Cut(–)/Fill(+) Table			
Range	Cut(–)/Fill(+)	Cut(–)/Fill(+)	Color
1	–2'–3"	–6"	
2	–6"	–4"	
3	–4"	–2"	
4	–2"	0"	
5	0"	2"	
6	2"	4"	
7	4"	6"	
8	6"	8"	
9	8"	10"	
10	10"	12"	
11	12"	2'–3"	

GRAPHIC SCALE
(US SURVEY FEET)
0 50
50 25 100
1 inch = 50 feet

PSE

SURVEY NOTES

1) THIS MAP COMPARES PRE-CONSTRUCTION EXISTING CONDITIONS TO POST-CONSTRUCTION FINAL CONDITIONS
2) THIS TOPOGRAPHIC BATHYMETRIC SURVEY WAS PERFORMED AND PREPARED IN ACCORDANCE WITH WAC 332-130-145.
3) DATA FOR THIS SURVEY WAS GATHERED BY DEPTH SOUNDING UTILIZING ELECTRONIC DATA COLLECTION ON JULY 7, 2021 (PRE-CONSTRUCTION EXISTING CONDITIONS) AND OCTOBER 26, 2021 (POST CONSTRUCTION FINAL CONDITIONS)
4) HORIZONTAL DATUM: NAD 83/11, WASHINGTON STATE PLANE NORTH ZONE
5) VERTICAL DATUM: TIDAL – MLLW
6) CONTOURS DEPICTED HEREON MEET OR EXCEED NATIONAL MAPPING STANDARDS FOR 1-FOOT ACCURACY TOPOGRAPHIC SURVEYS AND WERE MECHANICALLY GENERATED FROM GROUND FIELD TOPOGRAPHY GATHERED FOR THIS SURVEY UTILIZING ELECTRONIC DATA COLLECTION.

CALL BEFORE YOU DIG 1-800-424-5555

REVISION	DATE	DESCRIPTION
1	11.5.2021	VOLUMETRIC COMPARISON – REVISIONS PER ENGINEER COMMENTS

ISSUE	DATE	DESCRIPTION
1	10.29.2021	VOLUMETRIC COMPARISON

AMERICAN CONSTRUCTION
1501 TAYLOR WAY
TACOMA, WA 98421

AS-BUILT SURVEY
CUSTOM PLYWOOD MILL CLEANUP SITE, ANACORTES, WA
PHASE III SUBTIDAL SEDIMENT CLEANUP

PACIFIC SURVEYING & ENGINEERING, INC.
909 Squalicum Way, Suite 111 | BELLINGHAM, WA 98225
T: 360.671.7387 | F: 360.671.4685
WWW.PSESURVEY.COM | INFO@PSESURVEY.COM

DATA	DRAWN BY	CHECKED BY	FIELD BOOKS
BASE	RMT	PKB	DESIGN: –
DESIGN	–	–	STAKING: –
XREF:	–		ASBUILT: 483.01
DWG: 2021234_svE_Volumes.dwg			DATUM
HORIZ. SCALE:	1" = 50'		
VERT. SCALE:	–		HORIZ.: NAD 83/91
JOB#:	2021234		VERT.: MLLW
SHEET 1 OF 1			

PETER K. BRANDT
STATE OF WASHINGTON
35147
REGISTERED PROFESSIONAL LAND SURVEYOR
11/3/21

APPENDIX B
Selected Site Photos

Photo 1: Eelgrass bed at low tide

Photo 2: Measurement collected to approximate the draft of the barge

Photo #3: Environmental bucket utilized during dredging with plastic sheeting laid down for sampling purposes

Photo #4: Homogenization and sampling of dredged material underway.

Photo #5: Environmental bucket used in dredging, approximate volume of 2 cubic yards.

Photo #6: Clamshell bucket predominately utilized during both dredging and backfill, approximate volume of 4 cubic yards

Photo #7: Clamshell bucket removing anomalous debris (derelict pile) encountered during dredging.

Photo #8: Clamshell bucket backfilling material close to the surface of the water.

Photo #9: Rain bucket utilized to approximately measure the thickness of backfilled material as it was placed.

Photo #10: Rain bucket measurement collected using a painted metal rod. The rod was painted to specifically show the permissible range of thickness placed.

Photo #11: Steel table used to uniformly deposit the 2-inch thin layer cap, located on the barge with a small amount of ***material remaining after deposition***

Photo #12: The steel table was filled using a small skid steer loader and then two deck hands used rakes to remove excess and level out the backfill to be placed

Photo #13: Measurements taken during a practice dry-run on the barge of the 2-inch thin layer cap table.

Photo #14: Pneumatic controls of 2-inch thin layer cap table.

Photo #15: Backfill underway utilizing the 2-inch thin layer cap steel table.

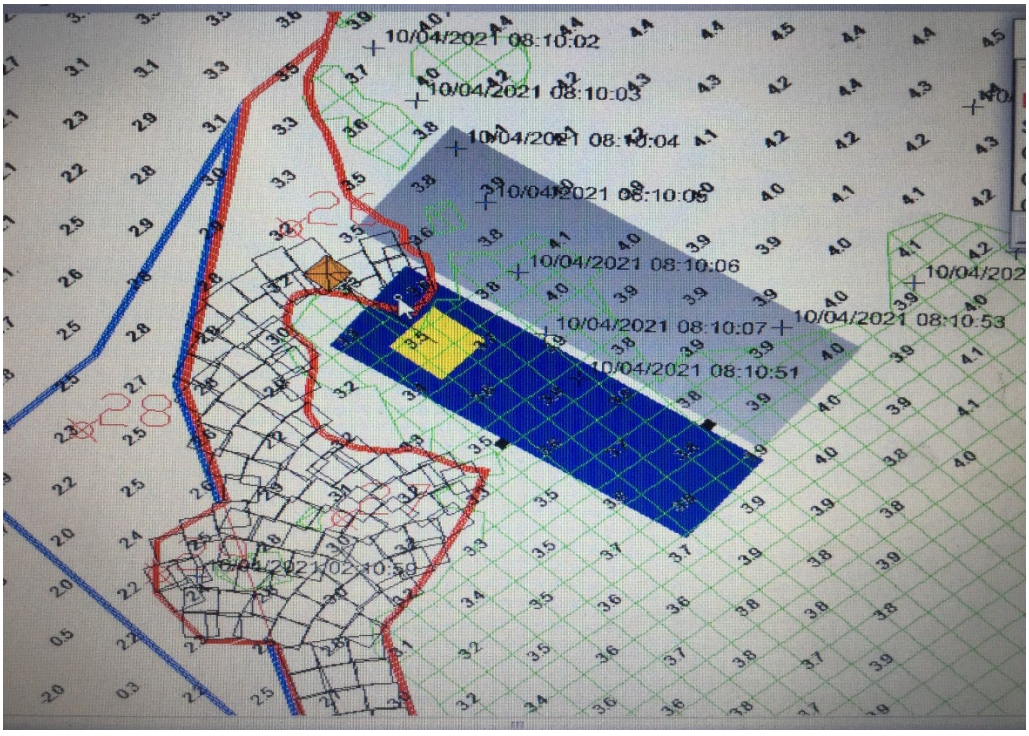
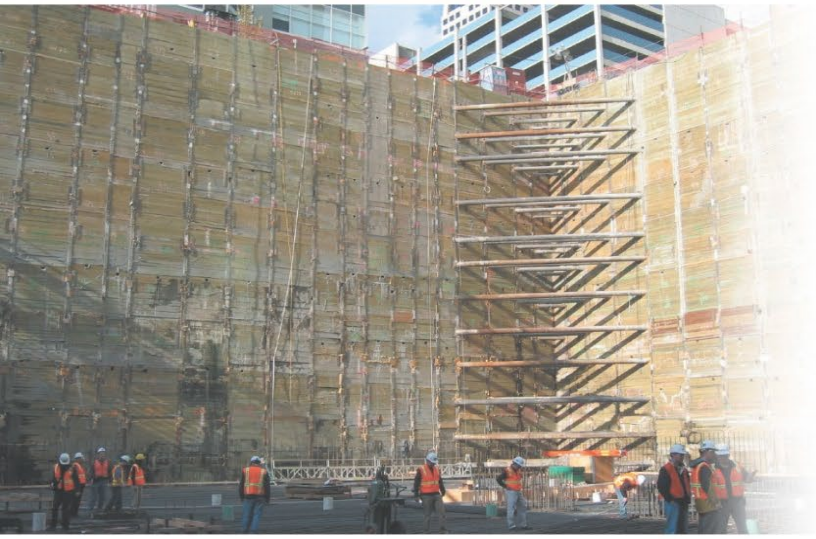


Photo #16: Placement screen displaying the barge, ship, and bucket locations.

Photo #17: Survey boat utilized during Phase III operations, including monitoring water quality, assisting with barge positioning, as well as ferrying people back and forth between the shore.

Photo #18: Example of dewatering by filtering excess water through a "geotube" on the materials barge.

APPENDIX C
Pre-Construction Eelgrass Transplant Report



EELGRASS TRANSPLANT REPORT
CUSTOM PLYWOOD MILL SITE
CLEANUP SITE IDENTIFICATION NO. 4533
PHASE III SUBTIDAL SEDIMENT CLEANUP
FIDALGO BAY
ANACORTES, WASHINGTON

by
Hart Crowser, a division of Haley & Aldrich
Seattle, Washington

for
Department of Ecology
Lacey, Washington

File No. 0202972000
June 2022

HART CROWSER
A division of Haley & Aldrich

HART CROWSER, A DIVISION OF
HALEY & ALDRICH
3131 ELLIOTT AVENUE
SUITE 600
SEATTLE, WA 98121
206.324.9530

SIGNATURE PAGE FOR

REPORT ON

CUSTOM PLYWOOD MILL SITE
CLEANUP SITE IDENTIFICATION NO. 4533
PHASE III SUBTIDAL SEDIMENT CLEANUP
FIDALGO BAY
ANACORTES, WASHINGTON

PREPARED FOR

DEPARTMENT OF ECOLOGY
LACEY, WASHINGTON

PREPARED BY:

Jessica Blanchette
Technical Specialist
Hart Crowser, a division of Haley & Aldrich

REVIEWED AND APPROVED BY:

Jim Shannon
Biologist/Senior Project Manager
Hart Crowser, a division of Haley & Aldrich

John Bingham
Senior Project Manager
Hart Crowser, a division of Haley & Aldrich

Table of Contents

List of Figures

1. Introduction

In the spring of 2021, the Washington Department of Ecology completed the first part of Phase III remedial actions at the Custom Plywood site in Fidalgo Bay, Washington. Part of this Phase III effort was to transplant eelgrass out of an area proposed to be dredged. This report summarizes the eelgrass transplant effort to aid in future monitoring of the transplanted eelgrass as required in the eelgrass monitoring report (Ecology 2019).

1.1 BACKGROUND

The Washington Department of Ecology (Ecology) Toxics Cleanup Program (TCP) completed Phase II of the sediment cleanup at the Custom Plywood Mill site located on Fidalgo Bay, in 2013 (Figure 1). The Phase II cleanup addressed dioxin contamination and included in-water remedial activities such as dredging and excavation, as well as habitat enhancements. Specific enhancements included transplanting eelgrass and establishing a 2,000[1] square foot eelgrass bed (transplant area) within the Phase II excavation and backfill area following construction.

The next remedial effort at the site, Phase III, focuses on the remediation of intermediate levels of dioxin contamination through the application of a thin layer sand cap over roughly ten acres of subtidal habitat along with a minor dredging effort. In 2021, the first part of Phase III included transplanting eelgrass from the dredge footprint plus a 10-foot buffer area (0.46 acres); other planned work for 2021 includes dredging (0.37 acres) and thin layer capping (4.5 acres). The 4.5 acres of thin layer capping covered 0.5 acres of existing eelgrass bed which will be monitored in the summer 2022 to determine impacts, if any, to eelgrass shoot density and distribution.

The project site is located in Anacortes, Washington, in Section 30 of Township 35 North, Range 2 East (Figure 1).

[1] The USACE Nationwide Permit No. NWS-2012-868 required a minimum of 2,000 square feet of transplanted eelgrass as advanced mitigation for any eelgrass potentially impacted during remedial construction. The actual transplant area measured 2,377 square feet when planted in 2014.

Figure 1 – Vicinity Map

2. Methodology

2.1 SITE PREPARATION

Results from the 2019 eelgrass monitoring event found that the 2014 transplant area shoot density decreased over the course of five years of monitoring. However, additional recruitment was found directly to the southeast of the 2014 transplant area, extending the main bed to the north. As such, the 2021 transplant area described in this report has been moved to an adjacent area to the southeast to attempt to bridge the northern area with observed new growth and the 2014 transplant area (Figure 2). The size of the mitigation area was determined assuming 0.3 acres of the dredge prism contains eelgrass at 36 shoots/m^2 in density, thus 43,700 shoots were anticipated for transplantation.

In preparation to transplant a substantial quantity of shoots and to facilitate consistent monitoring, Marine Survey and Assessments (MSA) placed 23 labeled, capped, rebar stakes within the identified transplant area. Each stake represents a center-point for a circularly planted plot; actual eelgrass transplanting was conducted by Grette Associates, LLC, (Grette). Eelgrass shoots, processed into planting units (PUs), were planted into the transplant site using a series of radial plots. Each radial plot measured eight (8) meters (m) in diameter (4 m radius), and the plots were arranged within an approximately 76 m by 36 m area (Figure 2). The plots were initially laid out with the assumption that approximately half the dredge prism was covered with eelgrass.

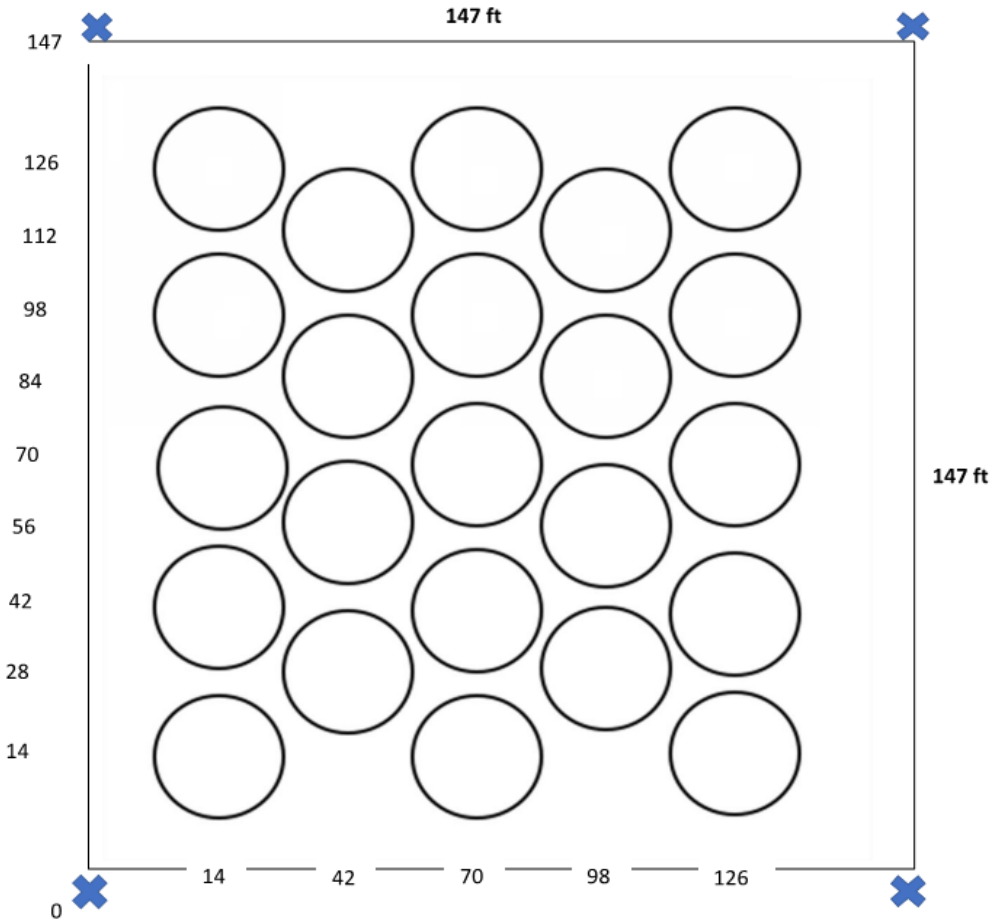


Figure 2 – Example of Circular Plot Setup

To better prepare for eelgrass harvest, MSA conducted a focused investigation of the dredge area by swimming transects between the outermost point of the 10-foot construction buffer and the beach running west to east. Distances between eelgrass and georeferenced points on the beach determined the extent of eelgrass within each transect. The extent of eelgrass was depicted on a map to inform the harvest process and refine planning (see Results, Figure 3).

Prior to transplant, four buoys were placed along the easternmost perimeter of the dredge prism to demarcate the offshore edge of where eelgrass was harvested. The buoys correspond with a 10-foot construction buffer relative to control points 4, 5, 6, and 7 per the Custom Plywood Site Phase III Interim Remedial Action Construction Set of plans, sheet C2.0, submitted on February 11, 2021. Prior to commencing eelgrass harvest, Grette inspected the eelgrass in the dredge prism to ensure that herring spawn was not found in the harvest area. No spawn was observed.

2.2 EELGRASS HARVEST

The eelgrass transplant was conducted April 19 to 21, 2021, and in part on June 23, 2021. Eelgrass was removed from the proposed dredge prism and from a 10-foot perimeter around the prism to accommodate for potential additional dredge impacts.

Shoots were harvested by gently agitating the substrate beneath the shoots by hand to expose the rhizomes. Rhizomes and shoots together were pulled from the substrate, taking care not to break the shoots from the rhizomes. As much rhizome material as practicable was collected along with the shoots. Once free from the substrate, the rhizome and shoot material were carefully placed into a mesh dive bag and the diver continued harvesting. Once the bags were full, the divers ascended to the boat to deliver the mesh bags containing the eelgrass to the Safety Officer/Diver Tender.

The eelgrass shoots were then placed into a large cooler containing fresh seawater on the support vessel. Once the cooler reached an appropriate capacity, the cooler was passed to the shore support personnel for processing.

When conducting the first day of the pre-construction eelgrass survey on foot, at low tide on June 23, 2021, several eelgrass shoots were revealed to be within the construction boundary. These shoots were removed using the previously described techniques, processed into staples, and transplanted within 24 hours of their discovery.

2.3 STAPLE PROCESSING

After transferring harvested eelgrass to shore, shore support staff began processing the eelgrass shoots into planting units (PUs). The shore support staff separated the eelgrass shoots and trimmed the blades to approximately 8 to 10 inches in length. The eelgrass shoots were processed onto metal landscape staples. Staff tied four eelgrass shoots onto landscape staples with paper-coated wire twist ties. The

heavy gauge landscape staples were 8 inches long with a minimum 1-inch crown. The shoots were crossed on the staples, with two shoots facing one direction and two facing the other, such that paired blades extend from either side of the staple (Photograph 1).

After tying the eelgrass onto the landscape staple, the completed PU was tallied and placed into a separate cooler with fresh seawater for holding until transplanting. Shore staff were tasked with keeping the cooler out of direct sunlight and monitored the temperature of the water. The cooler was flushed with fresh seawater as necessary to maintain cool water temperatures.

Photograph 1 – Planting Unit

2.4 TRANSPLANTATION

Transplantation of PUs occurred within 24 hours of eelgrass harvesting, either the evening of the same day they were harvested or the following morning if visibility was too limited. After harvesting was completed for the day and the PUs were tied, the divers prepared for transplanting the PUs. Large plastic totes were filled with the PUs and were submerged near the intended plot(s) by paired divers. The divers then used the knotted line to install the PUs as indicated above. The divers recorded underwater video of each plot to document the installation.

To ensure consistent spacing and correct PU count per plot, the divers utilized a length of nylon line. The line had a carabiner on one end and a lead weight on the other, with knots pre-tied in the line every 0.3 meters (m) (13 knots total). The divers hooked the carabiner on the center rebar and pulled the line taught. Planting units were planted at each knot, on the same side of the line. After the entire line was planted, the weighted end was moved 0.7 m around the center rebar, in the direction away from the planted eelgrass. The process is repeated until 35 radii are planted around the 25 m circumference.

3. Results

For Phase III construction in 2021, eelgrass transplanting included 494 PUs with an average of 4 shoots per PU for a total of 2,025 shoots. Transplanted shoots cover approximately 50 m^2, planted at a density of 36 shoots/m^2. Shoots were transplanted into the identified 2021 transplant area in the westernmost corner, bridging an area between new recruitment and the 2014 transplant area (Figure 4).

Visibility was challenging at the time of transplant; divers frequently had 0.5 to 2 feet of visibility while planting. As such, planting was opportunistic within circular plots and predominantly planted within plot numbers 11 and 12.

The actual quantity of eelgrass shoots within the dredge prism proved to be significantly lower than planned for within the Custom Plywood Phase III Eelgrass Mitigation and Monitoring Plan (2019). As such, the goals outlined in the Mitigation and Monitoring Plan require adjustment to reflect the actual impacts of Phase III construction more accurately. Monitoring of the transplant area is to be conducted during years 1, 3, 5, and 10. Year 1, 2022, is the only year contracted at this time.

