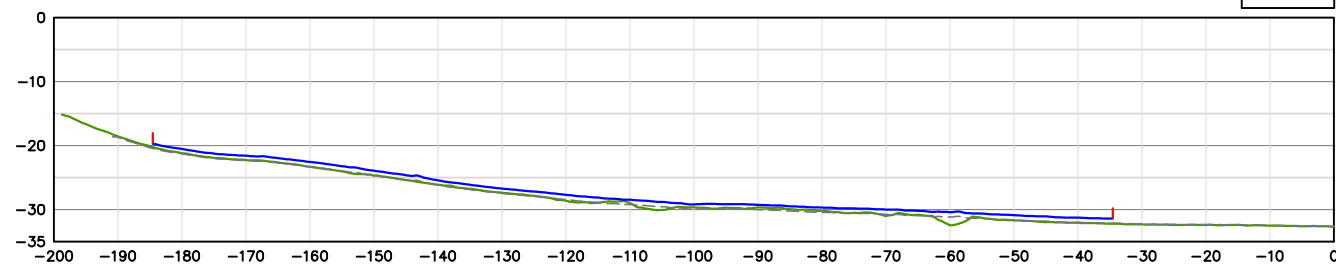
7+00



7+20

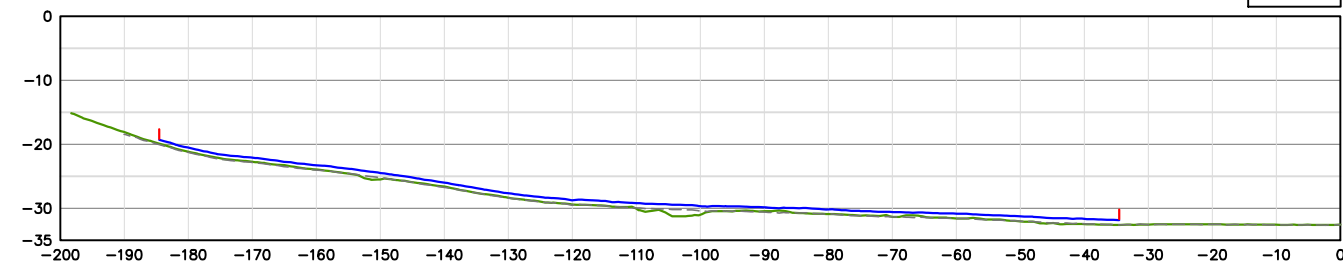


7+40

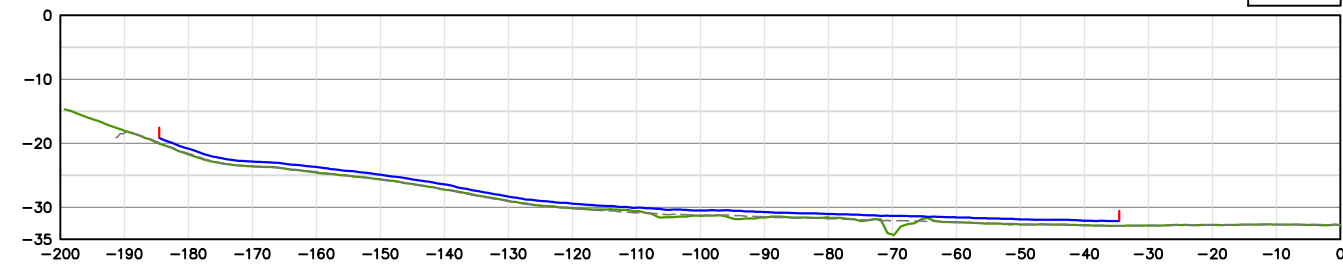


ENR GRAVELLY SAND SUBPLOT

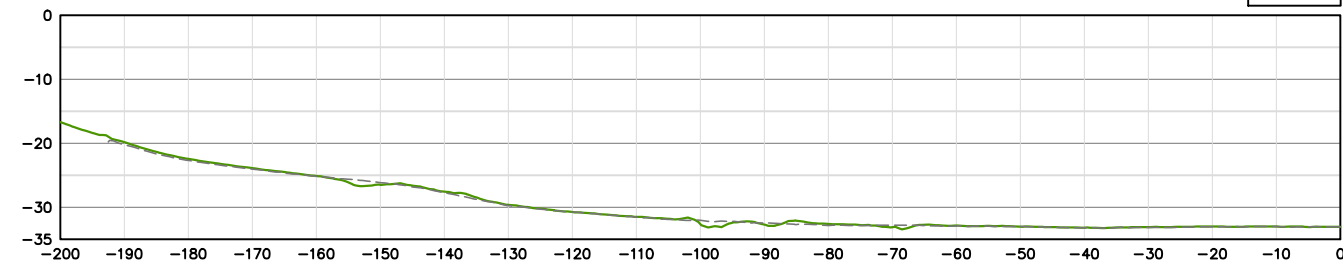
7+60



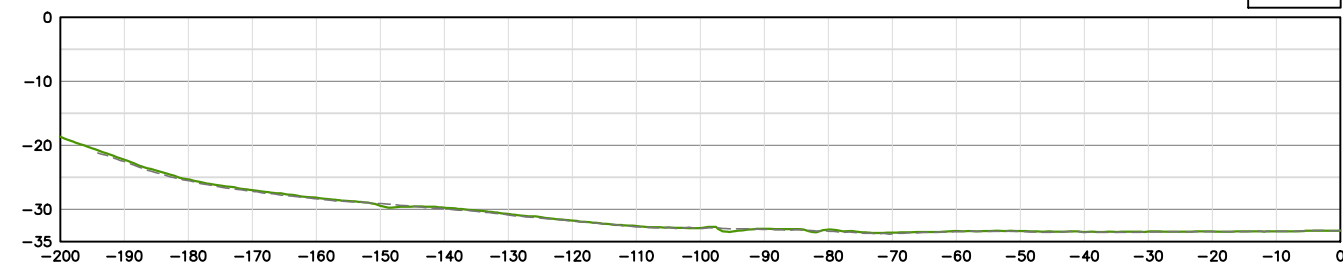
7+80



8+00



8+20



DATUM INFORMATION

Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES

1. SURVEY FOR THE SCOUR PLOT AREA WAS CONDUCTED BY TERRASOND LIMITED ON DECEMBER 30, 2016
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANT WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
4. PROFILE VERTICAL MAGNIFICATION IS 1.0

PROFILES LEGEND

- SUBPLOT EXTENT (9 INCHES)
- CURRENT SURVEY
- - - PRE-SURVEY (DEC 12, 2016)