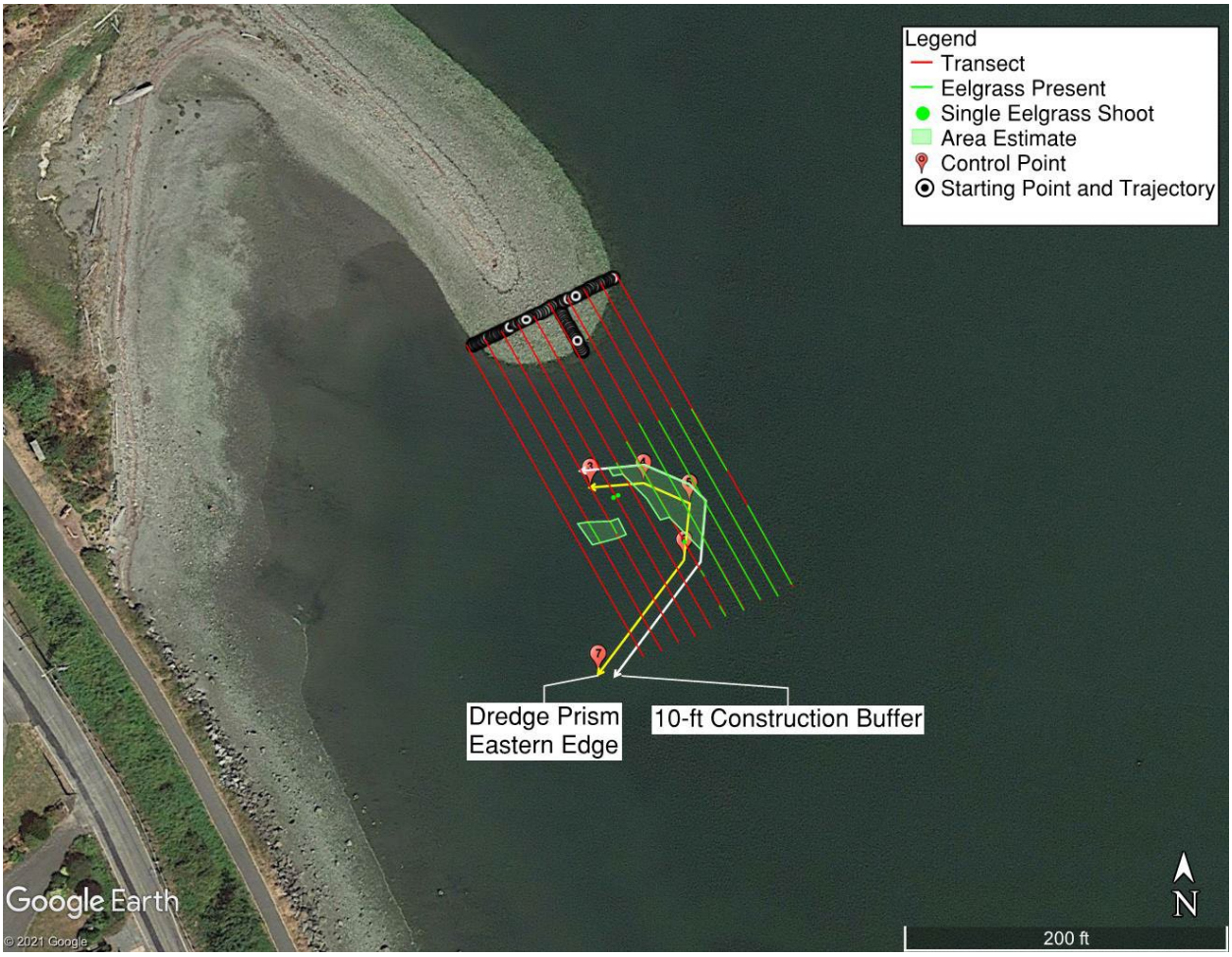
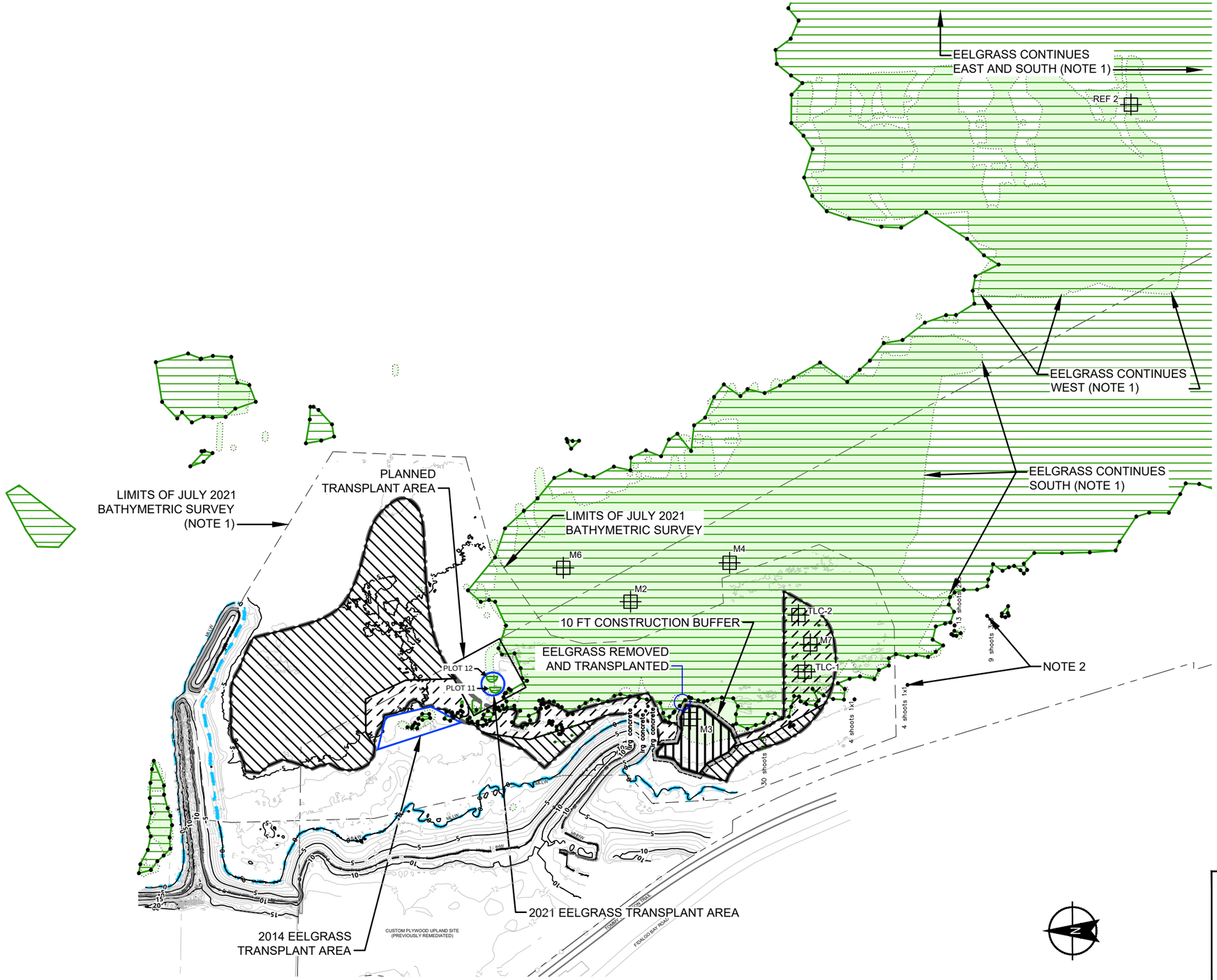


Figure 3 – Eelgrass Extent Within the Dredge Prism to be Removed; Resulted from Reconnaissance Conducted by MSA

References

1. Ecology 2019. Custom Plywood Phase III Eelgrass Mitigation and Monitoring Plan. Toxics Cleanup Program, Washington State Department of Ecology, Olympia, Washington. August 2019.

\\haleyaldrich.com\share\sea_projects\Notebooks\1960000_Custom_Plywood_Subtidal_Sediment_Cleanup\Deliverables\Reports\Eelgrass\Eelgrass Transplant Report\Draft\2022_0629_HCHA_CP_Macro_Veg_Transplant_Report.docx



LEGEND

- EELGRASS BIOMASS & DENSITY (REF# & M#) OR BIOMASS (TLC-#) MONITORING LOCATION (SEE NOTE 3)
- PROPERTY LINE
- PROJECT LIMIT LINE
- MLLW — MEAN LOWER LOW WATER
- DREDGE & BACKFILL AREA
- 2-INCH THIN LAYER CAP (TLC) AREA
- 8-INCH TLC AREA
- JULY 2021 EELGRASS SURVEY
- SURVEY GPS POINTS
- JULY 2019 EELGRASS SURVEY

NOTES

1. ROUGH APPROXIMATE EDGE OF 2019 AND 2021 SURVEYS, EELGRASS CONTINUES IN DIRECTIONS NOTED.
2. ISOLATED EELGRASS AREA (ESTIMATED NUMBER OF SHOOTS AND SIZE L' X W'; TYP.).
3. EXCEPTION, SAMPLE M6 IS ONLY EELGRASS DENSITY.

HALEY ALDRICH

CUSTOM PLYWOOD SUBTIDAL SEDIMENT CLEANUP
ANACORTES, WASHINGTON

PRE-CONSTRUCTION EELGRASS EXTENT

SCALE: AS SHOWN
JUNE 2022

FIGURE 4

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APPENDIX D
Pre-Construction Eelgrass Survey Report

PRE-CONSTRUCTION EELGRASS DELINEATION REPORT
CUSTOM PLYWOOD MILL SITE
CLEANUP SITE IDENTIFICATION NO. 4533
PHASE III SUBTIDAL SEDIMENT CLEANUP
FIDALGO BAY
ANACORTES, WASHINGTON

by
Hart Crowser, a division of Haley & Aldrich
Seattle, Washington

And

Grette Associates, LLC
Tacoma, Washington

for
Department of Ecology
Lacey, Washington

File No. 0202972000
June 2022

Grette Associates LLC
ENVIRONMENTAL CONSULTANTS

HARTCROWSER
A division of Haley & Aldrich

HART CROWSER, A DIVISION OF
HALEY & ALDRICH
3131 ELLIOTT AVENUE
SUITE 600
SEATTLE, WA 98121
206.324.9530

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REPORT ON

CUSTOM PLYWOOD MILL SITE
CLEANUP SITE IDENTIFICATION NO. 4533
PHASE III SUBTIDAL SEDIMENT CLEANUP
FIDALGO BAY
ANACORTES, WASHINGTON

PREPARED FOR

DEPARTMENT OF ECOLOGY
LACEY, WASHINGTON

PREPARED BY:

Jessica Blanchette
Project Marine Biologist
Hart Crowser, a division of Haley & Aldrich, Inc

Scott Maharry
Associate Scientist
Grette Associates LLC

REVIEWED AND APPROVED BY:

Jim Shannon
Client Lead
Hart Crowser, a division of Haley & Aldrich, Inc

John Bingham
Project Manager
Hart Crowser, a division of Haley & Aldrich, Inc.

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1. Purpose

The purpose of this report is to present the results of the eelgrass (*Zostera marina*) and macroalgae survey conducted in July 2021 as part of the Phase III Subtidal Sediment Cleanup at the Custom Plywood Mill site, located in Anacortes, Washington.

2. Introduction

The Washington Department of Ecology (Ecology) Toxics Cleanup Program (TCP) completed Phase II of the sediment cleanup at the Custom Plywood Mill site located on Fidalgo Bay, in 2013 (Figure 1). The Phase II cleanup addressed dioxin contamination and included in-water remedial activities such as dredging and excavation, as well as habitat enhancements. Specific enhancements included transplanting eelgrass and establishing a 2,000- square-foot eelgrass bed (transplant area) within the Phase II excavation and backfill area following construction.

The next remedial effort at the site, Phase III, will focus on the remediation of intermediate levels of dioxin contamination through the application of a thin-layer sand cap over roughly 10 acres of subtidal habitat along with a minor dredging effort. These cleanup activities for the remainder of the site will be completed over two in-water construction seasons.

This eelgrass and macroalgae report has been prepared to assess the potential effects of the Phase III cleanup actions on existing eelgrass and macroalgal resources and help inform the design of the Phase III cleanup. This report will also include a brief synthesis of data collected during previous eelgrass and macroalgae surveys related to the Phase II remediation activity and evaluate change at the Phase II eelgrass transplant area.

Figure 1 - Vicinity Map

3. Survey Location

The project site is located in Anacortes, Washington, in Section 30 of Township 35 North, Range 2 East (Figure 1). Grette Associates, LLC, (Grette) biologists in conjunction with Hart Crowser (now Haley & Aldrich, Inc.) conducted the survey on June 23 and 24, and July 5 through 9, 2021, and included areas from approximately +1 feet mean lower low water (MLLW) to –5 feet mean lower low water (MLLW). The 2021 survey area was designed to cover the area of Phase III sediment cleanup and determine the extent of eelgrass and macroalgae within this area. The survey also extended outside the Phase III sediment cleanup boundary to capture the main portion of the eelgrass bed and included the transplant area established in Phase II, as well as areas north of the project site to include contractor access and staging areas. The total area surveyed covers approximately 44 acres.

4. Survey Methodology

Previous eelgrass and macroalgae surveys (completed in 2011, 2015, and 2016) were conducted in accordance with the Washington Department of Fish and Wildlife (WDFW) Eelgrass/Macroalgae Habitat Interim Survey Guidelines dated June 16, 2008 (WDFW 2008). The 2021 survey followed the 2008 WDFW guidelines for consistency where possible, but the survey also satisfies the detection and precision requirements dictated by the United States Army Corps of Engineers (USACE) guidelines (USACE 2016).

Grette utilized several different methodologies to conduct the delineation and density survey, in response to the relatively large size and shallow depths of the project site, and the poor water visibility conditions during the surveys.

4.1 SHORELINE EELGRASS AND MACROALGAE DELINEATION

Grette and Haley & Aldrich, Inc. (Haley & Aldrich) mapped eelgrass and macroalgae along the intertidal shoreline during low tides on June 23 and 24, 2021 (Figure 2, Table 1). Staff utilized a Trimble Geo7x differential Global Positioning System (dGPS) datalogger to document the shoreward boundary of the large, contiguous eelgrass bed located offshore within the southern half of the project site.

Table 1. Tides on June 23 and 24, 2021

Day	Predicted Tide[1] (MLLW)	Time (24-hr)
June 23, 2021	Low: –2.98 feet	0958
	High: +8.22 feet	1810
June 24, 2021	Low: –3.54 feet	1043
	High: +8.71 feet	1859

Notes:
1. Predicted tide levels from NOAA Tides & Currents: Anacortes, Fidalgo Island, WA – Station ID 9448794

Grette staff walked along the shoreward eelgrass boundary, with one staff placing pin flags at the boundary, and another staff following behind and collecting dGPS positions at each pin flag (Photograph 1). All pin flags were collected once the locations were documented. The maximum distance between each boundary point was approximately 50 feet. In addition, the intertidal area shoreward of the main bed boundary was investigated for the presence of small, isolated patches of eelgrass. Where found, patches were located with the dGPS and the approximate dimensions and number of individual eelgrass shoots were recorded.

The eelgrass bed boundary along the shoreline was defined using Eelgrass Delineation Method A, from the USACE guidelines.

4.2 OFFSHORE EELGRASS AND MACROALGAE DELINEATION

Eelgrass boundary delineations in offshore areas were conducted using a combination of Grette SCUBA divers and a survey vessel. The methods used to delineate the eelgrass boundaries in offshore areas differed from the USACE and WDFW methods in several ways, as described below.

The offshore portion of the large, contiguous eelgrass bed was delineated using a combination of SCUBA divers swimming along the eelgrass boundary, as well as observations from aboard a survey vessel. Due to the large size of the project site and eelgrass bed (approximately 77 acres), the use of transect methodology would have required transects approximately 950 feet long placed perpendicular to shore. In addition, due to the relatively poor water visibility at the site (approximately 3 to 6 feet), transect spacing would have to have been no more than 12 feet apart to ensure visual coverage of the site. This would have required approximately 230+ transects. Even at the typical spacing of 40 feet, approximately 70 transects would have been required, but would have resulted in incomplete coverage due to the limited visibility. As such, an alternative to transect-based delineation was necessary.

In the vicinity of the 2021 eelgrass transplant area, the bed edge was delineated using SCUBA divers to avoid damaging the newly transplanted eelgrass from propellor wash. In this area, divers were used to delineate the extent of eelgrass. The divers located the eelgrass edge that was delineated during the shoreline walking delineation and continued the delineation from that location by following the edge of the eelgrass bed and deploying weighted buoys along the edge. Once the buoys were placed, divers explored the areas outside of the buoys to confirm no eelgrass patches were missed. Once the tide rose to a point where it was safe to reach the buoys by boat without disturbing the eelgrass, the buoys were located with the dGPS datalogger and removed. Divers also made note if macroalgae were observed among or nearby to the eelgrass beds.

The remainder of the large, contiguous eelgrass bed was delineated during low-tide conditions using the survey vessel. As the bathymetry at the project site is consistently flat, the survey vessel could be operated in shallow water without fear of running aground. Also, as visibility during the delineation was limited to between 3 to 6 feet, shallow water conditions were necessary for staff to visualize the bottom to ensure all eelgrass could be seen. Staff operated the vessel offshore from the edge of the eelgrass bed to avoid prop wash disturbance, following the outer edge of the bed. Staff dropped weighted buoys from the boat approximately 1 meter from the outer edge of the bed, as visualized from the surface. The buoys were then located using the dGPS datalogger and the buoys were removed.

In the northern portion of the project area, north of the contiguous bed, surface transects were surveyed using the survey vessel (Figure 2). Transects were spaced approximately 100 feet apart and were oriented due north-south, beginning off the east end of the Fidalgo Marina jetty. The transects were surveyed during low tide, in approximately 4 to 6 feet of water depth so as to visualize the bottom substrate. A weighted buoy was placed where eelgrass was observed. After the transect surveys were completed, the locations of the buoys were further investigated, and the eelgrass patches were delineated from the boat at low tide using buoys and the dGPS datalogger.

A contiguous eelgrass bed was also delineated within the Fidalgo Marina boat yard, immediately north of the jetty to the north of the project site. This bed was delineated from the survey vessel during low tide, where the eelgrass boundary and substrate could be observed from the surface. Surface buoys were dropped from the boat along the outer edge of the eelgrass bed. The buoys were then located using the dGPS datalogger.

In order to determine the shoot density of eelgrass, Grette SCUBA divers counted eelgrass shoots at five specific locations in the main bed and adjacent to the project area for reference (M-2 through M-7 and Reference Site 2 [Ref-2]); Figure 2). While site M-3 has been used for density measurements during past surveys, the eelgrass boundary retreated from shore such that no eelgrass was present in this location

during the 2021 survey. As such, density measurements were collected from site M-7, which is within a portion of the eelgrass bed that has been identified for thin-layer capping in 2021.

Ref-2 has been used historically to compare eelgrass densities in a nearby area to changes in the project area. At each density count location, divers randomly placed 0.25-square-meter (m^2) quadrats (n = 30 at each site, except for M-6 where n = 35). These counts satisfied WDFW statistical requirements to detect differences among means ($\alpha = 0.10$ and power $[1 - \beta] = 0.90$). Average shoot density at each quadrat was multiplied by 4 to obtain shoots per square meter (shoots/m^2). Hart Crowser has conducted an eelgrass shoot density change analysis to gauge bed stability and inform the mitigation process anticipated in Phase III construction. Differences in average eelgrass shoot density between years were compared for each location using a one-way Analysis of Variance (ANOVA).

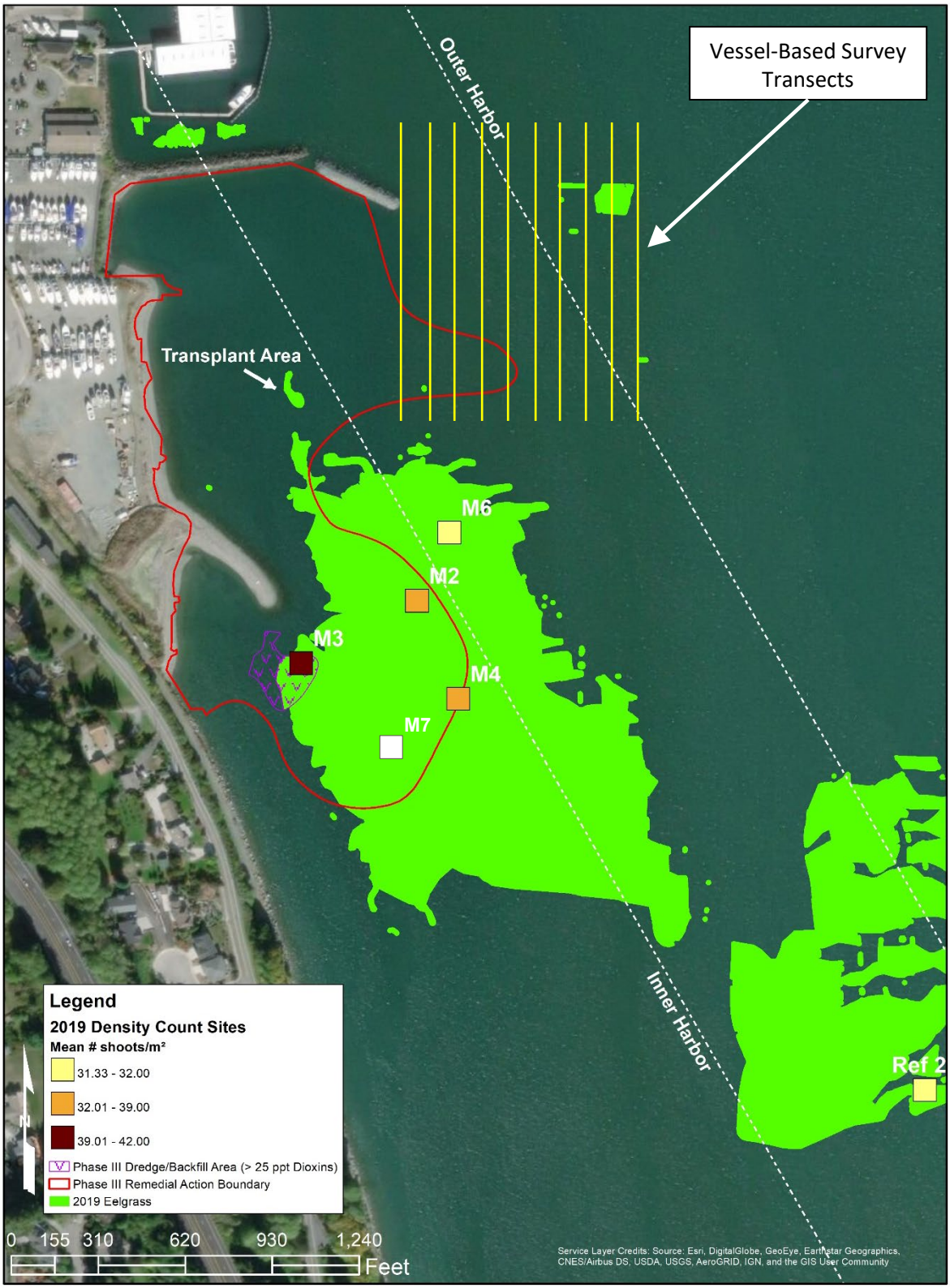

Figure 2 - Eelgrass and Macroalgae Vessel-Based Survey Transects and Biomass Sampling Locations

4.2.1 Biomass Sampling Methodology

In accordance with the 2019 Custom Plywood Phase III – Thin-Layer Capping Eelgrass Monitoring and Adaptive Management Plan (Ecology 2019), both eelgrass shoot biomass and below-ground biomass were to be evaluated prior to thin-layer capping placement. The resulting data were to be used in comparisons with post-project biomass monitoring to evaluate eelgrass health after thin-layer capping.