SURVEY CONTROL

ISLAND 1
N: 211,360.936
E: 1,266,399.995
E: 17.47

ISLAND 2
N: 211,361.930
E: 1,266,775.350
E: 17.97

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
801 NW 42nd Street, Suite 215 | Seattle, WA 98107

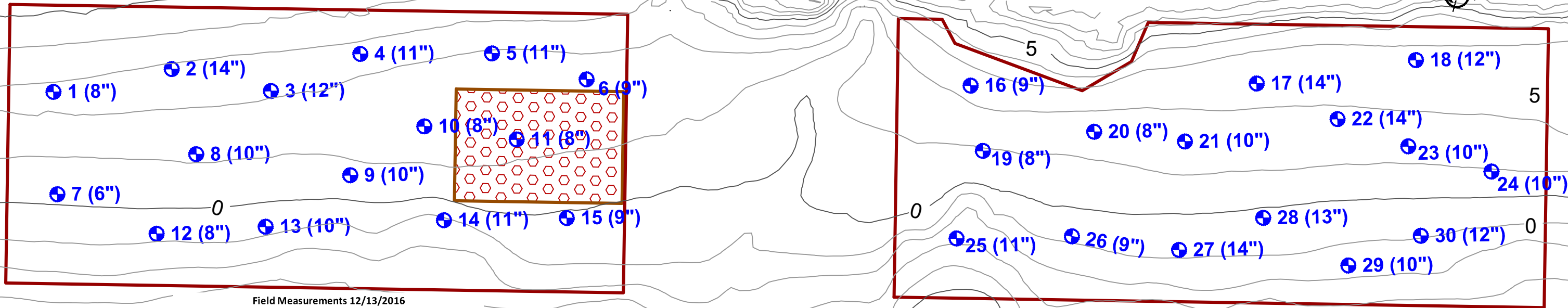
ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
DUWAMISH WATERWAY
CONTRACT # C00992C15

MULTIBEAM HYDROGRAPHIC SURVEY
SCOUR PLOT PROGRESS

SHEET 3 OF 3

Drawn: MSK	Checked: LNL	Survey Date: DEC 30, 2016
Project No.: 2016-001	Draw Date: DEC 30, 2016	

PLOT TIME: 1/3/2017 12:19 PM MOD TIME: 1/3/2017 12:16 PM USER: Dan Pickering DWG: D:\Projects\King County\ENR Pilot\CAD\2017-01\2017-01-03 KC-ENR Staking and Mermits.dwg



**Field Measurements 12/13/2016
Gravelly Sand + Activated Carbon Intertidal Subplot**

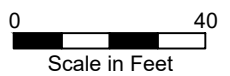
Test Plot Location ID (IT-ENR-AC-xx)	Stake # (S-xx)	Stake Length above Plate (Inches)	Exposed Stake length (measured) Inches	Placed ENR Thickness (Inches)
IT-ENR-AC-01	S-31	18	10	8
IT-ENR-AC-02	S-61	18	4	14
IT-ENR-AC-03	S-41	18	6	12
IT-ENR-AC-04	S-37	18	7	11
IT-ENR-AC-05	S-70	18	7	11
IT-ENR-AC-06	S-69	18	9	9
IT-ENR-AC-07	S-29	18	12	6
IT-ENR-AC-08	S-56	18	8	10
IT-ENR-AC-09	S-100	18	8	10
IT-ENR-AC-10	S-57	18	10	8
IT-ENR-AC-11	S-76	18	10	8
IT-ENR-AC-12	S-35	18	10	8
IT-ENR-AC-13	S-45	18	8	10
IT-ENR-AC-14	S-44	18	7	11
IT-ENR-AC-15	S-34	18	9	9

AVERAGE THICKNESS	10
MINIMUM THICKNESS	6
MAXIMUM THICKNESS	14

**Field Measurements 12/27/2016
Gravelly Sand Intertidal Subplot**

Test Plot Location ID (IT-ENR-AC-xx)	Stake # (S-xx)	Stake Length above Plate (Inches)	Exposed Stake length (measured) Inches	Placed ENR Thickness (Inches)
IT-ENR-16	S-10	18	9	9
IT-ENR-17	S-5	18	4	14
IT-ENR-18	S-11	18	6	12
IT-ENR-19	S-38	18	10	8
IT-ENR-20	S-19	18	10	8
IT-ENR-21	S-20	18	8	10
IT-ENR-22	S-16	18	4	14
IT-ENR-23	S-14	18	8	10
IT-ENR-24	S-7	18	8	10
IT-ENR-25	S-28	18	7	11
IT-ENR-26	S-14	18	9	9
IT-ENR-27	S-6	18	4	14
IT-ENR-28	S-33	18	5	13
IT-ENR-29	S-1	18	8	10
IT-ENR-30	S-18	18	6	12

AVERAGE THICKNESS	11
MINIMUM THICKNESS	8
MAXIMUM THICKNESS	14



Legend

13 (8") Stake Location (Thickness Measurement)

Test Plot

King County Department of Natural Resources & Parks
Wastewater Treatment Division

Enhanced Natural Recovery-Active Carbon Study

**Staking Locations & Thickness Measurements
Intertidal Plot**

DOF DALTON OLMSTED FUGLEVAND

FIGURE

January 3, 2017

Owner: King County

Project: Lower Duwamish Waterway ENR/AC Pilot

Dates: January 2, 2017 to January 6, 2017

Weekly Progress Meeting Summary:

- Schedule:
 - No work performed Monday January 2, 2017.
 - Scour Plot was completed on Jan 6th.
 - Final survey of the Scour Plot was completed on Jan 6th.
 - Scour plot is scheduled to be complete Jan 6th.
 - Subtidal plot is scheduled to be complete by Jan 25th.
- Issues:
 - No issues at this time; but when placing at Sub-tidal Plot which is within the Navigation channel be aware of the minimum depth requirements that must be maintained.
 - Vessel traffic may impeded placement at sub-tidal plot.

Construction Progress:

- Schedule (updated weekly by contractor – Attached)
- General progress with respect to schedule
 - Completed placement of the Gravelly Sand at the Scour plot on Jan 6th.
Approximately 40 CY of excess material was placed in areas identified from bathymetric survey data as having less than 4 inches material within the subplot and locations where spuds had been set prior to ENR material placement.
 - Final Scour Plot survey was completed on Jan 6th.
 - Divers performing scour plot stake measurements and Ash Grove post placement dock inspection on Jan 9th and 10th.
 - The loading of the Sand ENR is scheduled for 10 AM, Jan 13th.
 - Work scheduled for this week:
 - Sand+AC placement in Subtidal plot.
 - Load final barge of ENR
 - Daily hydrographic surveys performed at the end of each shift.

Problems Encountered (If Any) & Associated Action Items: None See Comments below:

Problems Encountered	Date	Required Action	Date Completed

Water Quality Monitoring:

- Observed non-construction-related events that impacted water quality.
 - None
- Summary of water quality criteria violations and actions taken.
 - No WQM activities to report. (No monitoring required or performed based on previous monitoring results).

QA Inspections:

- Results:
 - QA Inspections:
 - None.
 - Surveying (Performed at the end of each shift. Attached is the Jan 6, 2017 survey)
 - Monitoring Activities:
 - RSS divers performed preplacement inspection of the Subtidal plot on Jan 4th and 5th.
- Out of Spec Conditions (if encountered) & Corrective Actions: None See
Comments below:

Out of Spec condition	Date	Corrective Action	Date Completed

Weekly Photo Log – LDW ENR/AC Pilot



Photo 1-A: Cold weather froze water and ENR material in the barge. Excavator was used to break up the frozen ENR material prior to placement.

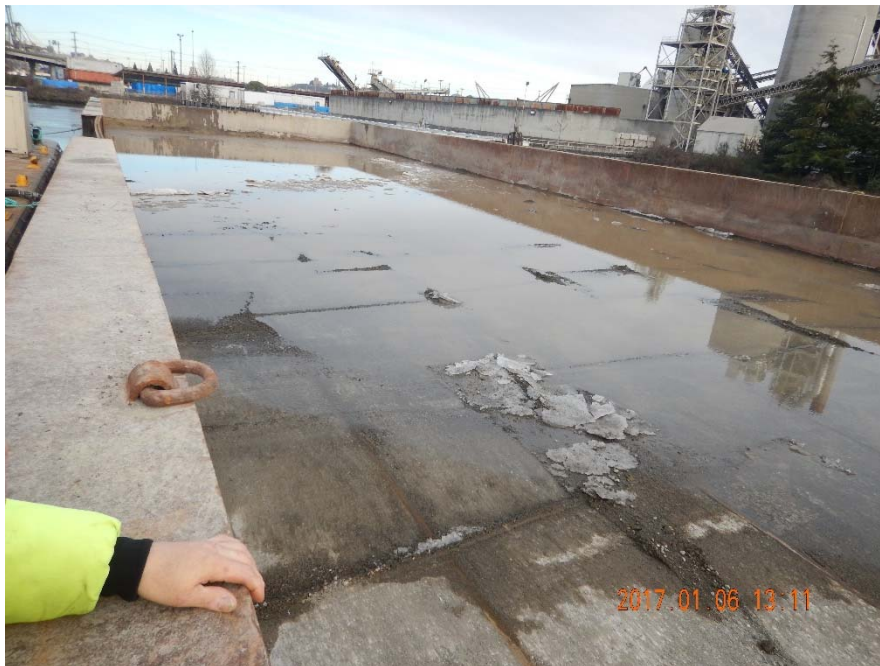


Photo 1-B: Material barge after the final placement of the Gravelly Sand ENR material at the Scour plot.

Weekly Photo Log – LDW ENR/AC Pilot



Photo 2-A: Sand+AC ENR material prior to levelling and soaking.



Photo 2-A: Soaking of the Sand+AC ENR material. Material was soaked over the weekend prior to mobilization to the Subtidal Plot.