At each of the eelgrass density locations shown on Figure 2, Grette divers collected five above-ground eelgrass shoots. In addition to these locations, two more monitoring points were identified for biomass collection without density counts; these locations are designated “TLC-1” and “TLC-2” to represent the eastern and western portions of eelgrass receiving a thin layer cap in 2021. Monitoring location M-7 is located at the approximate center of the 0.5-acre area receiving thin layer cap in 2021.

The shoots were gently shaken to dislodge any residual sediment, and then placed into collection bags. After returning to the surface, the eelgrass shoots were inspected for clinging sediment or macroalgae; any sediment/macroalgae on the shoots was gently removed. The shoots were then placed into labeled bags and placed into a cooler for transport to shore.

Divers then collected two (2) four-inch core samples from each density location for below-ground eelgrass biomass analysis. Divers utilized a stainless steel four-inch hand core for collecting the sediment samples (Figure 3). The below-ground biomass samples were also placed into labeled bags and placed into the cooler for transport to shore.

Upon returning to shore, the cooler containing the shoot biomass and below-ground biomass samples was transferred to Haley Aldrich staff for transport to the analytical laboratory.

Figure 3 - Four-Inch Stainless Steel Hand Corer

4.2.2 Biomass Laboratory Methodology

Processing of above-ground eelgrass samples began by thawing the frozen sample and then placing the eelgrass shoots in a large bowl or bucket of water. Five shoots were then removed for further processing. The blade of each shoot was individually cleaned and any epifauna or algae was removed. The shoot was then cut 2 millimeters (mm) above the last below-ground root node to remove any below-ground material. The length and width of the blades for each shoot were then measured and recorded. If any blades were broken or damaged, they were measured to the point at which the blade was still intact. The width of each blade was measured at the midpoint between the tip and the leaf base. After measuring, the samples were patted dry, weighed using a tared beaker, and recorded. The shoots were then placed in a labeled paper bag and dried at 65° C for at least 48 hours. Once dry, the dried shoots were removed from the bag and reweighed in a tared beaker and recorded.

Below-ground eelgrass samples were defrosted using a warm water bath and once thawed, the sample was emptied into a mixing bowl to stir and loosen the sediment. Afterwards, the sediment sample was sieved using a 0.5-mm screen. The sample was rinsed until only roots and rhizomes, infauna, and larger wood debris was left. All roots and rhizomes were removed from the sieve with forceps and kept in a second tray filled with water. The roots and rhizomes that were removed from the sieve were then cleaned of any additional debris. Any decayed root matter was rejected from further processing and discarded. Cleaned and clipped below-ground material was then patted dry and transferred and wrapped in a pre-labeled and pre-weighed coffee filter. After taring the scale, the weight was recorded in grams and then placed in an empty glass beaker for containment during the drying process in the oven. The filter-wrapped samples were then dried at 65° C for at least 48 hours. The dried samples were then reweighed and recorded.

4.3 USACE METHODOLOGY

On May 27, 2016, the USACE issued their own guidelines known as “Components of a Complete Eelgrass Delineation and Characterization Report” (USACE 2016). The 2021 survey differs from the USACE methodology in several ways. The main differences between the USACE guidelines and the methods used in the 2021 survey are described below.

As with the 2019 survey, the 2021 survey area extended past the remedial action boundary to capture dynamics within the main portion of the bed and was approximately twice the area of the remedial action area. Eelgrass habitat within Fidalgo Bay is classified as flats type habitat and has extensive cover within the shallow embayment, similar to the adjacent Padilla Bay (Nearshore Habitat Program 2015). Numerous eelgrass and macroalgae surveys have been conducted as part of the investigation and remediation of the site. An aerial survey was completed in 1997 that mapped eelgrass throughout Fidalgo Bay and provided a guide for the survey years (2011, 2015, 2016, and 2019) that followed. These same surveys have always satisfied WDFW guidelines and have maintained statistical precision with increased effort in underwater video to define the eelgrass boundary. In addition, the Samish Tribe recently collected aerial imagery to map eelgrass beds and characterize the potential benthic habitats within Fidalgo Bay (Wyllie-Echeverria et al. 2015).

The 2021 eelgrass delineation survey utilized a combination of Method 1: Walking or Wading, and Method 2: Snorkelers or Divers. As described above, Method 1 was utilized to delineate eelgrass boundaries within the intertidal areas during low tide. Eelgrass boundaries were delineated on foot and boundary locations were geolocated using a dGPS datalogger. The offshore eelgrass boundaries were

delineated utilizing Method 2, as well as visualization from the boat. Buoys placed using Method 2 were located using the dGPS datalogger. During both inshore and offshore delineations, the method utilized to establish the boundaries of the eelgrass was Method B (USACE 2016).

Similar to 2019, density counts were collected at fixed locations across depths within and outside of the remedial area (Figure 2). Several of these sample locations were the same as those in previous surveys in order to determine inter-annual variability in density. Overall, these differences in survey design are considered discountable and provide the same quantitative data with similar or better precisions. The consistent collection of density data used during the multiple surveys allows for year-to-year comparison of historically collected eelgrass and macroalgae data which is one of the major goals of the USACE guidance.

5. Results

Project biologists conducted the walking/ wading eelgrass delineation on June 23 and 24, 2021, and the vessel-based delineation on July 6 through 9, 2021. SCUBA divers conducted density surveys on July 6 through 9 from a 19-foot Almar aluminum boat. Ecology representative, Arianne Fernandez, was present during the field survey work on July 8, 2021. Weather conditions were mostly to partly sunny with calm to breezy winds. The water column was moderately turbid for the majority of the survey with an average visibility of 3 to 6 feet. The delineation surveys covered approximately 44 acres to include the sediment cleanup area, transplant area, and areas of potential use by the contractor for access and staging (Figure 2).

Satellite coverage for the Trimble dGPS datalogger during the delineation survey was favorable, and horizontal precision (95% CI) for the collected positions ranged from 0.5 to 0.8 feet (6 to 10 inches).

5.1 BENTHOS AND MACROALGAE

The slope of the surveyed area from west to east was very gradual (flat) with elevations varying only between +3 and –6 feet MLLW. Substrate was predominantly mud/silt with some wood waste at M-2 and M-6. Macroalgae was observed in most locations during the survey, particularly in the areas occupied by eelgrass, as well as the area immediately south of the Fidalgo Marina jetty.

Sugar kelp *(Saccharina latissimi)* was the dominant macroalgae species; it was present at all sites in 73 of the 155 density quadrats and was observed throughout the low-tide walking survey of the intertidal shoreline. A dense collection of sugar kelp (*Saccharina latissimi*) drift was observed immediately south of the Fidalgo Marina jetty. Most, if not all, of the sugar kelp in this area was unattached drift and had likely aggregated in this location due to the currents created by the jetty and tidal currents.

Hairy mat (*Gracilaria* sp.), *Sargassum muticum, Smithora naiadum*, and unidentified brown algae were also recorded. Moderate collections of *Ulva* sp. Were present sporadically along the shoreline during the low-tide walking survey, while sugar kelp and hairy mat were also present (Photographs 3 and 4). Seventy-seven of the 155 quadrats had no macroalgae present.

5.2 FISH AND INVERTEBRATE FAUNA

Observations of benthic invertebrates were opportunistic, collected incidental to eelgrass surveys. Four Dungeness crabs (*Metacarcinus magister*) and one red rock crab (*Cancer productus*) were noted, all at site M-7. During the eelgrass boundary delineations, primarily while diving, kelp crab (*Pugettia producta*), white-line dirona (*Dirona albolineata*), and hooded nudibranch (*Melibe leonine*) were also frequently observed. No fish were observed during the surveys.

5.3 ANTHROPOGENIC ELEMENTS

Anthropogenic materials were noted throughout the survey area but were not the focus of this survey. These observations were isolated to the nearshore areas consisted of wood debris and sections of concrete pipe. Wood debris was observed in sites M-2, M-6, and REF-2, while the broken sections of concrete pipe were located immediately east of the end of the gravel spit north of the Phase III dredge prism (Photographs 5 and 6).

During survey activities on July 8, 2021, a foul odor was observed coming from the area of the beach. The source of the smell could not be determined. While the tide was relatively low at the time, approximately -1 feet to 0 feet MLLW, it did not appear that exposed macroalgae was the source.

5.4 EELGRASS

The on-foot and vessels surveys delineated eelgrass beds approximately 44.4 acres (179,865 m^2) in size. Photographs 1 and 2 show the eelgrass habitat within the survey area. Density data was collected from four locations throughout the project site and in one reference area; biomass was collected from five locations and the reference area (Table 2). Average shoot density at the five locations analyzed ranged from a low of 10 shoots/m^2 at M-2 to a high of 35 shoots/m^2 at M-7 (Table 3, Figure 3).

Table 2. Locations of Density and Biomass Data Collection

Location Name	Parameter	Latitude	Longitude
M-2	Density + Biomass	48.49334819	–122.598257
M-4	Density + Biomass	48.4927123	–122.5978556
M-6	Density Only	48.49378896	–122.5979421
M-7	Density + Biomass	48.49216163	–122.5987248
TLC-1	Biomass Only	48.49221674	–122.5992057
TLC-2	Biomass Only	48.49223624	–122.5983639
REF-2	Density + Biomass	48.4901805	–122.5932989

Table 3. Summary of 2021 Eelgrass Density Counts

Site	# of Quadrats (n)	Total # of Shoots	Average # of Shoots per m^2	Per Quadrat (0.25 m^2)				
				Average Count	Min/Max Count	25th/75th Quartile Count	Coefficient of Variance	Variance
REF-2	30	192	26	6	0/15	0/10	74	22
M-2	30	77	10	3	0/16	0/4	145	14
M-4	30	97	13	3	0/9	0/6	94	9
M-6	35	162	18	5	0/15	2/6	76	12
M-7	30	266	35	9	0/24	5/13	62	30

5.4.1 Transplant Area

Due to the poor visibility during the delineation survey, divers could not locate the transplanted eelgrass. While the coordinates for the transplant were used in an attempt to locate the transplant plots, divers could not locate the capped rebar marking the location of the planted eelgrass. To avoid unnecessary disturbance to the newly-planted shoots, divers did not exhaustively search for the transplanted eelgrass. The boundary of the transplant area was visible at the surface during the low-tide walk and on-site staff were able to determine the transplants had taken root. Best estimate of the 2021 transplant area covers 50 m^2 (538 square feet). The 2014 transplant area appears to have decreased in size, totaling approximately 81 m^2 (875 square feet, compared to 2,000 square feet of initially

transplanted eelgrass). Total area of transplanted eelgrass for mitigation purposes in 2021 is 131 m^2 or 1,410 square feet.

5.4.2 Existing Eelgrass Boundary Change

Utilizing the results of previous delineation surveys at the project site since 2011, the size of the eelgrass bed delineated in 2021 was compared to the previous surveys (Table 4). The area used for comparison was the area commonly surveyed between all the surveys from 2011 to 2021, as shown in Figure 4 from the 2019 survey report (Hart Crowser 2020).

Table 4. Comparison of Existing Eelgrass Bed Size between Survey Years

Year	Total Eelgrass Area	
	Acres	Square Feet
2011	14.5	633,515
2015	12.4	538,068
2016	12.2	532,060
2019	11.5	502,804
2021*	12.1	527,722

Notes:
* Area approximated based on survey drawing

Overall, the 2021 eelgrass delineation survey found that while eelgrass coverage increased on the site, eelgrass shoot density decreased. Expansion of the existing eelgrass bed occurred primarily in the offshore boundaries and to the south, while the eelgrass boundary retreated waterward in the location of the dredge prism.[1] As in 2019, eelgrass was absent to the north of the transplant area and south of the Fidalgo Marina jetty. Extent relative to the project boundary can be found in Figure 4, attached.

5.4.3 Eelgrass Biomass Results

As the first biomass analysis prior to Phase III construction, data described below will serve as an initial baseline for these particular locations. As such, a more comprehensive trend analysis is not included in this report but should be considered following future monitoring events.

5.4.3.1 Below-ground Biomass

Below-ground biomass in this study were markedly low at near zero grams dry weight per square meter (g DW/m^2). Two locations, TLC-1 and TLC-2 resulted in no rhizomes found within the collected below-ground sample and were therefore omitted from analysis. Overall material in all samples was limited to bare roots without rhizomes, leading to very low initial material to be analyzed. When looking at the overall magnitude of below-ground biomass present, there may have been an issue with sampling technique. During sampling, positioning of the two 4-inch cores may have been placed beyond the extent of rhizomal growth, or may have failed to reach the depth at which rhizomes were present.

[1] The eelgrass delineation at the site (July 2021) was conducted after the completion of the eelgrass transplant from within the dredge prism (April 2021). Therefore, eelgrass was not expected to occur there. However, far less eelgrass was transplanted out of the dredge prism than was expected based on the 2019 delineation survey, indicating the eelgrass had retreated from the area of the dredge prism.

When processing, it was also difficult to distinguish live from dead material, which appeared to be nearly identical to wood waste particulates. The resultant low quantity of material means an increase in effect of the laboratory process using a filter as a vessel; miniscule quantities of moisture held within the coffee filter holding root material is also dried and caused negative weight values in 3 of the 4 samples analyzed. This leads to high data variability in a set with low sample size to begin with (one sample per plot per sampling event). Thus, conclusions based on this data set should be interpreted cautiously.

5.4.3.2 Shoot and Above-ground Biomass

Shoot biomass and above-ground biomass data was collected for all six sites. Shoot biomass was calculated by taking the biomass (gDW) of the complete sample and dividing it across the number of shoots per sample (five per sample). This results in an average biomass per shoot across samples. Above-ground biomass is an areal estimate derived from shoot density and shoot biomass. Therefore, sites with higher densities saw an increased above-ground biomass due to the higher quantity of shoots per area.

Overall, there were no statistically significant differences in blade length across sample sites but there was significant difference between widths of blades (p-values of 0.431 and $9.72e^{-20}$, respectively). Though the average blade length for the reference area (REF-2) had smaller blades relative to the project sites, biomass per shoot appears to be higher than most sites (Table 5, Figure 5). Of the samples collected within the project site, M-4 showed the highest shoot biomass, followed by TLC-2. Samples M-7, TLC-1, and TLC-2 are representative of the 0.5 acres of eelgrass that will receive 2 inches of thin layer capping with sand material. These areas will be examined for indications of eelgrass health while continuing monitoring.

Table 5. Biomass Results Summary

Sample Site	Average Blade Length (cm)	Average Blade Width (cm)	Average # of Blades per Shoot	Belowground Biomass (gDW)*	Average Shoot Biomass (gDW/shoot)	Above-ground Biomass (gDW/m^2)
REF-2	74.40	0.87	5.08	-0.08	1.90	49.40
M-4	90.37	1.12	7.00	-0.05	2.82	36.71
M-2	77.72	0.94	5.64	-0.05	1.09	10.86
M-7	104.08	1.19	5.44	0.19	1.30	45.36
TLC-1	82.41	0.76	5.08	N/A	0.74	25.76**
TLC-2	89.10	1.12	5.23	N/A	1.74	60.97**

Notes:

*See Section 5.4.3.1 regarding below-ground biomass.

** Extrapolated using the density of M-7 due to close proximity; density counts were not conducted at TLC-1 or TLC-2.

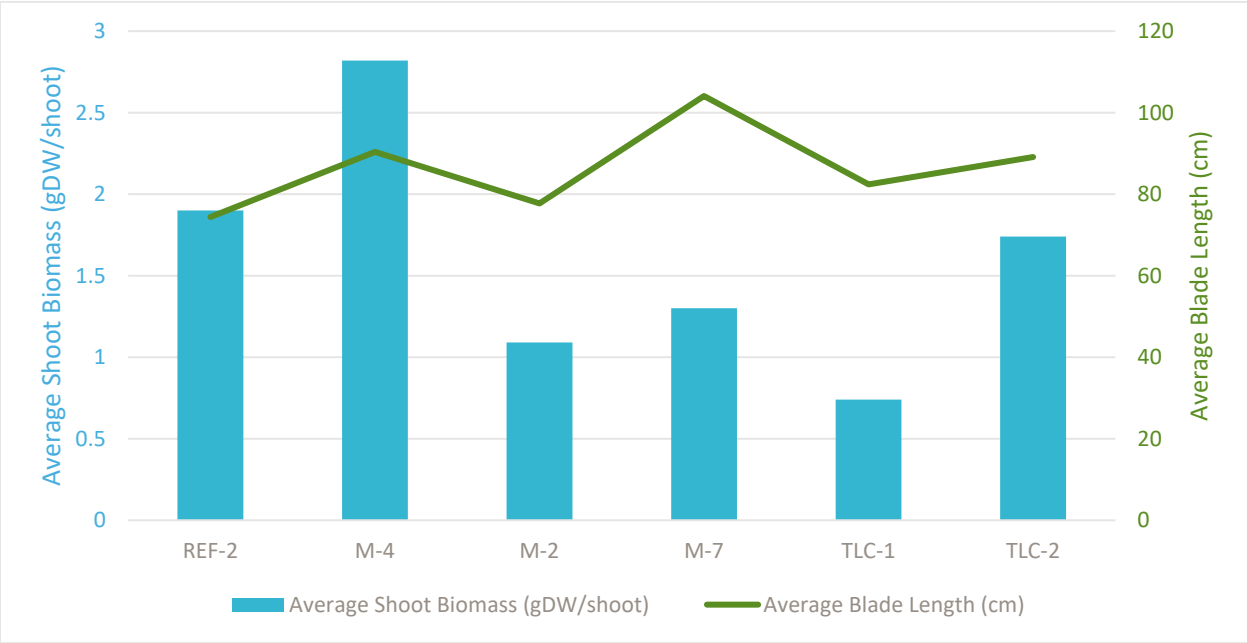

Figure 5 - Average Blade Length and Shoot Biomass by Site for 2021

6. Conclusions

The majority of the project site consists of silty sand and mud over a gradual slope. Ulvoids and brown algae were dominant in the intertidal/shallow subtidal zone with eelgrass interspersed with brown algae in subtidal areas. The project area is used by a variety of invertebrate and vertebrate fauna, with crab and nudibranch being the two dominant organisms observed.

The 2022 survey delineated eelgrass totaling 44.4 acres, including areas outside of the common delineation areas from previous surveys. Consistent with the observations of the Phase III dredge prism during the April 2021 transplant, the shoreward eelgrass boundary retreated waterward of the prism. Overall density of the bed within and directly adjacent to the remedial action boundary has decreased from an average of 36 shoots/m^2 in 2019 to 19 shoots/m^2. The density observed at the Reference location was 26 shoots/m^2, decreased from the previously observed 32 m^2 in 2019.

Biomass data will continue to be collected to monitor the health of the eelgrass bed with particular emphasis on the areas targeted for thin-layer capping. Though below-ground biomass will continue to be monitored, alterations in protocol may result in increased recovery of material relative to the findings in this report, as such, the baseline established here within should be considered carefully when analyzing below-ground biomass. Shoot and above-ground biomass for this monitoring event demonstrates varied results across the project site without statistically significant differences in shoot length.

The size of the eelgrass bed has decreased since monitoring began in 2011, though it increased in 2021 relative to 2019. Eelgrass is plastic in morphology and mobile using horizontal rhizome growth to establish clonal growth while also being highly variable in reproductive effort between years, becoming a moving target to determine stability (Marba et al 2004). The natural variability in eelgrass growth in tandem with changes in Fidalgo Bay should be considered when determining health of the existing bed. Understanding eelgrass bed stability will be necessary to assess effects of the project on the existing bed and should be collaboratively determined with the Samish Tribe and other local partners investigating current eelgrass health in Fidalgo Bay.