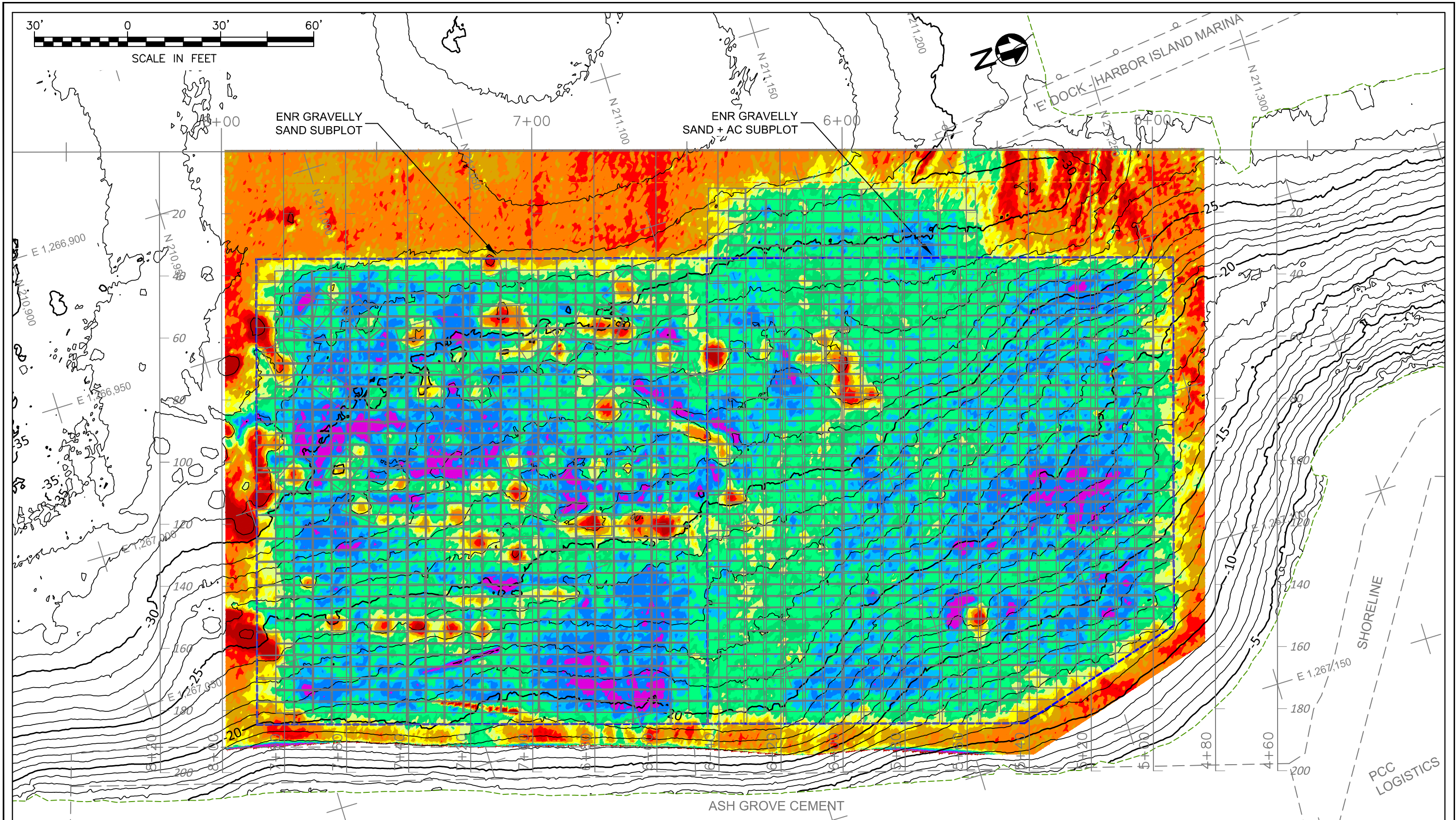
ID	Task Mode	Task Name	Duration	Start	Finish	Nov 20, '16			Dec 4, '16			Dec 18, '16			Jan 1, '17			Jan 15, '17			Jan 29, '17			Feb 12					
						S	T	M	F	T	S	W	S	T	M	F	T	S	W	S	T	M	F	T	S	W	S		
1	↳	General	178 days	Wed 6/1/16	Fri 2/10/17																								
2	↳	Contract Award	0 days	Wed 6/1/16	Wed 6/1/16																								
3	↳	Phase 1 Notice to Proceed	0 days	Wed 6/1/16	Wed 6/1/16																								
4	↳	Start In-Water Work	0 days	Tue 11/29/16	Tue 11/29/16																								
5	↳	Phase 2 Substantial Completion	0 days	Wed 1/25/17	Wed 1/25/17																								
6	↳	Punchlist	2 days	Thu 1/26/17	Fri 1/27/17																								
7	↳	Closeout	10 days	Mon 1/30/17	Fri 2/10/17																								
8	↳	Complete In-Water Work	0 days	Thu 2/9/17	Thu 2/9/17																								
9	↳	Final Acceptance	0 days	Thu 2/9/17	Thu 2/9/17																								
10	↳	Materials Placement	39 days	Tue 11/29/16	Wed 1/25/17																								
11	↳	Test Placement	2 days	Tue 11/29/16	Wed 11/30/16																								
12	↳	Test Placement Area- Sand + AC	1 day	Tue 11/29/16	Tue 11/29/16																								
13	↳	Test Placement Area- Gravelly Sand + AC	1 day	Wed 11/30/16	Wed 11/30/16																								
14	↳	Intertidal Plot	14 days	Thu 12/1/16	Tue 12/20/16																								
15	↳	Intertidal Plot- Gravelly Sand + AC	6 days	Thu 12/1/16	Thu 12/8/16																								
16	↳	Intertidal Plot- Gravelly Sand	7 days	Fri 12/9/16	Mon 12/19/16																								
17	↳	Hydrographic As-Built Survey	0 days	Tue 12/20/16	Tue 12/20/16																								
18	↳	Scour Plot	12 days	Tue 12/20/16	Fri 1/6/17																								
19	↳	Scour Plot- Gravelly Sand + AC	6 days	Tue 12/20/16	Wed 12/28/16																								
20	↳	Scour Plot- Gravelly Sand	6 days	Thu 12/29/16	Fri 1/6/17																								
21	↳	Hydrographic As-Built Survey	0 days	Fri 1/6/17	Fri 1/6/17																								
22	↳	Subtidal Plot	12 days	Mon 1/9/17	Wed 1/25/17																								
23	↳	Subtidal Plot- Sand + AC	6 days	Mon 1/9/17	Tue 1/17/17																								
24	↳	Subtidal Plot- Sand	6 days	Wed 1/18/17	Wed 1/25/17																								
25	↳	Hydrographic As-Built Survey	0 days	Wed 1/25/17	Wed 1/25/17																								

Project: Baseline Schedule-Update
Date: Mon 1/9/17

Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
Split		External Tasks		Inactive Summary		Manual Summary		Progress	
Milestone		External Milestone		Manual Task		Start-only			
Summary		Inactive Task		Duration-only		Finish-only			

ID	Task Mode	Task Name	Duration	Start	Finish	Jan 1, '17					Jan 8, '17					Jan 15, '17					Jan 22, '17			
						W	F	S	T	T	S	M	W	F	S	T	T	S	M	W				
1		ENR Material Loading	17 days	Fri 12/30/16	Wed 1/25/17																			
2		Barge #6 (KP3): Sand	0 days	Fri 1/13/17	Fri 1/13/17																			
3		ENR Placement Activities	18 days	Thu 12/29/16	Wed 1/25/17																			
4		Scour	6 days	Thu 12/29/16	Fri 1/6/17																			
5		Place Gravelly Sand	6 days	Thu 12/29/16	Fri 1/6/17																			
6		Subtidal	12 days	Mon 1/9/17	Wed 1/25/17																			
7		Place Sand + AC	6 days	Mon 1/9/17	Tue 1/17/17																			
8		Place Sand	6 days	Wed 1/18/17	Wed 1/25/17																			
9		Survey Activities	18 days	Thu 12/29/16	Wed 1/25/17																			
10		Scour: Post-Placement Survey	0 days	Fri 1/6/17	Fri 1/6/17																			
11		Subtidal: Establish Basestation	0 days	Mon 1/9/17	Mon 1/9/17																			
12		Subtidal: Post-Placement Survey	0 days	Wed 1/25/17	Wed 1/25/17																			

Project: 3-Week Look Ahead (1-3) Date: Mon 1/9/17	Task		Project Summary		Inactive Milestone		Manual Summary Rollup		Deadline	
	Split		External Tasks		Inactive Summary		Manual Summary		Progress	
	Milestone		External Milestone		Manual Task		Start-only			
	Summary		Inactive Task		Duration-only		Finish-only			



DATUM INFORMATION
 Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
 Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

- NOTES**
1. SURVEY FOR THE SCOUR AREA WAS CONDUCTED BY TERRASOND LIMITED ON JAN 06, 2017
 2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBeam, APPLANI WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE-SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
 3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
 4. BACKGROUND INFORMATION IS FOR VISUAL REFERENCE ONLY

MATERIAL THICKNESS (PRE VS CURRENT) 	LEGEND 	SURVEY CONTROL ISLAND 1 N: 211,360.936 E: 1,266,399.95 17.47
		ISLAND 2 N: 211,361.930 E: 1,266,775.350 17.97

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
 801 NW 42nd Street, Suite 215 | Seattle, WA 98107

ENHANCED NATURAL RECOVERY
 ACTIVATED CARBON PILOT STUDY
 DUWAMISH WATERWAY
 CONTRACT # C00992C15

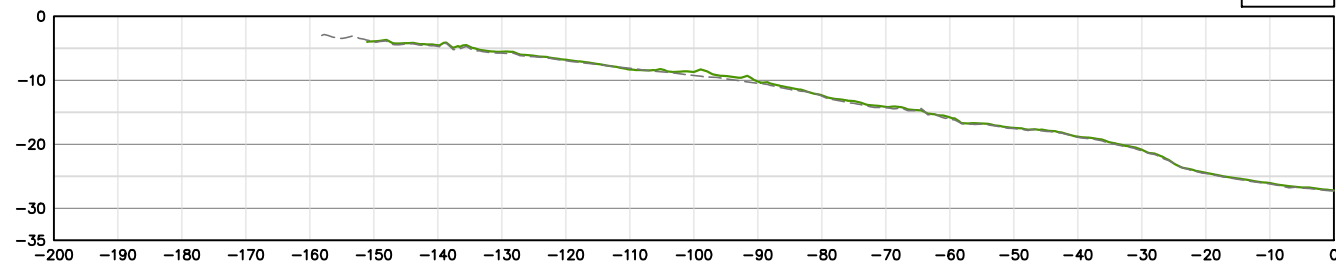
MULTIBEAM HYDROGRAPHIC SURVEY
 SCOUR PLOT POST-PLACEMENT

SHEET 1 OF 3

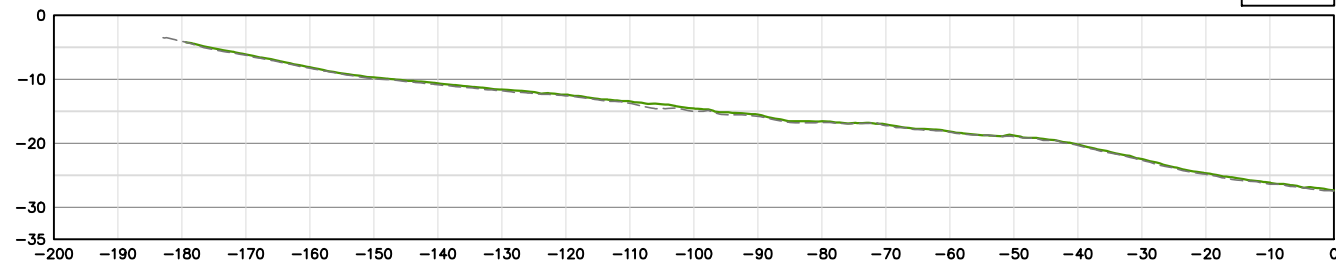
Drawn: MSK	Checked: LNL	Survey Date: JAN 06, 2017
Project No.: 2016-000	Draw Date: JAN 09, 2017	