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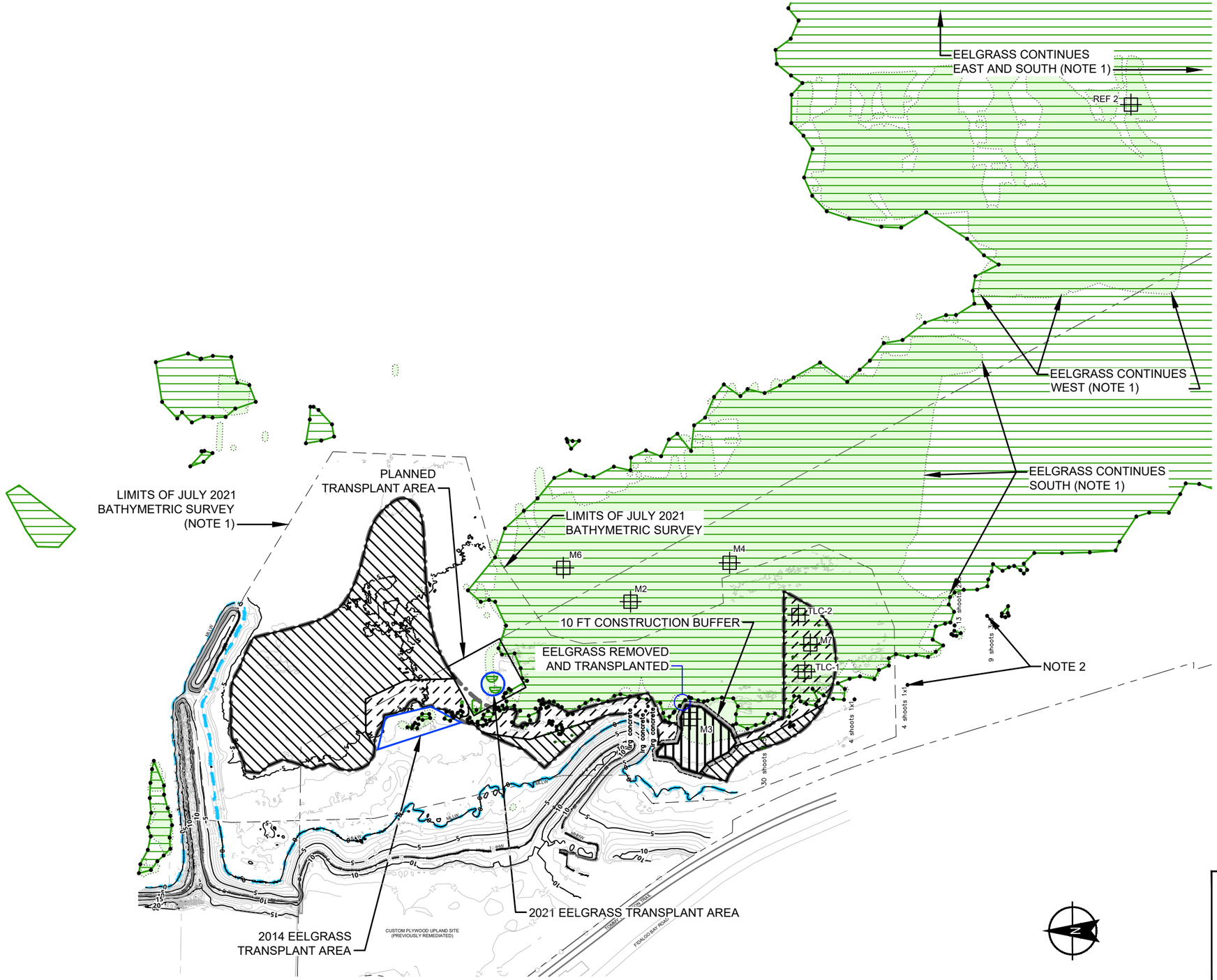


LEGEND

- EELGRASS BIOMASS & DENSITY (REF# & M#) OR BIOMASS (TLC-#) MONITORING LOCATION (SEE NOTE 3)
- PROPERTY LINE
- PROJECT LIMIT LINE
- MLLW — MEAN LOWER LOW WATER
- DREDGE & BACKFILL AREA
- 2-INCH THIN LAYER CAP (TLC) AREA
- 8-INCH TLC AREA
- JULY 2021 EELGRASS SURVEY
- SURVEY GPS POINTS
- JULY 2019 EELGRASS SURVEY

NOTES

1. ROUGH APPROXIMATE EDGE OF 2019 AND 2021 SURVEYS, EELGRASS CONTINUES IN DIRECTIONS NOTED.
2. ISOLATED EELGRASS AREA (ESTIMATED NUMBER OF SHOOTS AND SIZE L' X W'; TYP.).
3. EXCEPTION, SAMPLE M6 IS ONLY EELGRASS DENSITY.

HALEY ALDRICH

CUSTOM PLYWOOD SUBTIDAL SEDIMENT CLEANUP
ANACORTES, WASHINGTON

PRE-CONSTRUCTION EELGRASS EXTENT

SCALE: AS SHOWN
JUNE 2022

FIGURE 4

\\HALEYALDRICH.COM\SHARE\SEA_PROJECTS\NOTEBOOKS\196000_CUSTOM_PLYWOOD_SUBTIDAL_SEDIMENT_CLEANUP\CAD\196000_000_0003_SITE PLANS.DWG
KPOSTOLOWSKI Printed: 6/28/2022 6:26 PM Sheet: FIG 3

APPENDIX A
Photograph Log

Photo 1: Pin flags demarcating the eelgrass boundary.

Photo 2: Grette Associates staff delineating the shoreward eelgrass (Zostera marina) boundary, looking south.

Photo 3: Grette and Haley & Aldrich staff delineating the shoreward eelgrass boundary. Note the shallow shoreline slope.

***Photo 4: Eelgrass growing amongst* Sargassum muticum *and* Saccharina latissima.**

Photo 5: Dense* S. muticum *and wood waste along eelgrass boundary at dredge prism.

Photo 6: Dense* S. latissima *amongst shoreline eelgrass.

Photo 7: Concrete rubble shoreward of the eelgrass boundary.

APPENDIX E
Daily Field Reports

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	07/27/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|Warm
Work Summary:	Continue mobilization and set up, dry run of accessing the dredge area with tug.	Temperature:	75
Field Rep:	Jessica Blanchette	Remarks:	High tide at 2100: 8.33'
Field Rep Time In:	16:00	Start Draft Level:	2
Field Rep Time Out:	22:00	End Draft Level:	2

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project engineer/ PM. Chris arrived prior to 16:00. Set up equipment.	16:00	22:00
Chad Morrison	Deck Hand Apprentice. Mobilization, tide gauge set up, route mapping for entry.	16:00	22:00
Lester Jones	Project Supt. Mobilization, tide gauge set up, route mapping for entry.	16:00	22:00
Greg Lybeek	Operator. Mobilization, tide gauge set up, route mapping for entry.	16:00	22:00

Equipment

Equipment Used	Start Time	End Time
Survey skiff	16:00	22:00
Tide gauge	16:00	22:00
Victory (tug)	16:00	22:00
DB Snohomish (dredge barge)	16:00	22:00
Skagit (materials barge)	16:00	22:00

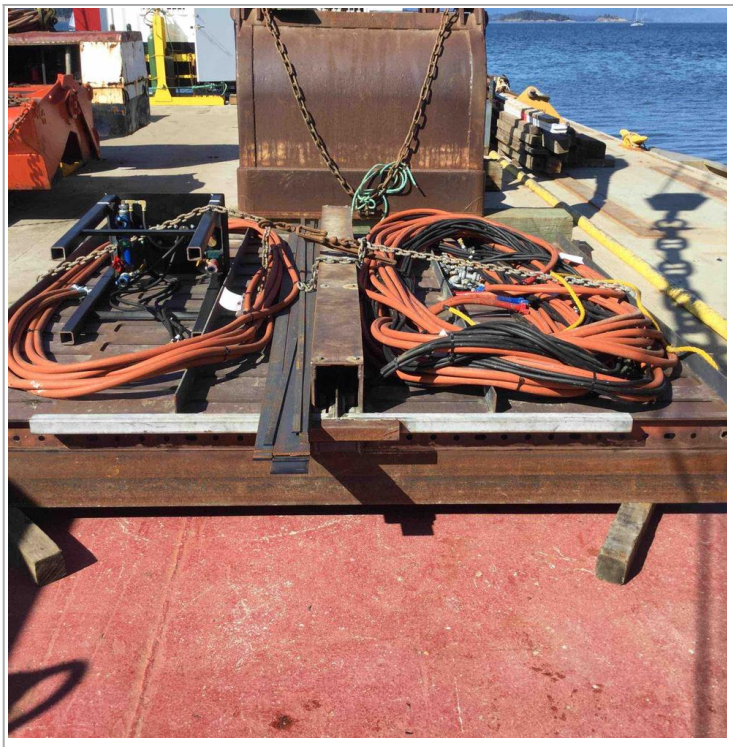
Daily Observations

Time	Observations
16:00	Arrived on site for skiff pick up to dredge barge
16:40	Crew depart to install transducer on tide gauge
17:30	Crew continuing mobilizing crane and setting up pumps, deck, barge, and welding equipment. Chris setting up software and site specifics.
20:30	Dry run in dredge area with survey vessel and Victory to map route of entry around eelgrass. 8.3' tide at time of visit.
21:09	Return to dredge
21:30	Depart dredge for shore
22:00	End of day

Photos

4 cubic yard rehandle bucket.

2 cubic yard cable arm (environmental bucket).



Custom table for spreading sand covering.

Barge name - "Skagit" - and start of day draft level.

Tugboat "Victory".

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Project No.: 1960000

Date:	07/28/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|Warm
Work Summary:	Continue set up of barge and equipment. Dredge southwest region of prism with environmental bucket.	Temperature:	75
Field Rep:	Jessica Blanchette	Remarks:	Predicted high tide at 2126: 8.2'
Field Rep Time In:	16:00	Start Draft Level:	2
Field Rep Time Out:	23:30	End Draft Level:	2

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project engineer/ PM.	16:00	23:30
Chad Morrison	Deck Hand Apprentice	16:00	23:30
Lester Jones	Project Supt.	16:00	23:30
Greg Lybeek	Operator	16:00	23:30

Equipment

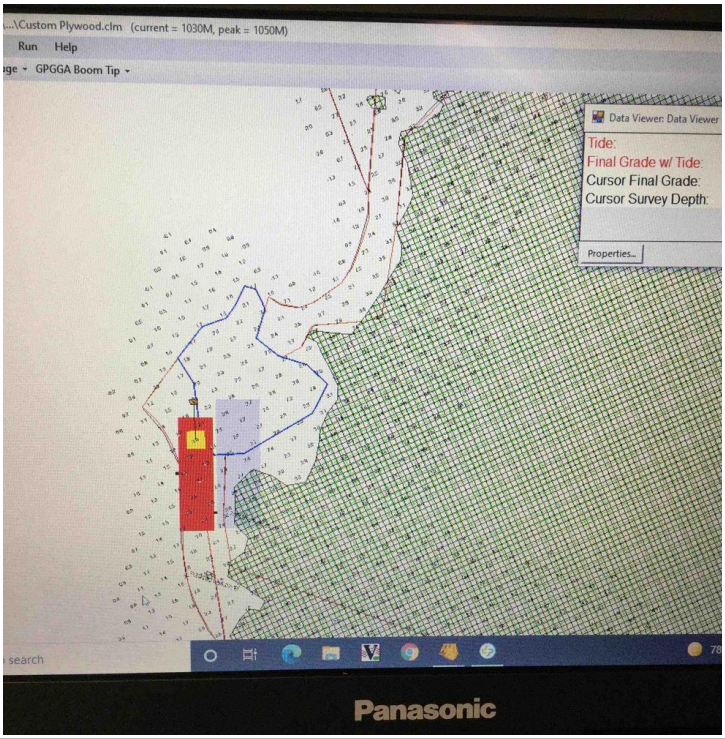
Equipment Used	Start Time	End Time
Survey skiff	16:00	23:30
2CY cable arm	16:00	23:30
Tide gauge (remains in place full time)	16:00	23:30
Victory (tug)	16:00	23:30
DB Snohomish (dredge crane)	16:00	23:30
Skagit (barge)	16:00	23:30

Daily Observations

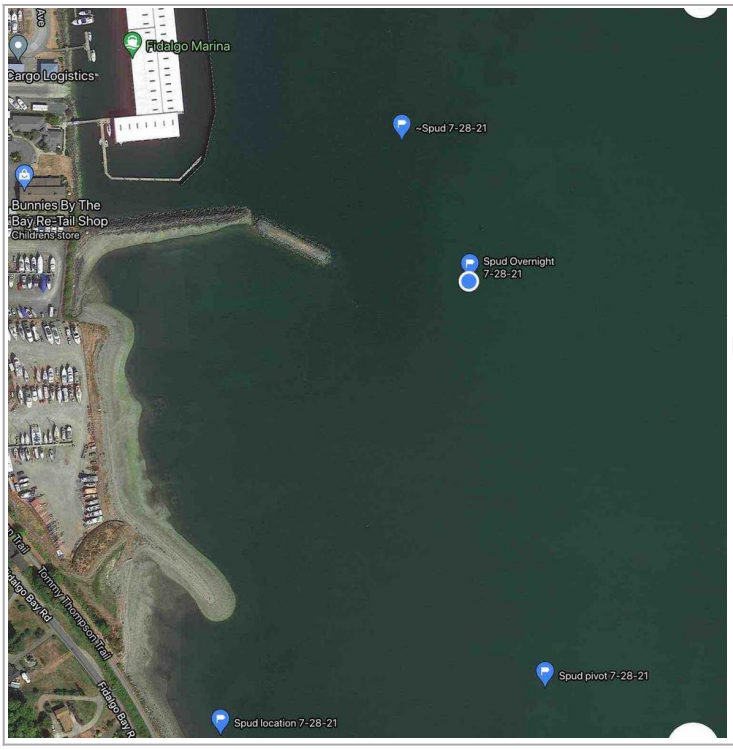
Time	Observations
20:14	Crew mobilizing barge, prep software/equipment.
20:22	Lower and release starboard spud to pivot south of dredge prism.
20:30	Spud down in final dredging location. South of prism.
20:35	Begin dredging Southwest area of dredge prism, using environmental bucket and markings on cable to determine depth. Approximately 6" cuts.
20:59	C. Raymond and J. Blanchette on survey vessel to collect water quality parameters for flood tide. ACC used calibration from rental (Field Environmental). Background collected 600' east of bucket up current at 6' (12' bottom); early warning collected 75' north of bucket; compliance sample collected at 150' northwest of bucket. No exceedence.
22:04	C.Raymond departs for WQM for ebb tide. JPB and C. Raymond discusses noise ordinance allowance, advised to stay within WAC bounds.
22:38	Dredging concludes.
22:40	Pull spuds and depart for staging area.
22:53	Arrive at new staging area east of project site, drop spuds.
23:22	Depart dredge
23:30	Secure skiff and depart for evening.

Photos

Environmental bucket over barge



Position during dredging



Locations of spudding.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	07/29/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|Warm
Work Summary:	Observe set up and dredging of southern dredge prism.	Temperature:	80
Field Rep:	Jessica Blanchette	Remarks:	Predicted high tide at 2157: 8.0'
Field Rep Time In:	16:00	Start Draft Level:	2
Field Rep Time Out:	00:45	End Draft Level:	4.5

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer.	16:00	00:45
Greg Lybeek	Operator.	16:00	00:45
Lester Jones	Project Supt.	16:00	00:45
Chad Morrison	Deck Hand Apprentice.	16:00	00:45

Equipment

Equipment Used	Start Time	End Time
Skiff	16:00	00:45
DB Snohomish	16:00	00:45
Skagit (barge)	16:00	00:45
Victory (tug)	16:00	00:45
Survey Vessel	16:00	00:45
4CY Cable arm	16:00	00:45

Daily Observations

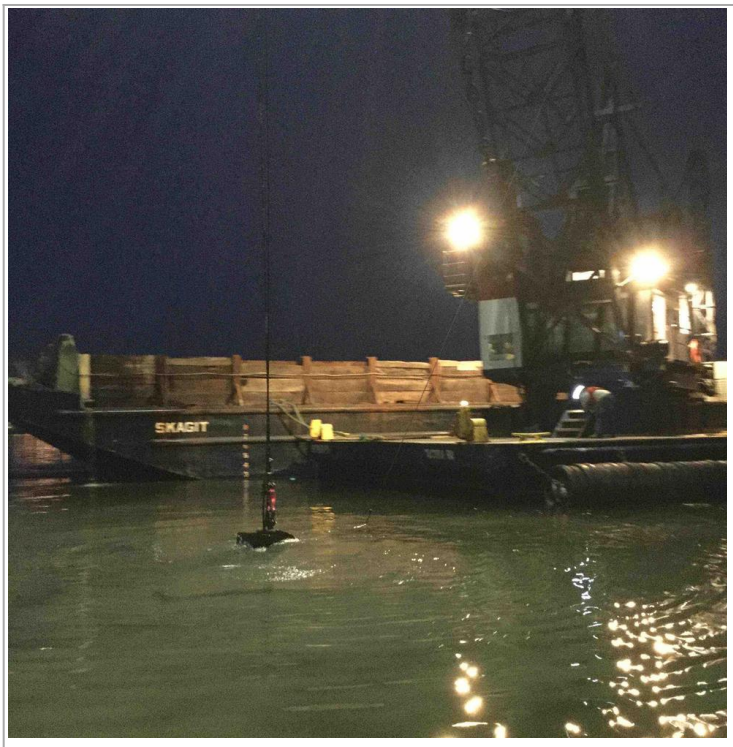
Time	Observations
16:00	Arrive for shore transport
16:10	Arrive at dredge
17:52	Crew depart in skiff for installing temporary light on jetty to facilitate navigation at night.
18:05	C. Raymond depart for survey.
18:07	Crew returns. Continues additional set up of pumps and maintenance on Skagit and Snohomish.
18:31	Chris returns from survey/processes data.
19:29	Survey reveals cuts from 7-28 were approximately 3" deep due to weight of bucket. ACC switches rigging to 4CY bucket and restarts WQM protocols.
20:28	Pick up spuds/ move to prism.
20:39	Drop port spud to pivot
20:41	Picked up spud.
20:54	Drop spuds in dredging location (south). Tide is 7.66' at time of arrival according to Guemes channel, tide gauge may be reading about .5' higher than online sources.
21:00	Begin dredging using 4CY clamshell bucket.
21:07	Lester and Chris check depth readings with lead line, matched readings with lines on bucket and cables.
21:30	Calibrate YSI turbidity probe 2-pt calibration. Using depth marks rather than logger settings.
21:40	CR and JPB depart to collect water quality parameters. Turbidity below 2 NTU at all locations.
21:56	Return to dredge from water quality monitoring.
22:32	Picked up and drop port spud. (Within 1 minute)

Time	Observations
23:35	Dredging concluded.
23:36	Pick up spuds/depart site. Travelled north over the eelgrass main bed at 7.9' MLLW.
23:55	Drop spuds at staging area. Shut down for evening.
00:30	Depart dredge.
00:45	Depart site for day.

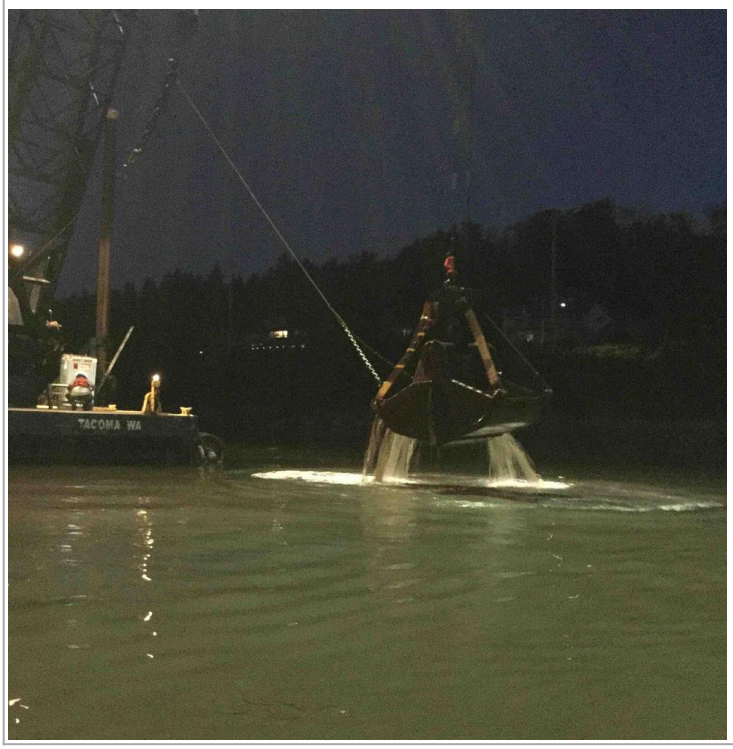
Photos

Starting draft level.

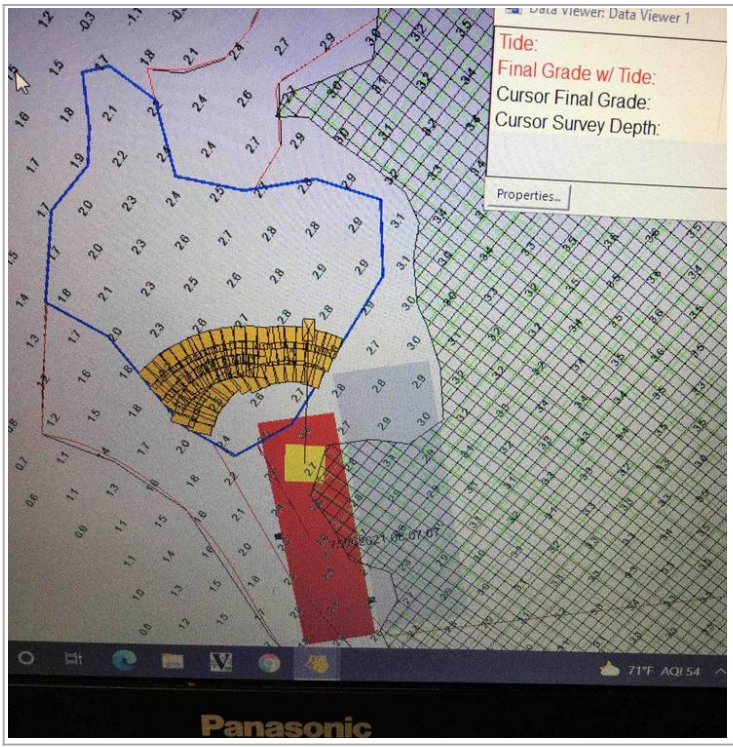
Starting material level, dredged 7-28, rested overnight.



Active dredging, note isolated plume (<75 feet).



Water draining from 4 CY rehandle bucket.



"Bucket map" of progress for both 7/29/2021 and 7/28/2021.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	07/30/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|Warm
Work Summary:	Observing dredging and preparation for barge departure,	Temperature:	82
Field Rep:	Jessica Blanchette	Remarks:	Predicted high tide at 22:24: 7.79'
Field Rep Time In:	16:00	Start Draft Level:	4.5
Field Rep Time Out:	01:30	End Draft Level:	5

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer	16:00	01:30
Greg Lybeek	Operator	16:00	01:30
Lester Jones	Project Supt.	16:00	01:30
Chad Morrison	Deck Hand Apprentice.	16:00	01:30

Equipment

Equipment Used	Start Time	End Time
Skiff	16:00	01:30
DB Snohomish	16:19	01:30
Skagit (barge)	16:19	01:30
Victory (tug)	16:00	01:30

Daily Observations

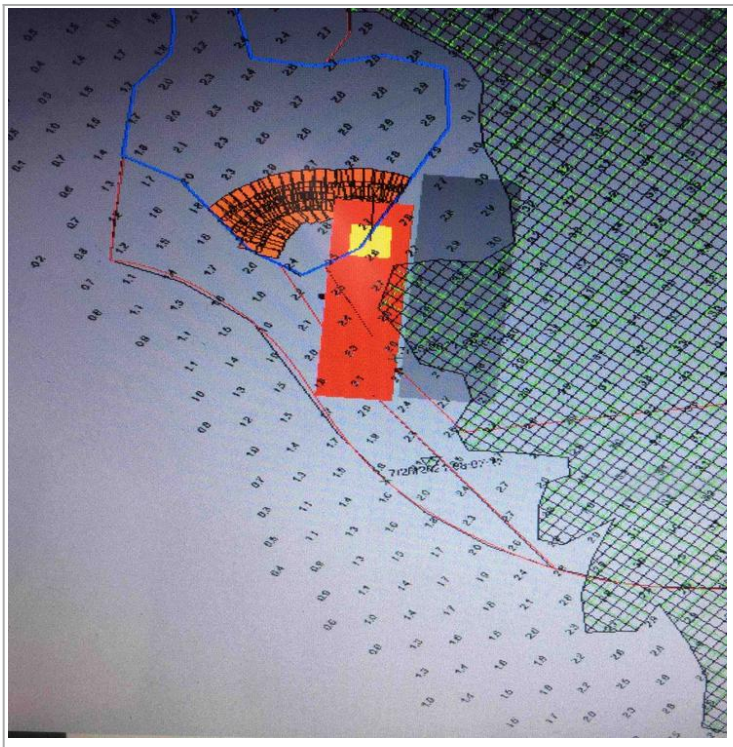
Time	Observations
16:00	Depart from shore to transport crew to dredge staging area. Crew begins setting up, adjusting boom, maintenance tasks, measuring draft.
20:00	CR departs for survey, crew continuing set up/prep
20:16	Pull spuds to mobilize to site.
20:22	Drop port spud to pivot.
20:25	Pick up port spud, continue into site from the southeast.
20:33	Drop port spud in work area in south dredge prism.
20:36	Drop second spud.
20:37	Pick up port spud to swing bow to west.
20:37	Drop spud in final location. Tide at 7.47' according to tide gauge at time of arrival.
20:40	Begin dredging south area, northeast of where dredging occurred 7/29.
20:53	Crew shifted barge forward using lines, approximately 20'.
21:29	CR departs for flood tide water quality monitoring (day 2 of switching to larger clamshell bucket).
21:29	Pick up port spud to pivot.
21:31	Dropped spuds to continue dredging.
21:42	CR returns from water quality monitoring. Crew continuing to dredge, man pumps, and adjust.
23:01	CR departs for ebb tide water quality monitoring. Plume appears localized with little movement with slack tide. Lights from dredge/barge highlight fines in surface waters but are within allowable levels at early warning and point of compliance.
23:01	Port spud pulled to pivot.
23:02	Port spud dropped post pivot.
23:14	Pick up both spuds to move out of site, ~8,14' tide according to placed gauge at time of moving.

Time	Observations
23:29	Dropped spuds to pause position.
23:31	Picked up and replaced spuds after repositioning to get square (<1 min)
23:31	Crew adjusting pumps, measuring draft, dewatering, and prepping Skagit for transport.
00:15	Chris and Greg depart on survey vessel to scout route for barge transport.
00:49	CR and GL return to dredge. Finalize securing dredge for weekend and barge for transport.
01:04	Depart dredge
01:30	Depart site for evening.

Photos

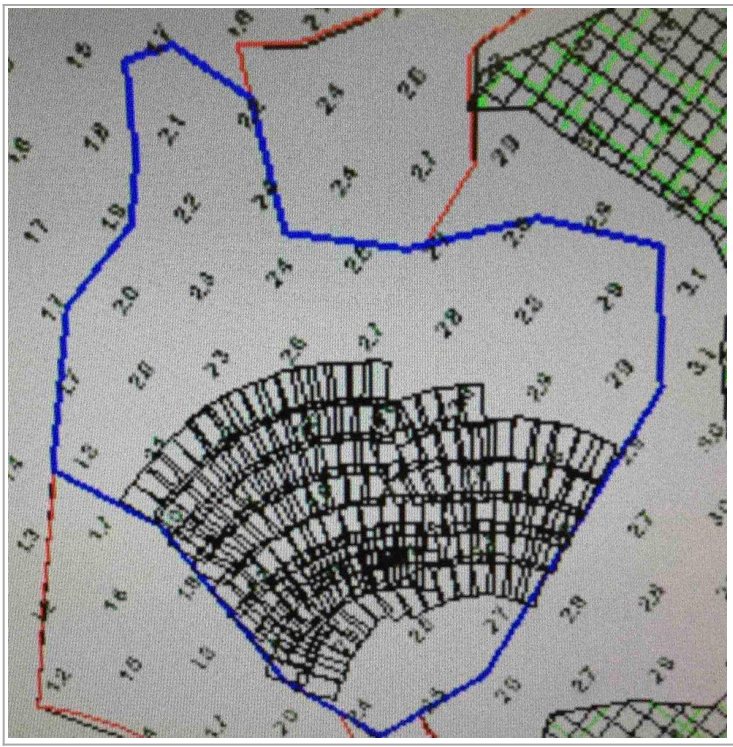
Start of day draft.

Dredge materials to date (7-27 thru 7-29).



Position of dredge prior to commencing.

Active dredging (bucket not yet to full depth).



All dredging to date

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/04/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|Warm
Work Summary:	Observe dredging, Ecology site visit.	Temperature:	75
Field Rep:	Jessica Blanchette	Remarks:	Predicted high tide of 7.7' at 17:19.
Field Rep Time In:	14:00	Start Draft Level:	2
Field Rep Time Out:	21:15	End Draft Level:	4.75

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer	14:00	21:05
Greg Lybeek	Operator.	14:00	21:05
Lester Jones	Project Supt.	14:00	21:05
Chad Morrison	Deck Hand Apprentice.	14:00	21:05
Arianne Fernandez	Dept. of Ecology site visit	17:33	21:05

Equipment

Equipment Used	Start Time	End Time
Skiff	14:00	21:05
DB Snohomish	14:00	21:05
Skagit	14:00	21:06
Victory	14:00	21:05
4CY Rehandle	14:00	21:05

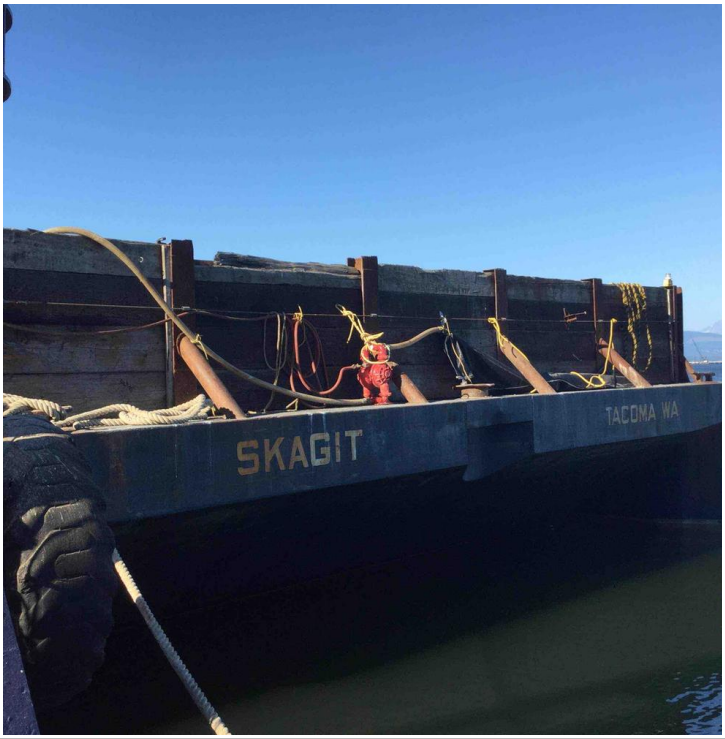
Daily Observations

Time	Observations
14:00	Crew arrives for shore transport.
14:08	Arrive on DB Snohomish, crew preps for dredging, sets up barge.
15:03	Pull spuds to move towards prism.
15:05	CR departs on survey vessel.
15:19	Drop spuds to pivot and stage while CR surveys.
15:37	Pick up spuds to mobilize into dredge prism.
15:47	Drop spuds to position near dredge prism.
15:49	Pick up spuds to reposition.
15:53	Drop spuds to adjust, Greg transfers to crane from Victory.
15:53	CR returns to dredge.
15:56	Pick up port spud to pivot using bucket placed in dredge area, swinging bow.
15:57	Drop port spud. Begin dredging. Predicted tide at time of arrival approx 7.4' in Guemes channel.
16:02	CM departs barge to check tide board against tide gauge readings.
16:34	Pick up and drop spuds to pivot.
16:35	Pick up and drop spuds to pivot. Crowd on beach watching activity, of approximately 10-15 people including passing cyclists. Appeared photos were taken by a person or two.
16:57	Large woody debris removed, including one log approx. 15' in length 1'diam.
17:20	CR departs to maintain tide gauge and pick up Arianne Fernandez from shore transport area.

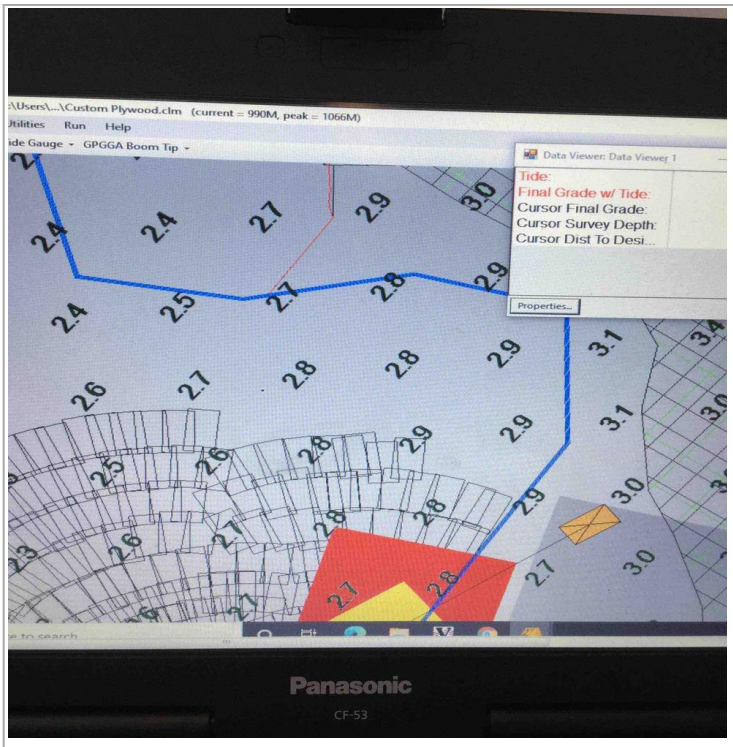
Time	Observations
17:39	CR and AF return to dredge. Arianne requests contractor pause for longer between dredge cut and swinging load over to barge to reduce amount of material leaving the bucket and entering adjacent areas.
17:51	Pick up port spud to pivot bow over to northeast.
17:53	Drop port spud.
18:34	Observed pile removed from dredge area.
19:33	Approx 6 people watching from shore. (A pair with dogs approached along the spit within ~200 ft)
20:00	Chris departs in survey vessel.
20:01	Cease dredging. Pick up spuds to mobilize out of site. Observed drift algae and silt come up from bottom while survey vessel pushes barge in approx 11' of water.
20:15	Drop spuds to stage for overnight. CR returns to dredge.
20:49	Depart dredge for shore transport.
21:15	Depart for day.

Photos

Active dredging.



Sediment bags and pump set up on Skagit barge.



Position at start of dredging.

Pile removed from north dredge prism.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/05/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|High Winds|Cloudy
Work Summary:	Dredging the north prism and northwest finger.	Temperature:	75 to 64
Field Rep:	Jessica Blanchette	Remarks:	
Field Rep Time In:	15:30	Start Draft Level:	4.75
Field Rep Time Out:	21:00	End Draft Level:	5.75

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project engineer	14:00	21:00
Greg Lybeek	Operator	14:00	21:00
Lester Jones	Project support	14:00	21:00
Chad Morrison	Deck hand apprentice	14:00	21:00

Equipment

Equipment Used	Start Time	End Time
Survey vessel	14:00	21:00
Skiff	14:00	21:00
DB Snohomish	14:00	21:00
Skagit	14:00	21:00
Victory	14:00	21:00
4CY Rehandle	14:00	21:00

Daily Observations

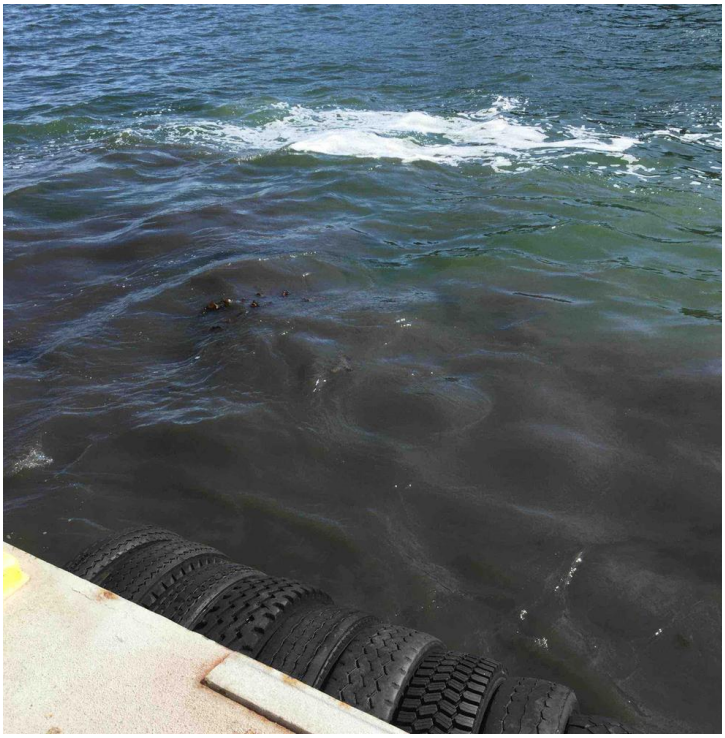
Time	Observations
15:30	JPB arrives to shore transport pick up location, crew on dredge at staging area prepping for movement to site.
15:56	JPB arrives on dredge, picked up by Lester.
15:58	Pick up spuds to mobilize to dredge prism.
15:59	Chris departs on survey vessel to support transport.
16:21	Drop and pick up spuds to reposition.
16:22	Drop spuds. CR set out to survey.
16:30	Begin dredging. Predicted tide at Guemes Channel at time of arrival= 7.4'
17:04	CR performs 2-point calibration on turbidimeter.
17:10	CR departs dredge for metered water quality monitoring.
17:19	Pickup spuds to reposition.
17:23	Drop spuds
17:32	Observed removing a pile approx 15' long.
17:32	CR returns from water quality monitoring.
17:44	CR departs for recon, tide gauge adjustments, assist in barge movement.
18:00	Stop dredging and reposition Skagit barge in line with Snohomish dredge using the crane and 4CY Rehandle to push barge back. Leave Rehandle in barge while transporting out of site.
18:12	Pick up spuds to transport out of site. ACC tide gauge reads 8.23' at time of departure.
18:40	Drop port spud, allow wind to swing barge into position, check to make sure out of channel.

Time	Observations
18:41	Drop starboard spud in staging location. Crew dewaters material and demobilizes for night. Prepping barge for transport tomorrow.
20:30	Depart dredge.
20:47	Arrive to shore transport.
21:00	Crew departs for day.

Additional Notes:
For Week 2 of construction, ACC performed active dredging 2 of 5 days due to the timing of receiving the Skagit back from emptying Load 1 and sending the Skagit with Load 2. Load 1 departed site 8/2/2021 and was offloaded on 8/3/2021; dredging conducted on 8/4 and 8/5. ACC crew prepping the Skagit and dewatering the barge prior to departure (Friday 8/6). Skagit departs site with Load #2 on Sunday 8/8/2021.

Greg Lybeek is scheduled for a crane test 8/9 (when the emptied Skagit barge is scheduled to return to site); dredging to resume 8/10/2021.

Photos



Plume and drift algae from survey vessel prop wash during barge transport. Approximately 11 feet of water at time.

Water draining and isolated plume with 4 cy rehandle.

Dredged material.

Dredged material.

Dredged material.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/10/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|Warm
Work Summary:	Dredging in northwest region, Dept of Ecology site visit	Temperature:	80
Field Rep:	Jessica Blanchette	Remarks:	
Field Rep Time In:	16:00	Start Draft Level:	2
Field Rep Time Out:	22:30	End Draft Level:	3.5

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer	16:00	22:30
Greg Lybeek	Operator	16:00	22:30
Lester Jones	Project Supt	16:00	22:30
Chad Morrison	Deck Hand Apprentice	16:00	22:30
Susannah Edwards	Department of Ecology site visit	18:38	22:30

Equipment

Equipment Used	Start Time	End Time
Survey vessel	16:00	22:30
DB Snohomish	16:00	22:30
Victory	16:00	22:30
Skiff	16:00	22:30
Skagit	16:00	22:30
4CY Rehandle	16:00	22:30

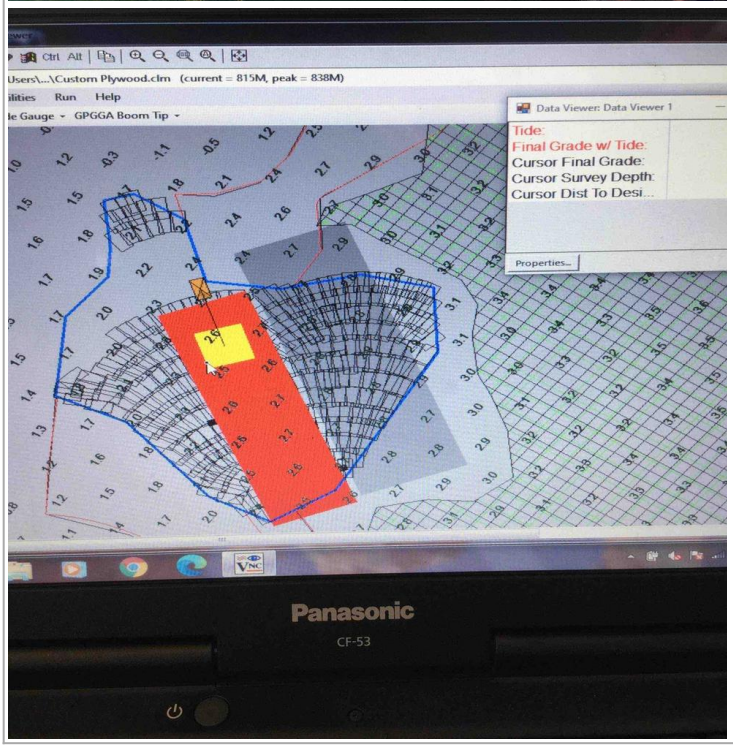
Daily Observations

Time	Observations
16:00	Arrive at shore transport dock to mobilize to dredge, depart for dredge.
16:15	Arrive at dredge, Greg departs to pick up Chris from shore.
16:31	Chris and Greg return to dredge.
16:46	Crew warming up equipment, setting up barge, greasing equipment, collecting barge measurements from all 4 corners of Skagit pre-load (Lester measures each corner from deck height to waterline to collect starting draft).
17:15	Lester and Greg depart to change out tide gauge battery. Chris receives lab results from ARI and discusses with JPB, results preliminary appear to have NDs for dioxin/furans, JPB calls Andrew Kaparos to review results and status of what is left/needed and compare to specs. Looking to expedite review so manufacturing can begin and be delivered by 8/18.
18:15	Pick up spuds to mobilize to site.
18:15	Chris Raymond departs in survey vessel to support navigation then departs to pick up Susannah Edwards of Dept of Ecy.
18:30	Drop spuds outside of bed east of site to wait for Chris in survey vessel.
18:38	CR and Susannah Edwards arrive on dredge. Chris departs for survey. Pick up spuds to mobilize into site.
19:14	Chris returns from survey/ navigating dredge into site. Tide gauge reads 7.58' at time of arrival.
19:16	Start of dredging in northwest corner of dredge prism.
19:17	Pick up spuds to pivot using bucket placed on bottom of dredge area.
19:21	Drop spuds.
20:15	Chris departs for water quality monitoring. Performed a 1 point calibration. (Slack tide after the predicted high of 20:00, appears to have missed flood tide event).