ENR GRAVELLY SAND + AC SUBPLOT

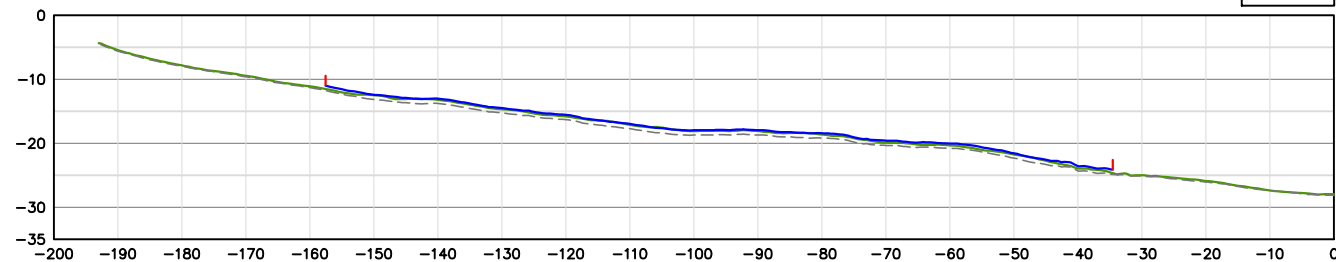
4+60



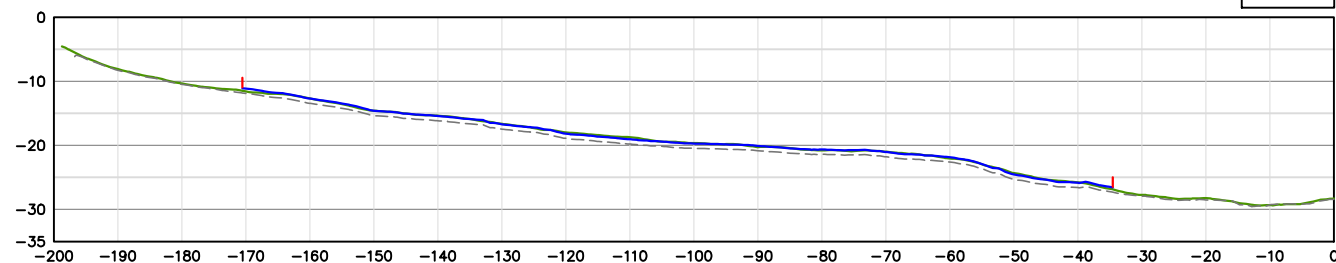
4+80



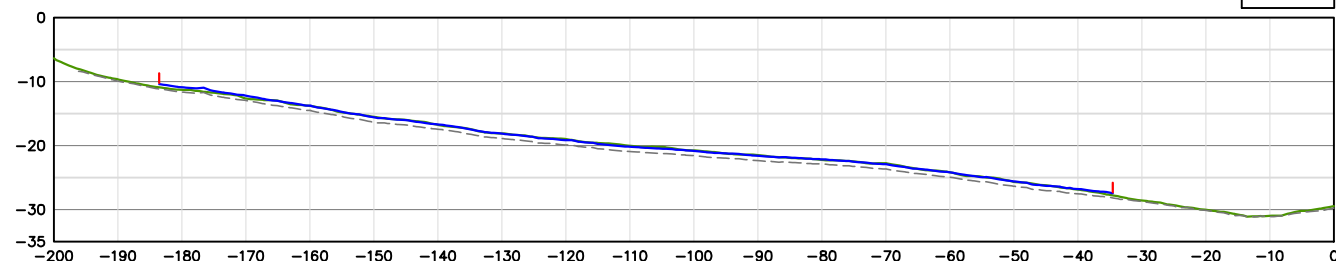
5+00



5+20

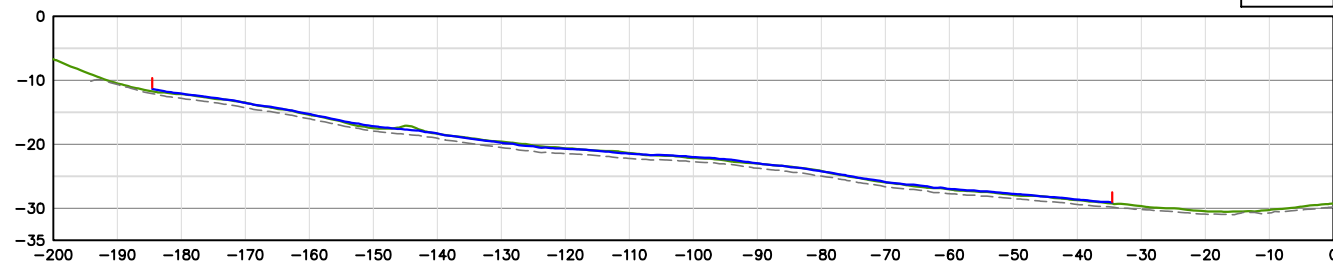


5+40

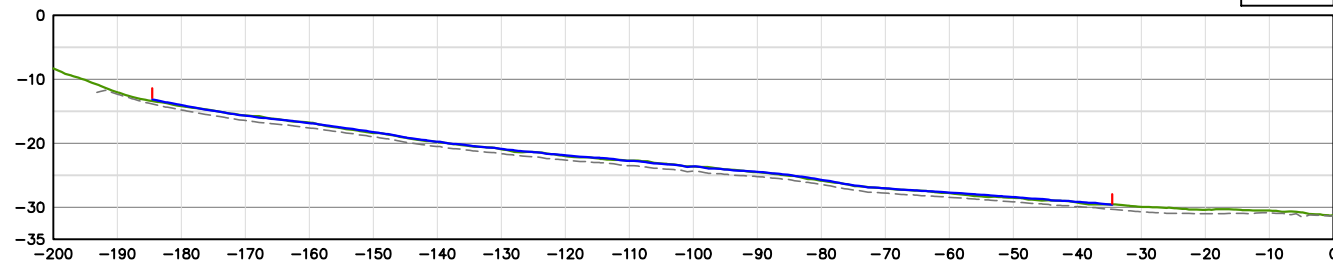


ENR GRAVELLY SAND + AC SUBPLOT

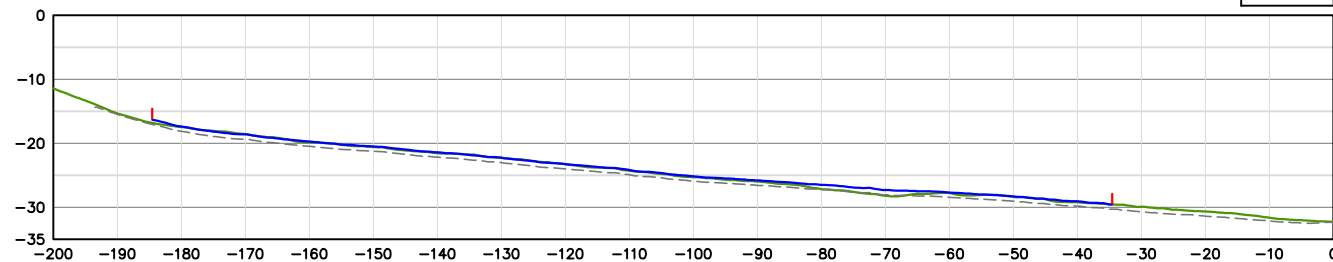
5+60



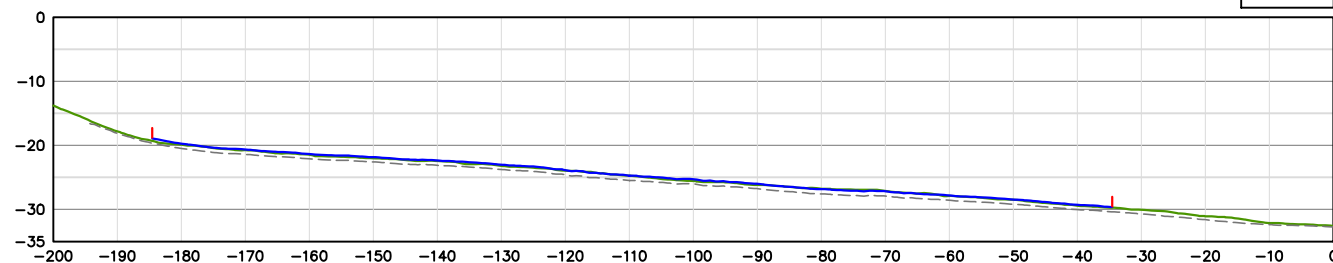
5+80



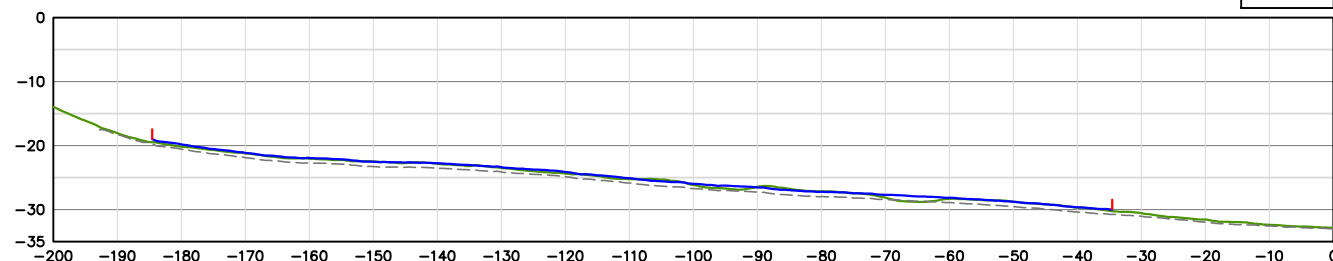
6+00



6+20



6+40



DATUM INFORMATION

Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
 Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES

1. SURVEY FOR THE SCOUR PLOT AREA WAS CONDUCTED BY TERRASOND LIMITED ON JANUARY 06, 2017
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLIANCI WAVEMASTER INERITAL NAVIGATION SYSTEM, AML CASE SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
4. PROFILE VERTICAL MAGGGERATION IS 1.0

PROFILES LEGEND

- SUBPLOT TENT (39 INCHES)
- CURRENT SURVEY
- PRE-SURVEY (DEC 12, 2016)

SURVEY CONTROL

ISLAND 1
 N: 211,360.936
 E: 1,266,339.995
 17.47

ISLAND 2
 N: 211,361.930
 E: 1,266,775.350
 17.97

700 S Riverside Drive | Seattle, WA 98108

PRECISION GEOSPATIAL SOLUTIONS®
 801 NW 42nd Street, Suite 215 | Seattle, WA 98107

ENHANCED NATURAL RECOVERY
 ACTIVATED CARBON PILOT STUDY
 DUWAMISH WATERWAY
 CONTRACT # C00992C15

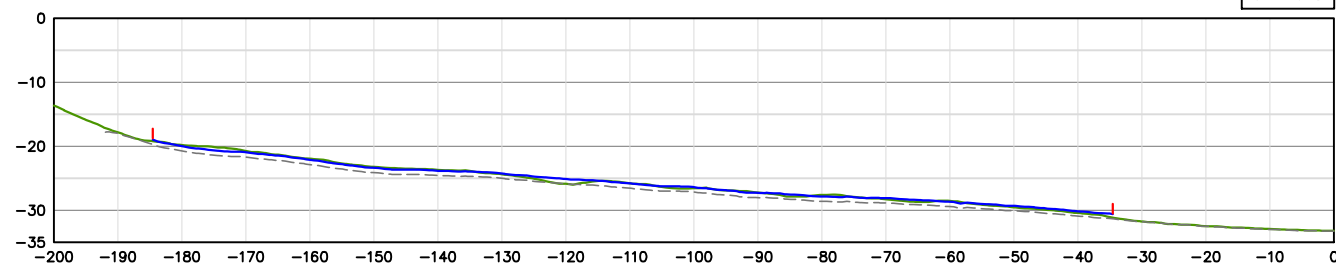
MULTIBEAM HYDROGRAPHIC SURVEY
 SCOUR PLOT POST-PLACEMENT

SHEET 2 OF 3

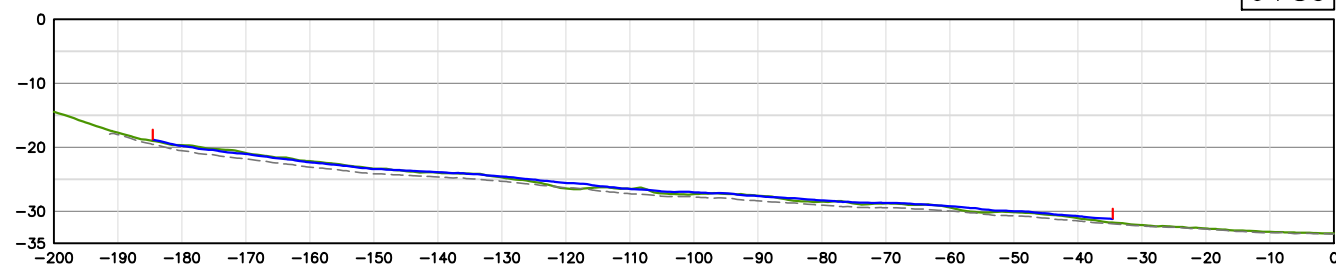
Drawn: MSK	Checked: LNL	Survey Date: JAN 06, 2017
Partner Site: ANSI	Project No.: 2016-00	Draw Date: JAN 09, 2017