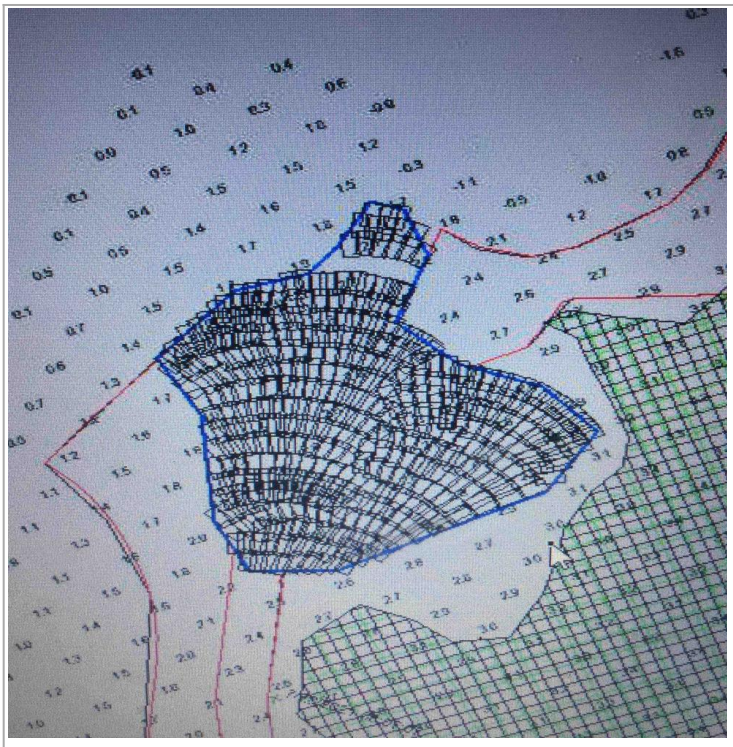
Time	Observations
20:28	Chris returns from water quality monitoring, turbidity is staying consistently below 5 NTUs for all monitorimg locations. CR and SE join Greg in crane cab to get oriented.
21:05	CR departs for ebb tide water quality monitoring.
21:23	Chris concludes water quality monitoring and returns to dredge to drop off YSI.
21:24	Dredging ceases and crew mobilizes dredge out of site. Pick up spuds. Tide gauge reads 7.7' MLLW at time of departure.
21:32	Drop spuds in staging area east of site; bow of barges in approx 13.5'-14' of water.
21:35	CR back on dredge with survey vessel.
22:15	Depart dredge for evening.
22:30	Arrive back at shore transport dock to demobilize for evening, depart for day.

Photos

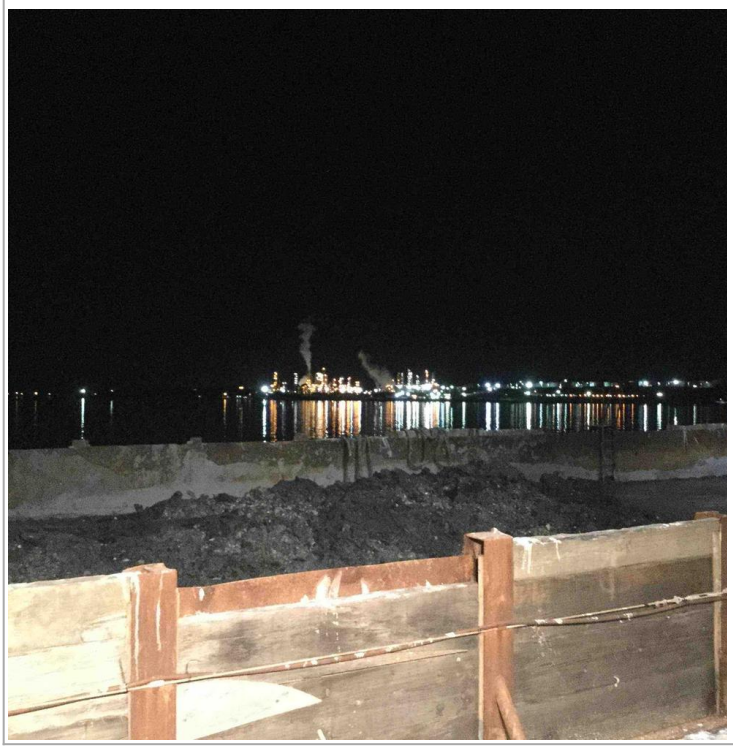
Start of day draft level (port bow).



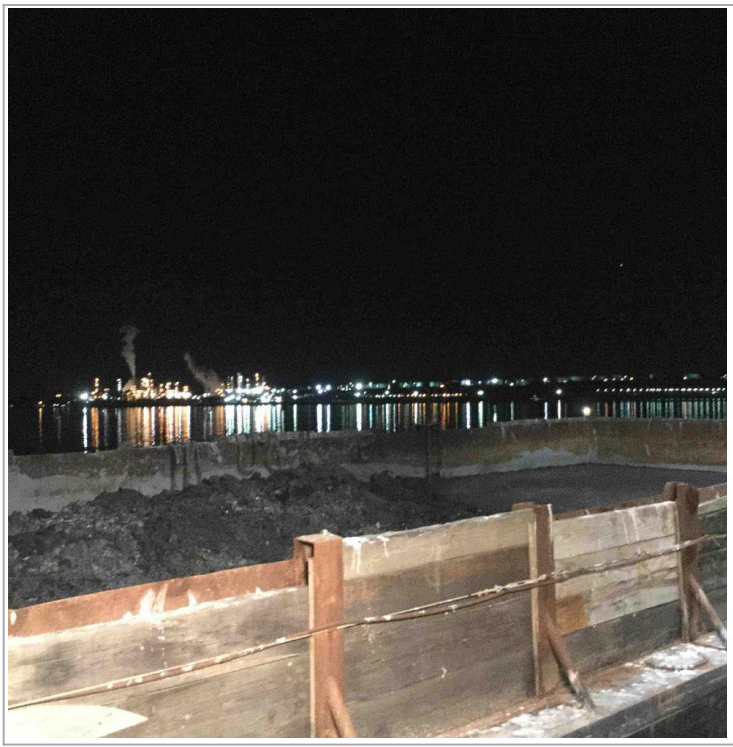
Position of barges at start of dredging.



Progress to date.



Material dredged 8/10.



Material dredged 8/10.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/11/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Hot|Sunny
Work Summary:	Dredging southern portion of prism to final grade, collect documentation sample.	Temperature:	82
Field Rep:	Jessica Blanchette	Remarks:	Predicted high in Guemes Channel: 8.2' MLLW @ 20:24
Field Rep Time In:	16:00	Start Draft Level:	3.5
Field Rep Time Out:	23:26	End Draft Level:	3.75

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer	16:00	23:25
Greg Lybeek	Operator	16:00	23:25
Lester Jones	Project Supt.	16:00	23:25
Chad Morrison	Deck Hand Apprentice	16:00	23:25

Equipment

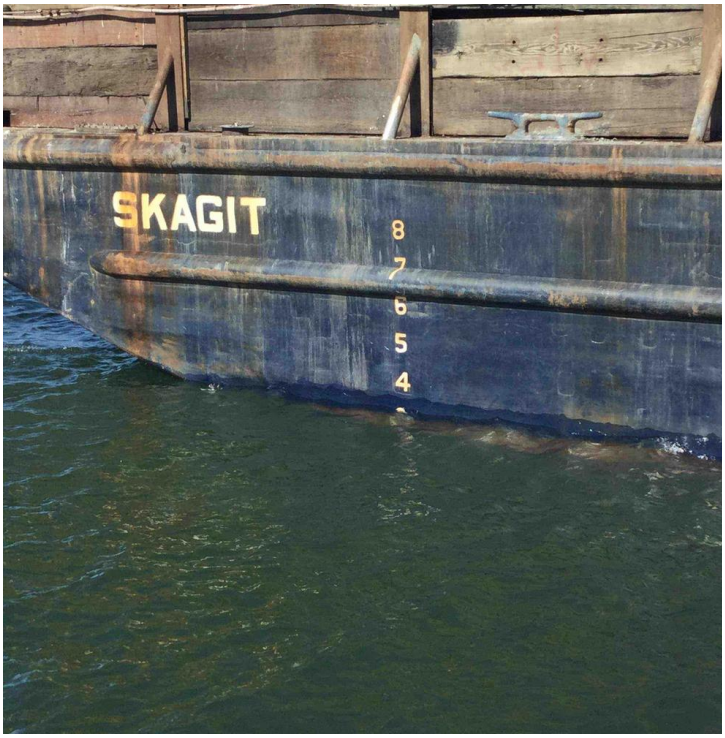
Equipment Used	Start Time	End Time
Survey vessel	16:00	23:25
DB Snohomish	16:00	23:25
Victory	16:00	23:25
Skagit	16:00	23:25
2CY cable arm (environmental bucket)	16:00	23:25
Skiff	16:00	23:25

Daily Observations

Time	Observations
16:00	Arrive at shore transport area.
16:20	Arrive at dredge; crew warming up equipment and going through set up for day.
17:00	Crew switching from 4CY Rehandle to 2CY cable arm (environmental bucket).
18:53	Pick up spuds to mobilize to site. Chris departs in survey vessel to support navigation.
19:03	Dropping port spud to pivot.
19:06	Pick up port spud to continue. Tide gauge at entry: 7.34'
19:13	Drop spuds in dredging location.
19:18	Pick up port spud to swing barge using bucket at dredge floor. Chris back in dredge.
19:19	Drop port spud.
19:21	Pick up both spuds with bucket boomed out (ahead of barge); Greg brings boom in/up to pull forward. Insufficient to pull so dropped spuds back in place.
19:22	Dredging begins with 2CY cable arm (environmental bucket).
20:08	Pick up spuds
20:09	Drop spuds.

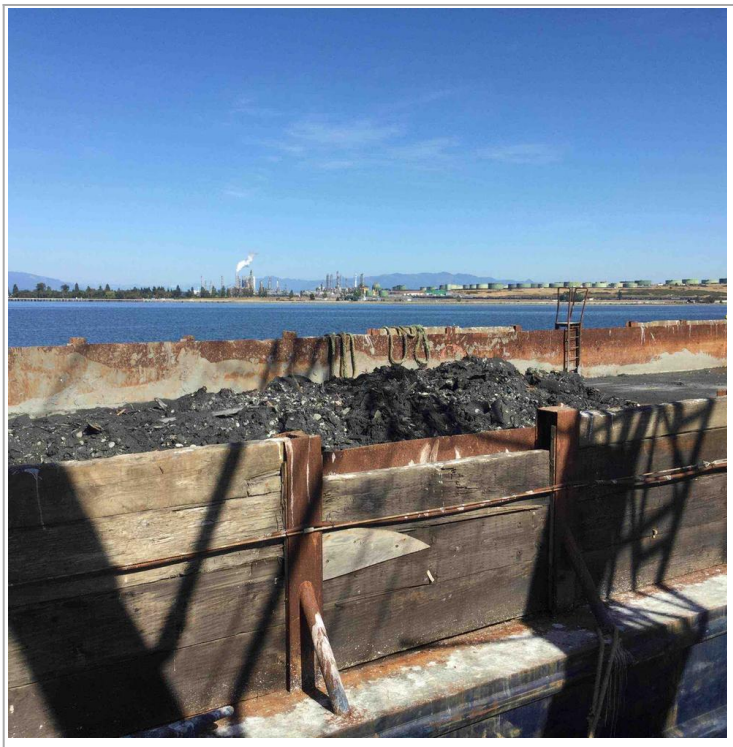
Time	Observations
20:15	Collect sample from southernmost quadrant of dredge prism. Sample ID "CPP3-S" taken at 20:15 approximately 3" deep. Pile from the bucket appeared thicker than 3" and was likely laterally compressed and is a roughly disturbed sample from upper layer. Noticeable shell hash, observed 2 small pieces of wood (~1"x2 to 5"), no noticeable wood in sample. Selectively avoided larger shell hash for sample but some pieces may have been retained. Material is dark grey poorly graded sand with organic odor and shell hash. Sample was collected from largest portion that appeared to have no/ least amount of contact with bucket sides from several locations, then was homogenized in a cleaned stainless steel bowl before filling jar.
20:45	Chris returns to barge (was taking water quality readings while JPB collecting sample).
20:59	Pick up port spud to pivot and replace (within the same minute).
21:22	Pick up spuds to move forward.
21:24	Drop spuds.
22:13	Cris departs for water quality monitoring.
22:23	Cease dredging and pick up spuds, Chris pushing from stern in survey vessel to swing stern east. Tide gauge reads 7.48' at time of departure.
22:35	Drop spuds, pickup starboard spud again.
22:37	Drop starboard spud. Crew cools down equipment and takes measurements of Skagit. Demobilize for evening.
23:15	Depart dredge.
23:25	Arrive at shore transport and depart for day.

Photos

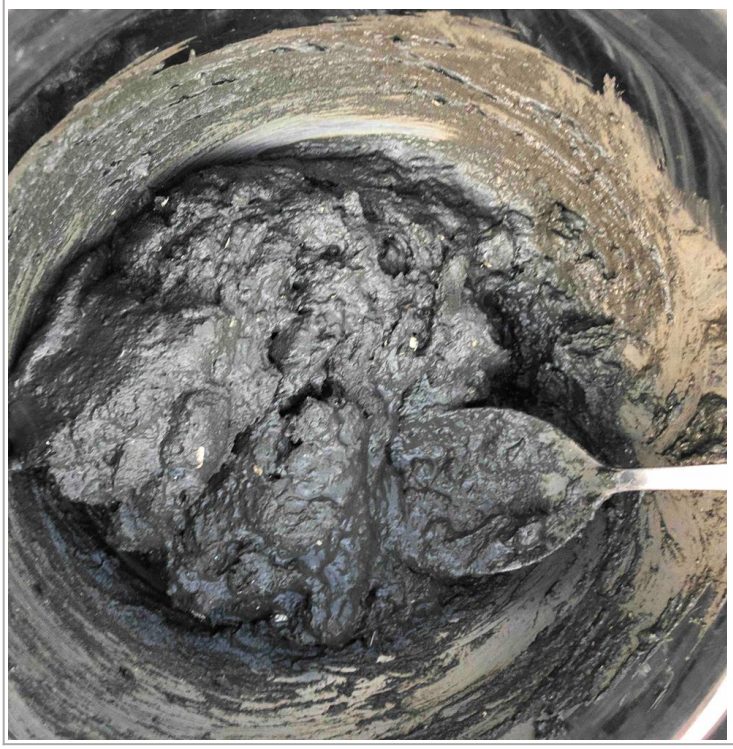


Start of day draft level.

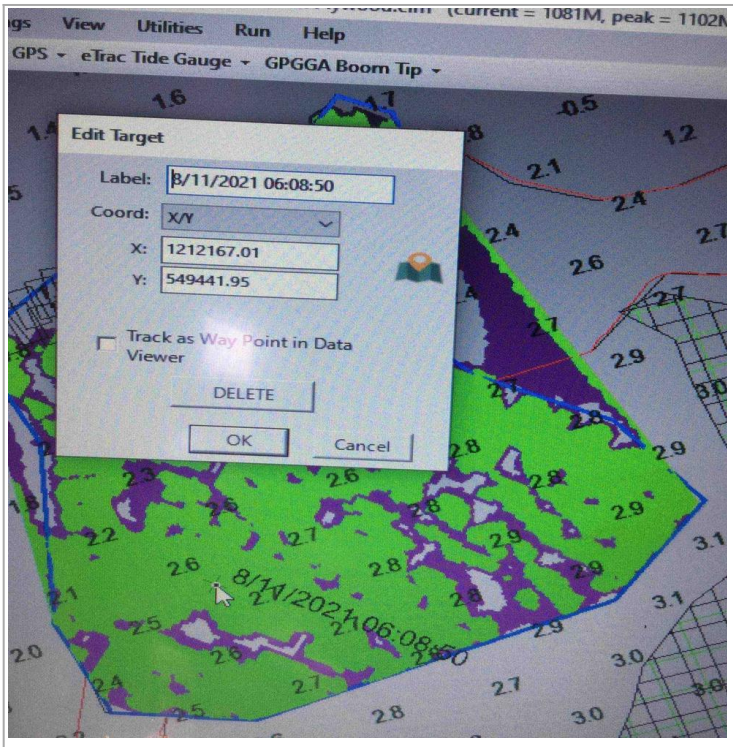
Material dredged 8/10/21.



Material dredged 8/10/21.



Homogenized material for CPP3-S.



Location of sample CPP3-S.

Material from Env bucket for CPP3-S.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/12/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations.
Tailgate Meeting:	Not conducted/Attended	Weather:	smoke|Hot|Sunny
Work Summary:	Dredging remaining areas 0-1' above spec. Collecting documentation samples.	Temperature:	88
Field Rep:	Jessica Blanchette	Remarks:	Predicted high tide in Guemes channel 8.2' at 20:52.
Field Rep Time In:	16:00	Start Draft Level:	3.5
Field Rep Time Out:	00:00	End Draft Level:	4

Crew

Worker Name	Work Accomplished	Time In	Time Out
Greg Lybeek	Operator	16:00	23:53
Lester Jones	Project Supt	16:00	23:53
Chad Morrison	Deck Hand Apprentice	16:00	23:53
Chris Raymond	Project Engineer	17:45	23:53

Equipment

Equipment Used	Start Time	End Time
Survey vessel	16:00	23:53
Victory	16:00	23:53
DB Snohomish	16:00	23:53
Skagit	16:00	23:53
2CY Cable arm	16:00	23:52

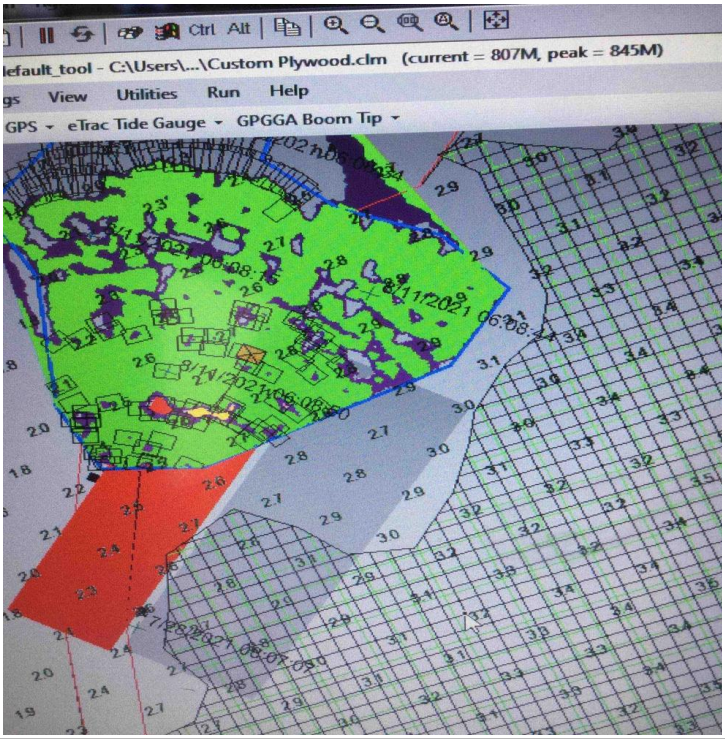
Daily Observations

Time	Observations
03:45	Arrive at shore transport area with crew.
16:09	Arrive on dredge.
17:45	Greg departs to pick up Chris from shore transport dock.
18:05	Chris and Greg arrive on dredge.
18:38	Pick up spuds to mobilize into site. Chris departs in survey vessel.
18:57	Drop port spud south of dredge prism. Tide gauge reads 7.21' at time of arrival.
19:00	Drop starboard spud. Chris returns to dredge.
19:05	Begin dredging.
19:07	Dredging pauses to adjust clam vision and position.
19:09	Pick up port spud to pivot using bucket.
19:10	Drop port spud. Dredging resumes.
20:05	JPB collects sample CPP3-W @ 20:05. Likely less than a 3" cut with environmental bucket. Material is dark grey to dark brown, loose, poorly graded sand with silt. More wood debris than CPP3-S, est 10%. Considerable shell hash, likely 30-40% (observed possible brachiopod or oyster shells in addition to clam). Selectively avoided wood debris and shell hash for sample but possibility they remained in small pieces. Homogenized sample prior to placing in jar.
20:17	Pick up port spud
20:21	Drop port spud after swinging to the east using the bucket.
21:19	Pick up spuds to shift barges forward/north.