ENR GRAVELLY SAND SUBPLOT

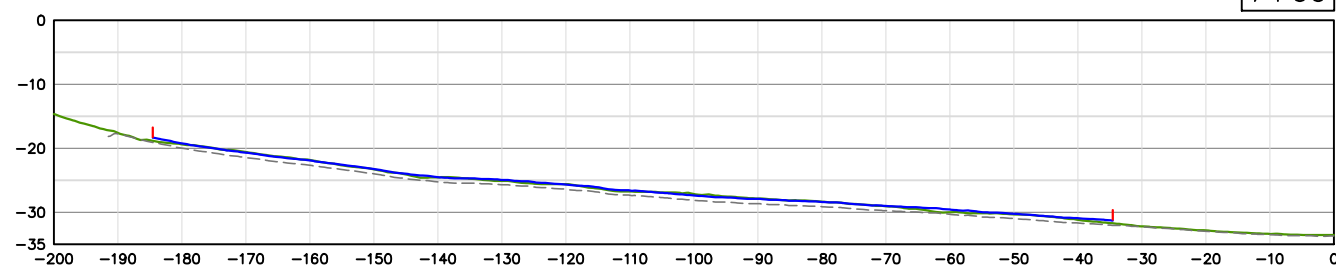
6+60



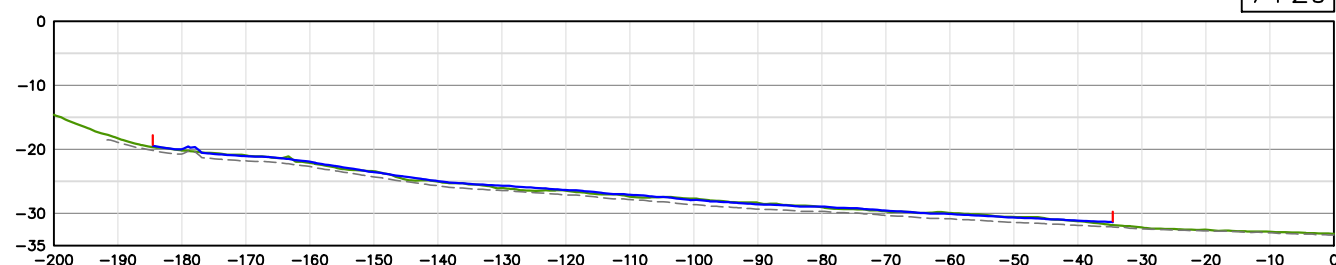
6+80



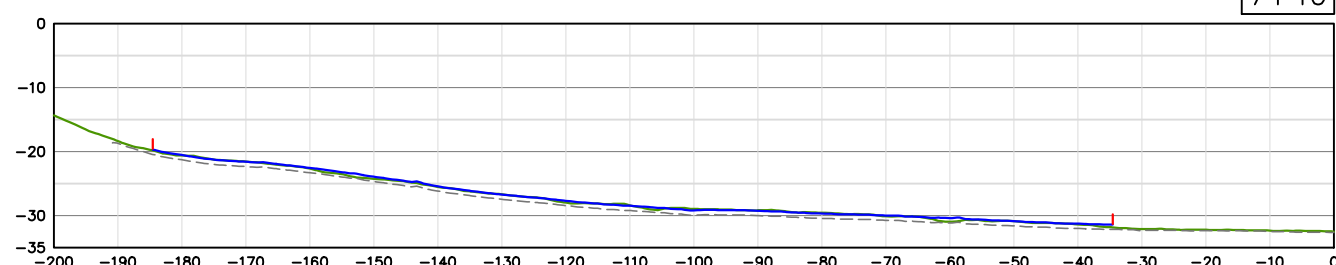
7+00



7+20

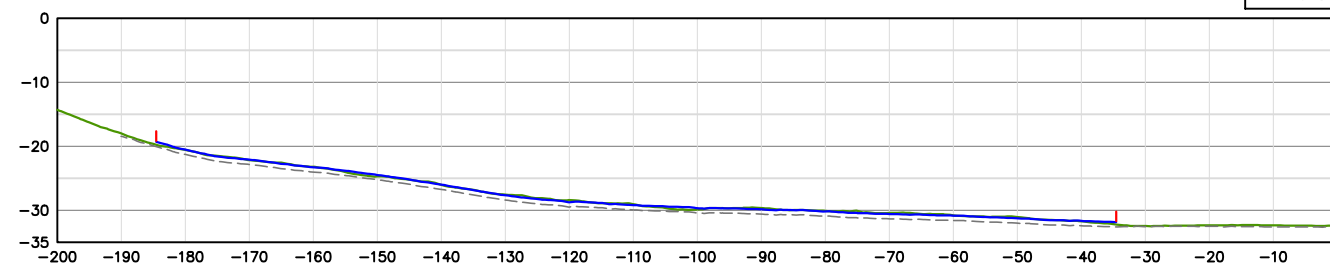


7+40

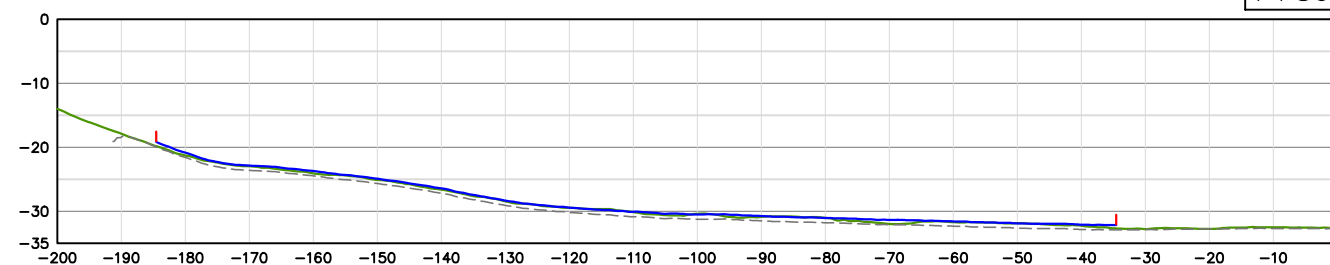


ENR GRAVELLY SAND SUBPLOT

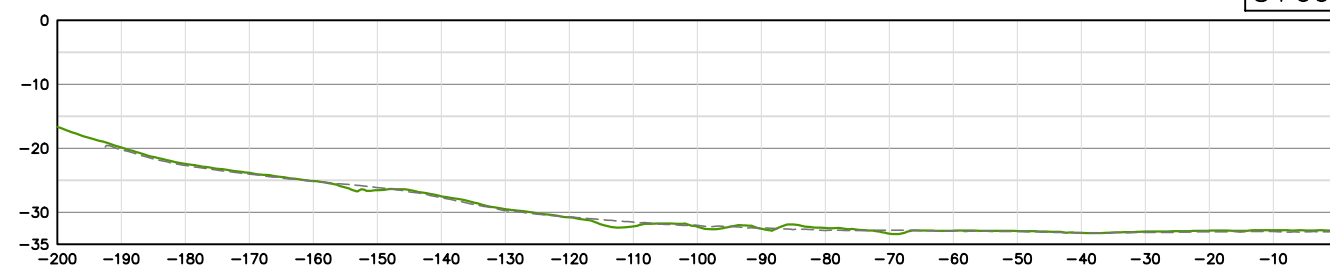
7+60



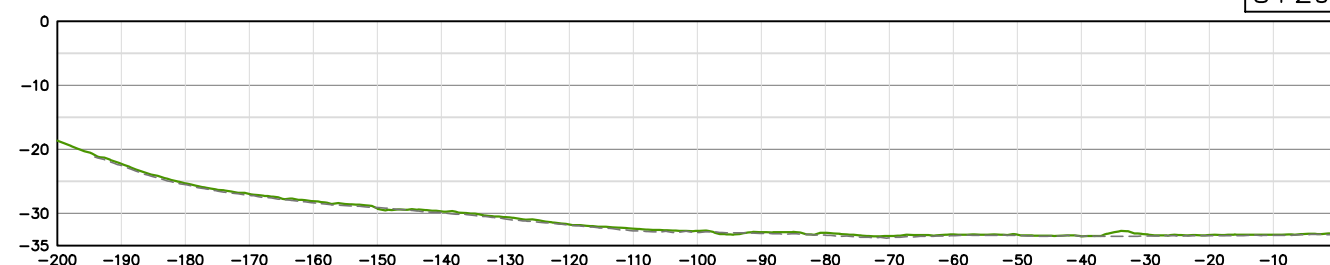
7+80



8+00



8+20



DATUM INFORMATION

Horizontal: WASHINGTON STATE PLANE NORTH, NAD83, U.S. FEET
Vertical: MEAN LOWER LOW WATER (MLLW) NOS SEATTLE EPOCH 1983-2001

NOTES

1. SURVEY FOR THE SCOUR PLOT AREA WAS CONDUCTED BY TERRASOND LIMITED ON JANUARY 06, 2017
2. HYDROGRAPHIC DATA WAS COLLECTED USING A RESON 7125 400kHz MULTIBEAM, APPLANT WAVEMASTER INERTIAL NAVIGATION SYSTEM, AML CASE SOUND VELOCITY PROFILE, AND HYPACK HYSWEEP 2016
3. REAL-TIME KINEMATIC (RTK) POSITIONING WAS BASED ON RECORD COORDINATES FOR POINT "ISLAND 1"
4. PROFILE VERTICAL MAGNIFICATION IS 1.0

PROFILES LEGEND

- SUBPLOT EXTENT (0.9 INCHES)
- CURRENT SURVEY
- PRE-SURVEY (DEC 12, 2016)

SURVEY CONTROL

ISLAND 1
N: 211,360.936
E: 1,266,309.995
E: 17.47

ISLAND 2
N: 211,361.930
E: 1,266,775.350
E: 17.97

ENHANCED NATURAL RECOVERY
ACTIVATED CARBON PILOT STUDY
DUWAMISH WATERWAY
CONTRACT # C00992C15

MULTIBEAM HYDROGRAPHIC SURVEY
SCOUR PLOT POST-PLACEMENT

SHEET 3 OF 3

Drawn: MSK	Checked: LNL	Survey Date: JAN 06, 2017
Partner Site: ANSI	Project No.: 2016-00	Draw Date: JAN 09, 2017