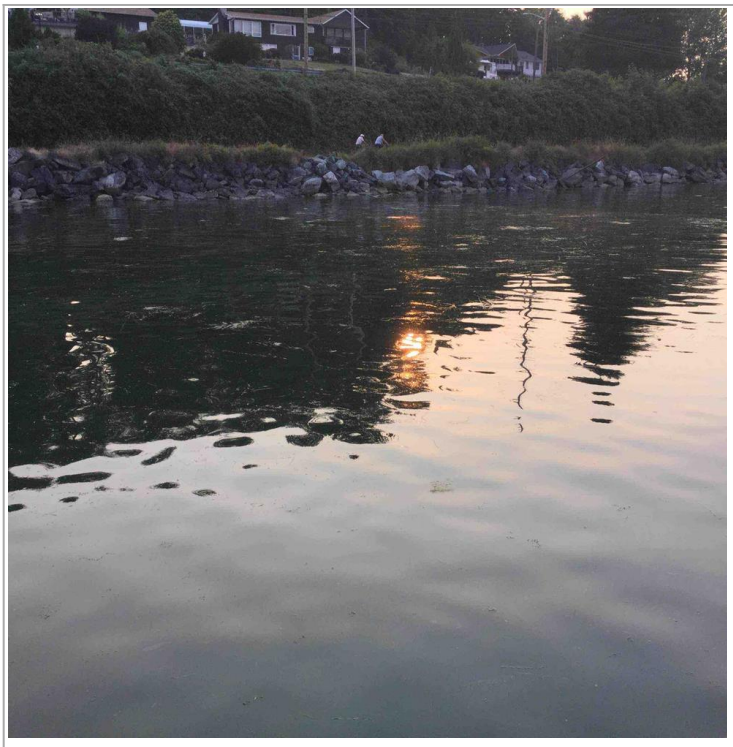
Time	Observations
21:21	Dropped spuds.
22:04	Collect sample CPP3-E @ 21:30. Approximate 3" cut with environmental bucket opened over visquene. Material is dark grey to dark brown, medium stiff, silt/clay with fine to medium sand. Almost fat clay intexture, weight, stiffness. Similar in wood debris toCPP3-W, est 10%. Considerable shell hash, likely 30-40%, more large pieces of clam than fine hash. Selectively avoided wood debris and shell hash for sample but possibility they remained in small pieces. Homogenized sample prior to placing in jar.
22:34	Chris and Chad depart in survey vessel to attach light to piling.
22:42	Chris and Chad return to dredge in survey vessel.
22:51	Chris departs in survey vessel to facilitate navigating out of the site.
22:51	Cease dredging. Pick up spuds to depart from site, Chris pushing east from stern. Tide gauge reads 7.5' at time of departure (7.35' when over center of bed)
23:03	Drop spuds in overnight staging area east of site.
23:07	Chris arrives back on dredge in survey vessel, crew demobilizing, adjusting spud cables, taking barge measurements.
23:40	Depart dredge for shore.
00:00	Depart for day.

Photos

Barge draft at start of dredging.



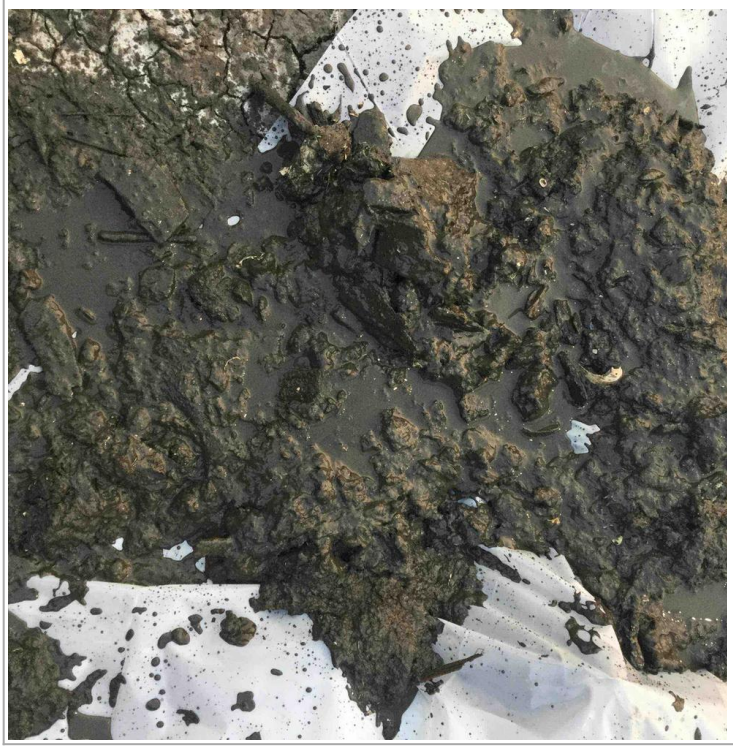
Position of barges at start of dredging with survey layer.



Observed notable amount of drift eelgrass on surface near dredge area. Most drifted out of the construction area within an hour.

Close up of drift eelgrass observed.

Homogenized sample for CPP3-W.



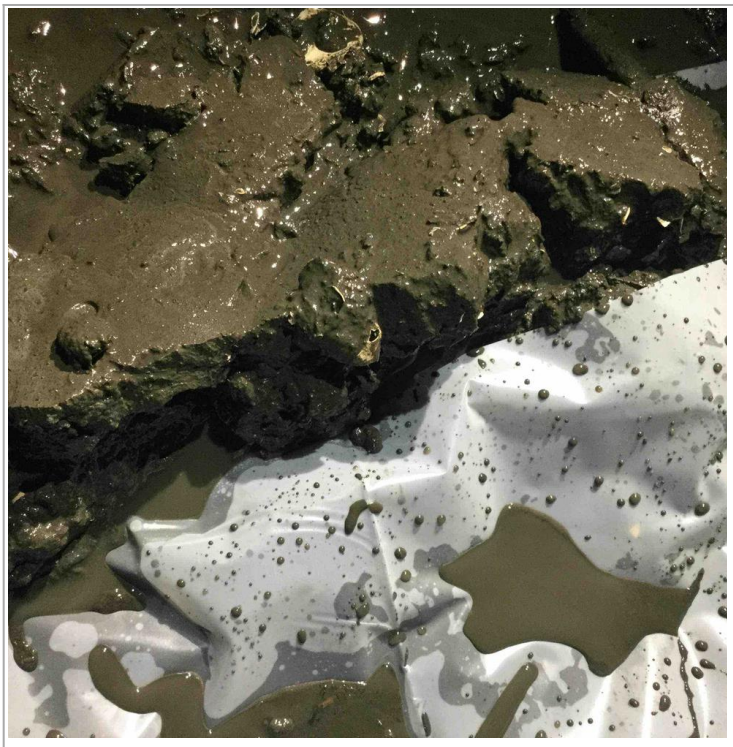
General material for CPP3-W.

Patch of light grey silt/clay in grab for CPP3-W

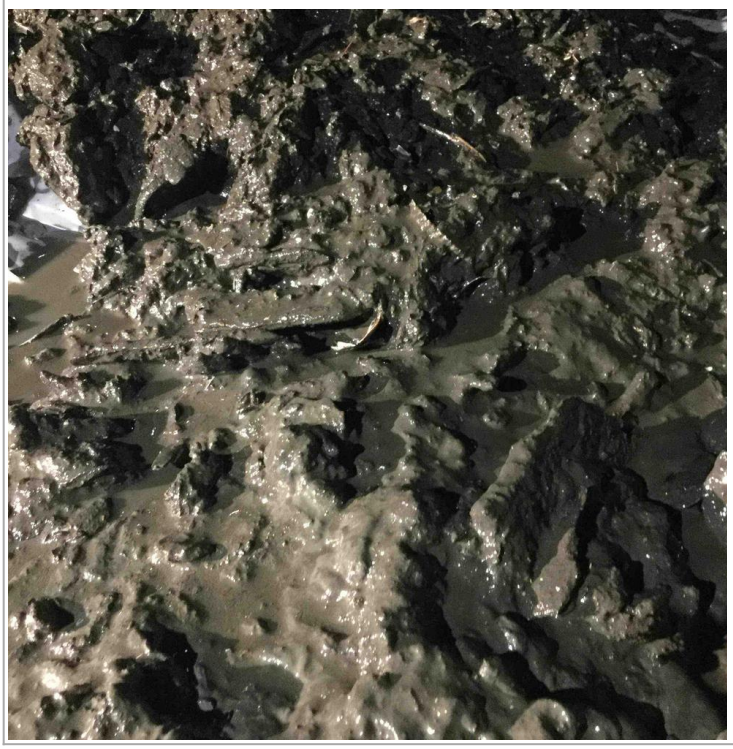
Close up of shell hash in grab for CPP3-W.

Wood waste in grab for CPP3-W.

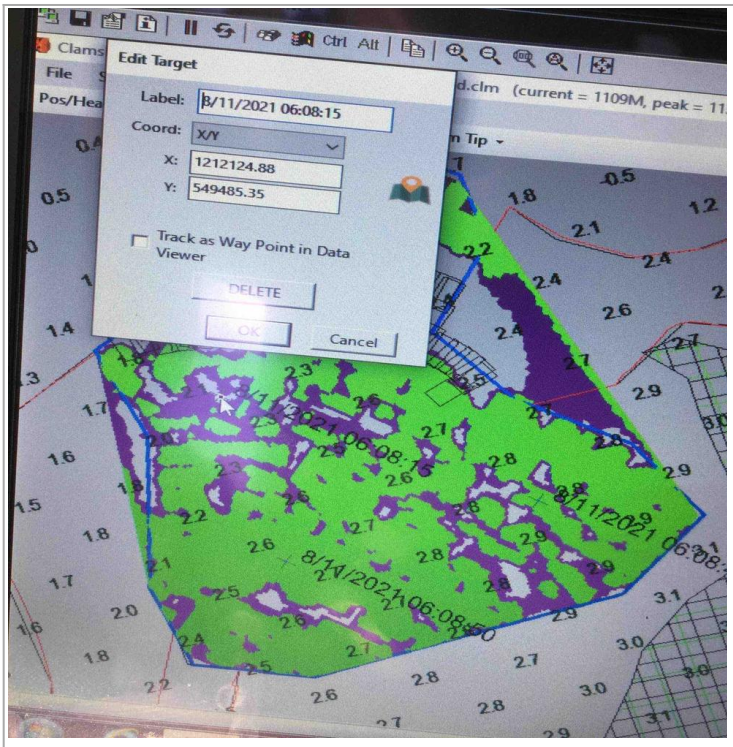
Sheen in grabbed material for CPP3-W.



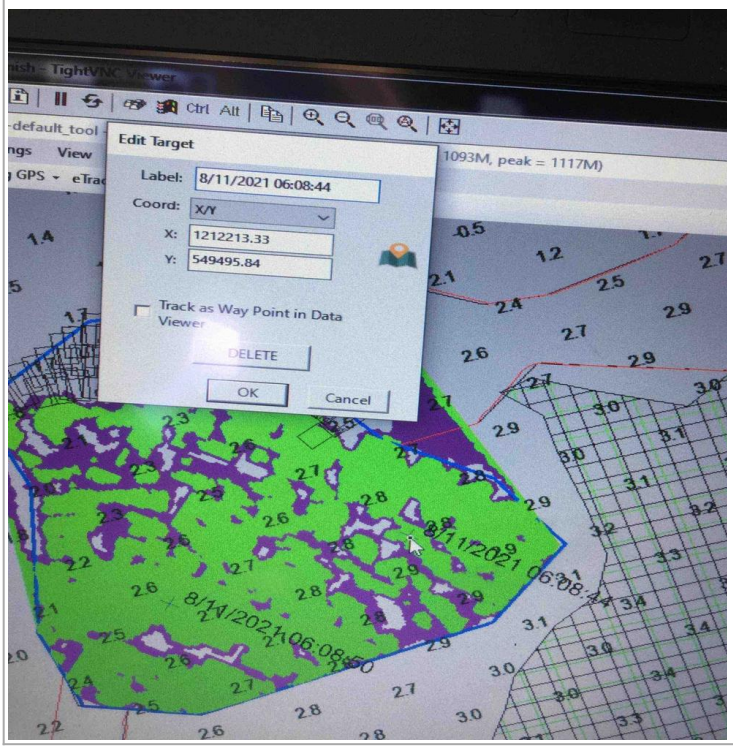
Material for CPP3-E.



Material for CPP3-E.



Location of CPP3-W.



Location of CPP3-E.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/13/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations.
Tailgate Meeting:	Not conducted/Attended	Weather:	Hot|Sunny|Smoke
Work Summary:	Dredging northwest region with 4 CY Rehandle	Temperature:	82
Field Rep:	Jesica Blanchette	Remarks:	Predicted high tide in Guemes channel: 8.2'@21:21.
Field Rep Time In:	16:00	Start Draft Level:	4
Field Rep Time Out:	00:15	End Draft Level:	4.75

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer	18:38	00:15
Greg Lybeek	Operator	16:00	00:14
Lester Jones	Project Supt	16:00	00:14
Chad Morrison	Deck Hand Apprentice	16:00	00:14

Equipment

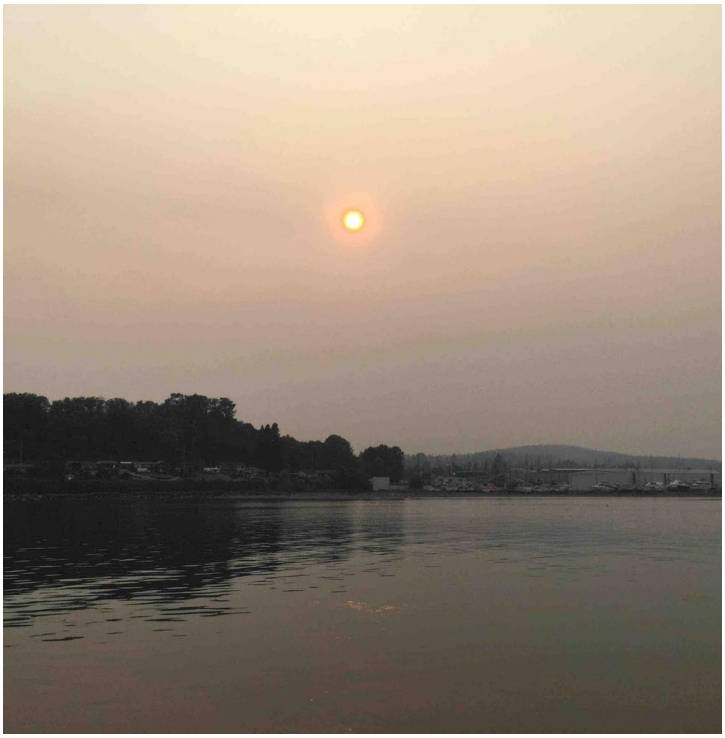
Equipment Used	Start Time	End Time
Survey vessel	16:00	00:14
DB Snohomish	16:00	00:14
Victory	16:00	00:14
Skagit	16:00	00:14
4CY Rehandle	16:00	00:14

Daily Observations

Time	Observations
16:00	Arrive on site for shore transport. Received call from Arianne Fernandez of Dept of Ecology to notify that the USACE received a call from the public requesting docs/ info around dredging. No current action or complaints, HC to direct public to ECY if get inquiries.
16:20	Arrive on dredge. Crew mobilizes for day, measures barge, switches cables to 4CY Rehandle.
17:32	Lester and Chad depart to check tide board. Appears to be within 0.05' of tide gauge.
17:48	Lester and Chad return to dredge.
18:37	Greg departs in survey vessel to pick up Chris from shore transport area.
18:49	Greg and Chris return to barge, Chris drops off Greg and takes survey vessel to survey progress on dredge prism.
18:59	Pick up spuds to mobilize into site.
19:15	Drop starboard spud, swing stern to the east to reposition. Tide gauge reading 7.23' at time of entry.
19:19	Drop both spuds
19:23	Start of dredging using 4CY Rehandle. ACC implementing visual monitoring since metered monitoring was used Tues and Wed of this week. Water quality appears to be holding with all stations below 5 NTUs.
20:19	Pick up port spud to pivot using bucket.
20:20	Drop port spud, resume dredging.
21:06	Pick up port spud to get square and shift forward.
21:07	Pick up starboard spud, Greg in Victory pushing forward.
21:09	Drop both spuds. Resume dredging.

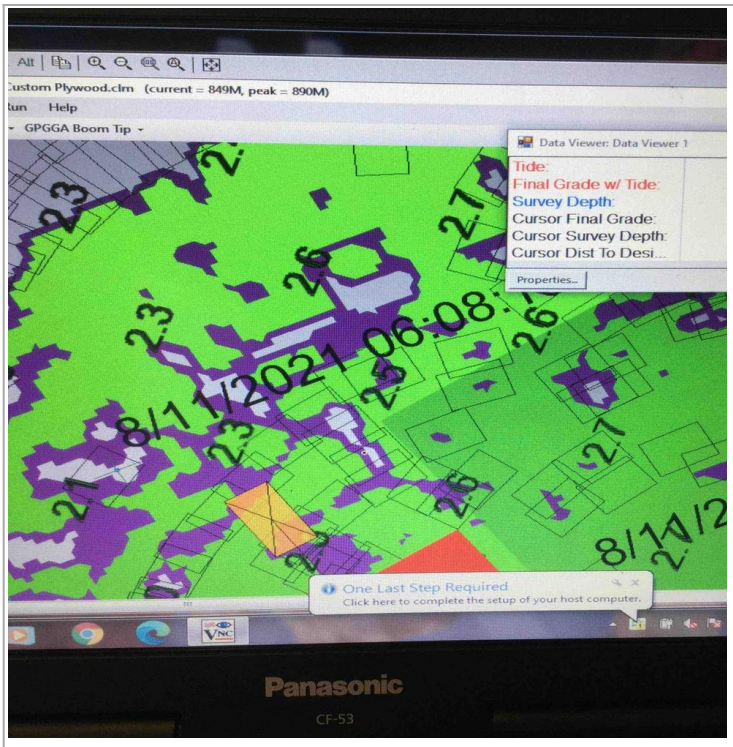
Time	Observations
21:36	Sample CPP3-N at 21:25. Approximate 8" cut with 4CY Rehandle bucket held closed and allowed water off the top to drain. Material is dark grey to dark brown, medium stiff, silt/clay with fine to medium sand. Almost fat clay intexture, weight, stiffness. Slightly more wood debris than CPP3-W, est 20%. Considerable shell hash, likely 30-40%, more large pieces of clam than fine hash. Selectively avoided wood debris and shell hash for sample but possibility they remained in small pieces. Homogenized sample prior to placing in jar.
21:54	Pick up spuds to shift forward using the bucket.
21:55	Drop starboard spud.
21:56	Drop port spud.
22:24	Pick up spuds.
22:26	Drop spuds.
22:36	Pick up spuds to shift south.
22:41	Drop starboard spud.
22:42	Drop port spud.
23:01	Dredging ceases. Chris departs in survey vessel to support navigation.
23:02	Pick up port spud.
23:03	Chris ceases pushing, drop port spud. Approximately 8' of after, Greg says may have felt a high spot or bump, outside of eelgrass bed. Tide gauge reads 7.74' at time of departure.
23:04	Pick up spuds to continue mobilizing out of site.
23:13	Drop spuds in overnight staging location. Crew demobilizes, take barge draft measurements, ties down for weekend.
23:56	Shut off dewatering pumps.
00:00	Depart dredge for shore.
00:14	Depart for day.

Photos



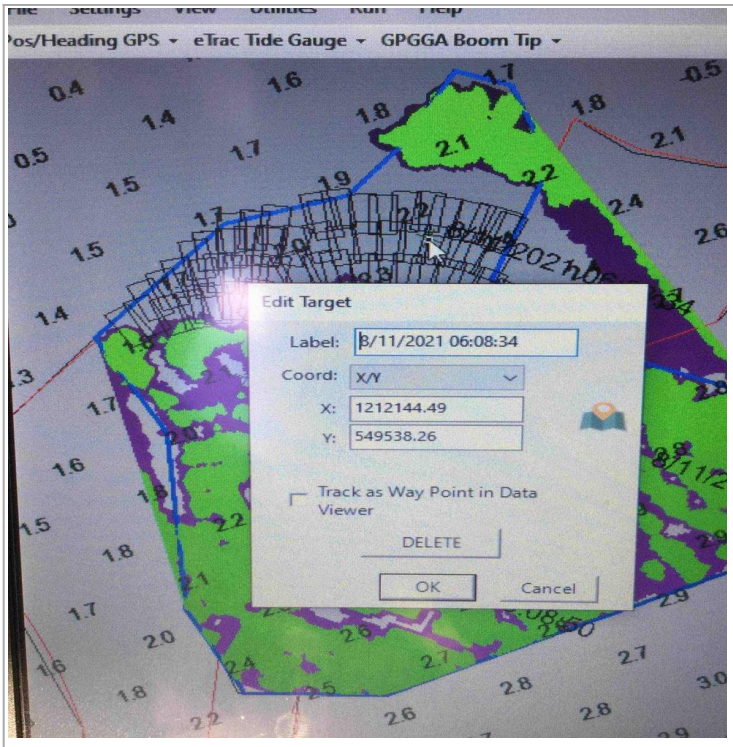
Smoky conditions.

Start of day barge draft.

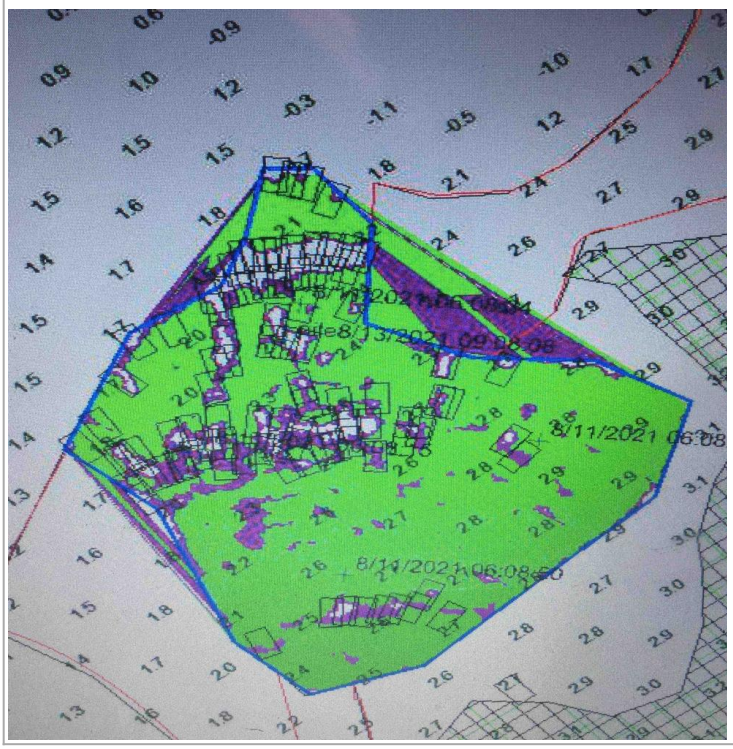


Start of dredging.

General material at CPP3-N.



Location of CPP3-N.



Bucket map of progress for 8/13/21.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/16/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Dredging observations
Tailgate Meeting:	Not conducted/Attended	Weather:	High Winds|Cloudy|Cold
Work Summary:	Survey and clean up remaining high spots.	Temperature:	60
Field Rep:	Jessica Blanchette	Remarks:	Predicted high tide in Guemes channel: 7.97' @ 23:02.
Field Rep Time In:	19:00	Start Draft Level:	4
Field Rep Time Out:	00:50	End Draft Level:	5.5

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer	19:00	00:50
Greg Lybeek	Operator	19:00	00:50
Lester Jones	Project Supt	19:00	00:50
Chad Morrison	Deck Hand Apprentice	19:00	00:50

Equipment

Equipment Used	Start Time	End Time
Survey vessel	19:00	00:41
DB Snohomish	19:00	00:41
Victory	19:00	00:40
Skagit	19:00	00:40
4 CY Rehandle	19:00	00:40

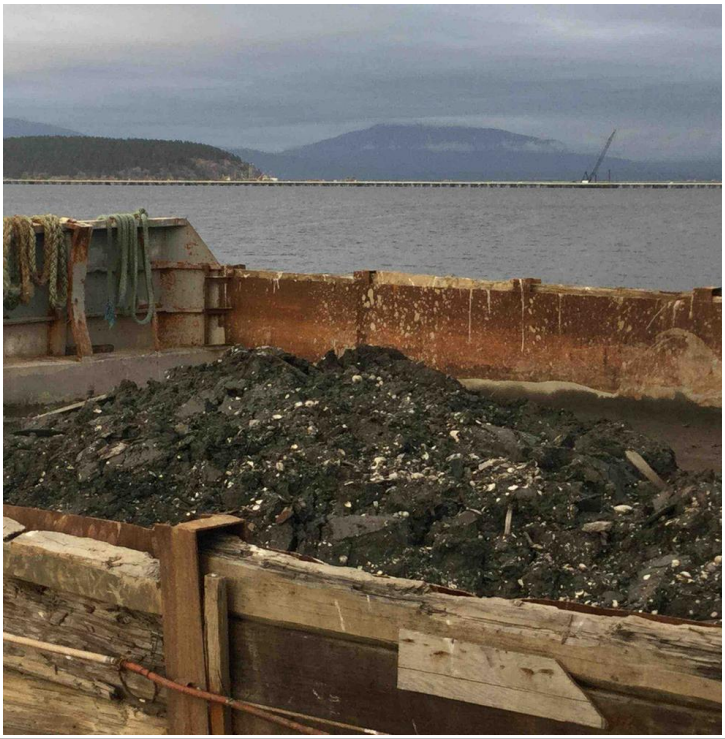
Daily Observations

Time	Observations
19:00	Arrive to shore transport .
19:20	Arrive at dredge, crew begins set up, adjust pumps, measure barge draft.
19:25	Chris departs to perform survey.
19:52	Chris returns to process survey before mobilizing to site.
20:22	Pick up spuds to mobilize.
20:29	Drop spud to pivot.
20:32	Pick up spud.
20:43	Drop spuds in dredging location.
20:50	Begin dredging.
21:18	Pick up spuds to pivot. Drop spuds.
21:39	Pick up spuds to shift position.
21:40	Drop spuds.
21:40	Chris departs for water quality monitoring.
21:55	Chris returns from water quality monitoring.
22:02	Pick up port spud to pivot.
22:03	Drop port spud.
22:22	Removed ~12' piling from northeast region of dredge prism.
22:36	Pick up port spud to rotate bow to the east. Drop spuds.
22:51	Pick up both spuds and shift barges south, Chad in Victory tug.

Time	Observations
22:54	Drop spuds.
23:02	Dredging pauses to facilitate dewatering.
23:25	Dredging resumes and Chris departs for water quality monitoring.
23:36	Pick up spuds to mobilize out of the dredge area; leave bucket in materials barge, Greg in Victory, Chris pushing in Survey vessel. Tide gauge reads 8.41' at time of departure.
23:51	Drop spuds in staging location. Crew demobilizes, measures barge draft, continues dewatering. Chris returns to barge in survey vessel.
00:04	Chris departs to survey dredge area in the event something goes wrong tomorrow. Plan is to survey post dredge surface tomorrow at noon.
00:36	Chris returns to dredge, picks up crew and JPB to depart to shore. Crew to assemble tomorrow at 13:00 to continue dewatering, prepping barge, processing survey. Dredging unlikely, HC technician will be on call pending survey approvals.
00:41	Arrive at shore transport area.
00:50	Depart site.

Photos

Barge name and draft level at beginning of day.



General material dredged 8/10-8/13.

General material dredged 8/10-8/13.

General material dredged 8/10-8/13.

General material dredged 8/10-8/13.

General material dredged 8/10-8/13.

Removed piling from northeast of dredge prism.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/24/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Backfill placement observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Clear|Sunny|Warm
Work Summary:	Backfill placement in dredge prism.	Temperature:	70 | 57
Field Rep:	Jessica Blanchette	Remarks:	Day 1 of backfill placement.
Field Rep Time In:	16:00	Start Draft Level:	4.75
Field Rep Time Out:	23:00	End Draft Level:	4.5

Crew

Worker Name	Work Accomplished	Time In	Time Out
Chris Raymond	Project Engineer	16:00	23:00
Greg Lybeek	Operator	16:00	23:00
Lester Jones	Project Supt	16:00	23:00
Chad Morrison	Deck Hand Apprentice	16:00	23:00
Visitor	Tug operator. Delivery of the Skagit with backfill material.	16:00	17:00

Equipment

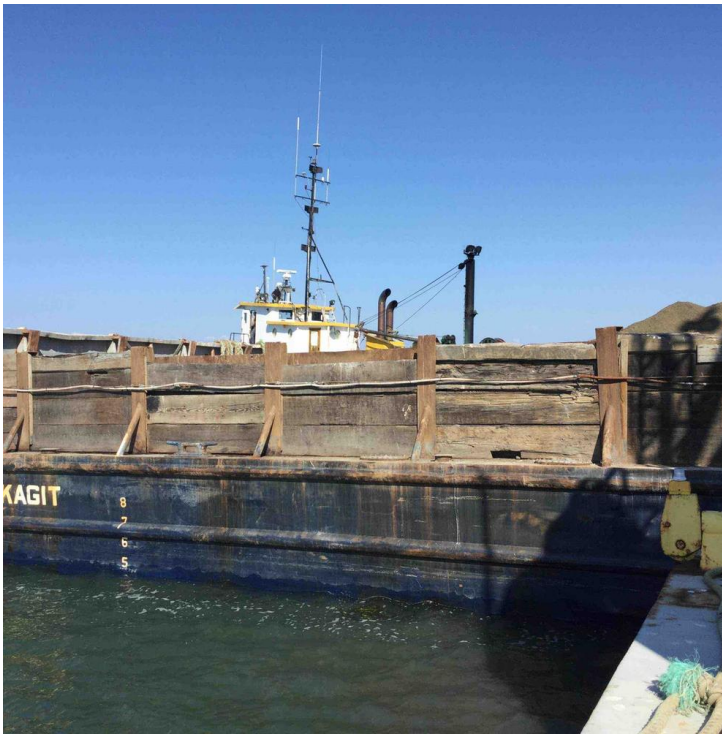
Equipment Used	Start Time	End Time
Survey vessel	16:00	22:56
Skagit	16:00	22:56
DB Snohomish	16:00	22:56
Skiff	16:00	22:56
Victory	16:00	22:56
4CY Rehandle	16:00	22:56

Daily Observations

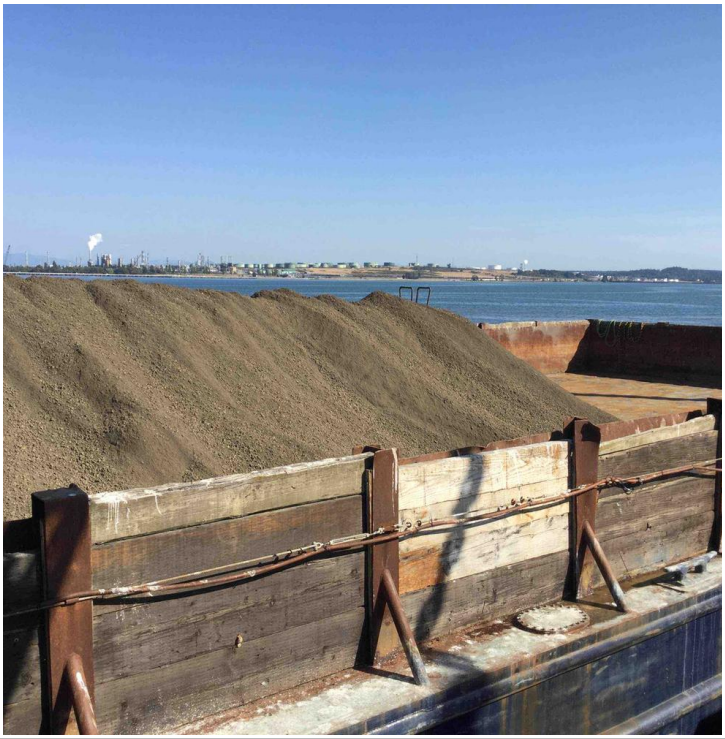
Time	Observations
16:00	Crew arrives on site for shore transport.
16:16	Arrive on DB Snohomish, tug arriving with Skagit upon arrival. Crew sets up barge to mobilize for day.
17:47	Pick up port spud to pivot and mobilize into site. Chad in survey vessel to facilitate navigation, Greg in Victory.
17:49	Pick up starboard spud.
18:05	Drop spuds to pivot.
18:34	Chris departs in survey vessel. Pick up port spud.
18:35	Pick up starboard spud. Tide gauge reads 7"65' at time of entry into eelgrass bed.
18:42	Noted civilians onshore along rip rap with nets and coolers, (possibly smelt dip-netting) nearby as approaching dredge area. Approx 10 ppl, 185' away, maybe 6 other groups/pairs along the shoreline running south.
18:47	Drop starboard spud to pivot stern to the west. Chris returns to DB Snohomish. Fishing groups along shoreline pack up and move south along shoreline further from dredge, one person remained.
18:49	Drop port spud.
18:56	Begin placement of backfill in southernmost region. 4CY Rehandle oriented perpendicular to boom. Bucket map will be drafted AFTER placement-- operator places material by taking a full "bite" of material, using sweeping motion with open bucket at the surface. Then, will spot-check depth using markings along the top of closed bucket and cable once material has been placed and will collect points at spots that have been checked.
19:16	Noted film/foam on surface waters due to placement. Appeared localized and flushed with tide.

Time	Observations
19:30	Noted change in operator procedures: after taking a bite of material, operator dips the bucket in the water vertically, lifts it out, and then proceeds to open and sweep across surface. Chris in crane with Greg to address clam vision error in readings.
19:32	Note: ACC appears to have missed flood-tide water quality monitoring event (30 min before high, started placing about 40 min prior). High tide in Guemes Channel predicted to be at 7:35. Will supplement with a slack tide reading.
19:44	Pick up spuds to move forward.
19:45	Drop spuds.
20:19	Chris departs for water quality monitoring.
20:34	Chris returns from monitoring. Pick up spuds to shift forward.
20:39	Drop starboard spud.
20:40	Drop port spud.
21:10	Chris departs for water quality monitoring.
21:37	Pick up spuds to mobilize out of site; Chris at stern post-water quality monitoring to facilitate navigation. Tide gauge reads 7.48' at time of departure.
21:47	Drop spuds. Approx 14' of water at spudding overnight location at time of spudding. Crew demobilizes for evening.
22:41	Depart dredge for shore transport.
23:00	Crew departs for day.

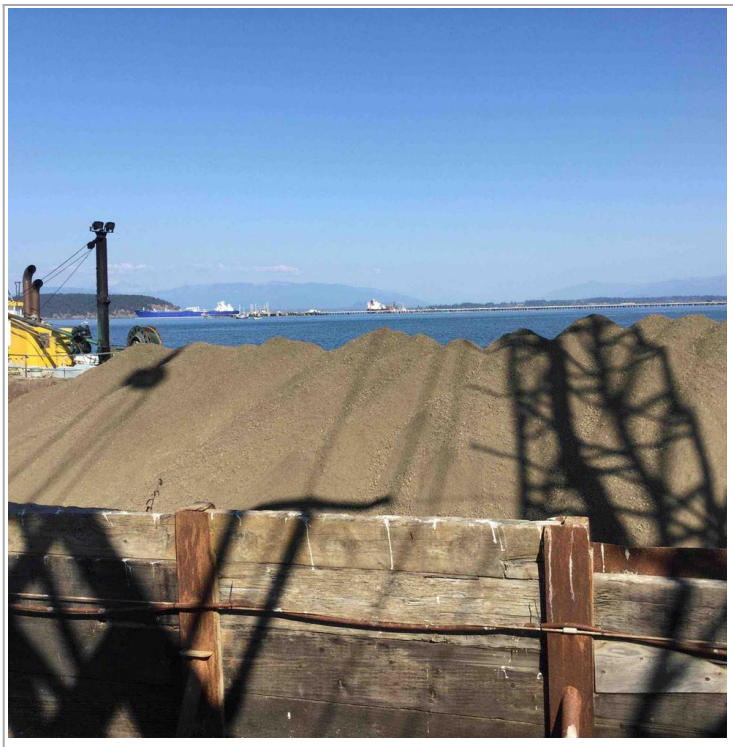
Photos



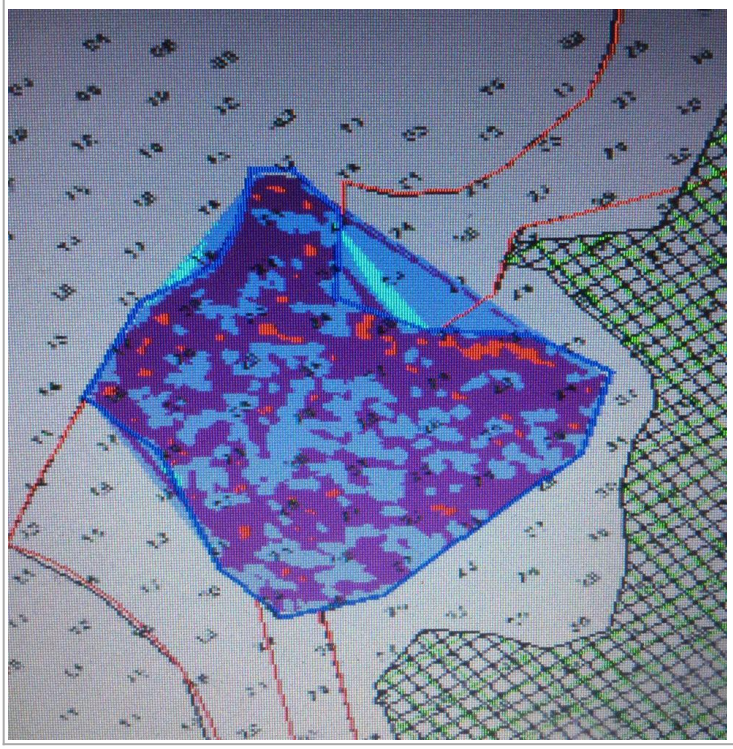
Start of day draft and barge name.



Material for backfill placement. (1 of 2)

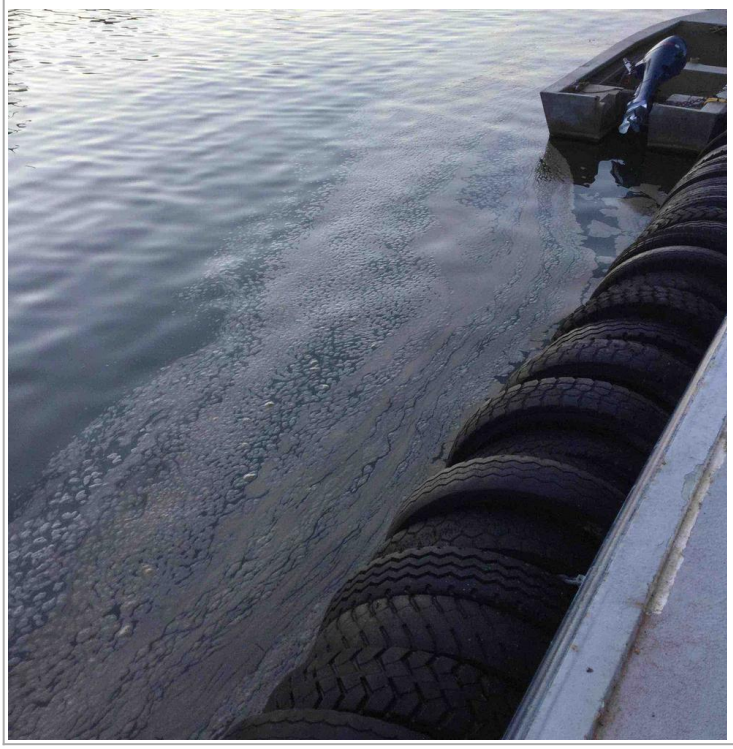


Material for backfill placement. (2 of 2)

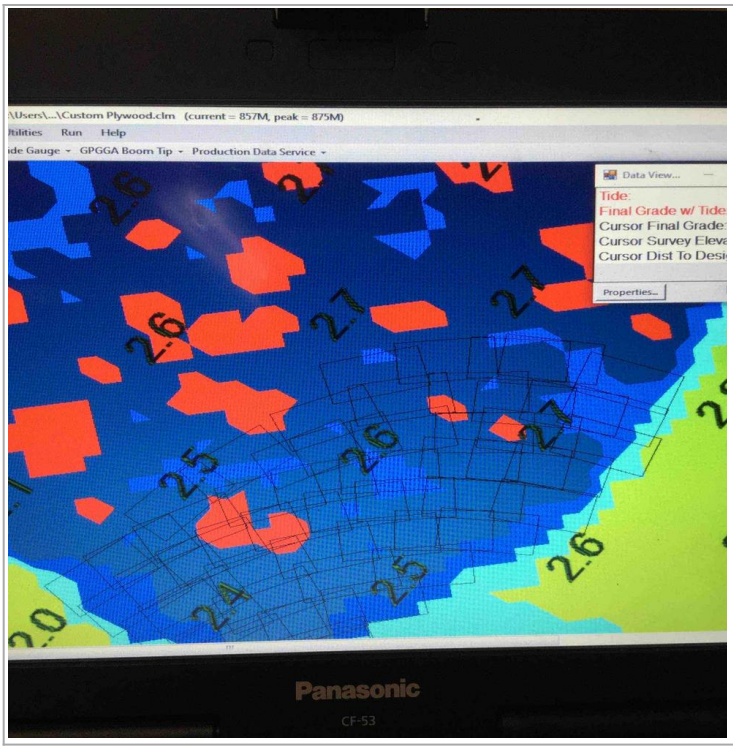


Dredge prism at start of placement (depth numbers not representative).

Placement of backfill in dredge prism using 4CY Rehandle. One end of "sweeping" motion with open bucket,



Noted film/foam on surface during placement. Appeared localized and flushed with tide.



Bucket map for day of placement (depth numbers are not representative). Red = possible overdredge?; Navy=at grade.

HC DFR with Crew and Equipment
Site: Custom Plywood Ph3

Date:	08/25/2021	H&A File Number:	1960000
Client:	Dept of Ecology	Project Manager:	John Bingham
Contractor:	American Construction Company	Purpose of Site Visit:	Backfill placement observations
Tailgate Meeting:	Not conducted/Attended	Weather:	Cloudy|Windy
Work Summary:	Continued backfill placement. Finished barge load.	Temperature:	70 | 57
Field Rep:	Jessica Blanchette	Remarks:	To resume placement Fri 8/27
Field Rep Time In:	16:00	Start Draft Level:	4.75
Field Rep Time Out:	22:02	End Draft Level:	2

Crew

Worker Name	Work Accomplished	Time In	Time Out
Greg Lybeek	Operator	16:00	22:02
Lester Jones	Project Supt	16:00	22:02
Arianne Fernandez	Dept of Ecology site visit.	17:00	22:02
Chad Morrison	Deck Hand Apprentice	16:00	22:02
Chris Raymond	Project Engineer	16:00	22:02

Equipment

Equipment Used	Start Time	End Time
Skagit	16:00	22:02
DB Snohomish	16:00	22:02
Skiff	16:00	22:02
Victory	16:00	22:02
Survey vessel	16:00	22:02
4CY Rehandle	16:00	22:02

Daily Observations

Time	Observations
16:00	Crew arrives on site for shore transport.
16:16	Arrive on DB Snohomish, tug arriving with Skagit upon arrival. Crew sets up barge to mobilize for day.
17:05	Lester departs to pick up Arianne from shore transport dock.
17:33	Crew return to barge to prepare for mobilizing into the site.
17:49	Arianne on site for Dept of Ecology site visit. Chad and Lester depart to adjust tide gauge.
18:12	Chris departs in survey vessel.
18:25	Pick up starboard spuds to mobilize into site. Tide gauge reads 6.97' at time of departure.
18:37	Drop spuds in southern dredge prism. Tide gauge malfunctioning (no reading a lower tide of 5.98, crew to fix.) Chris arrives back on dredge in survey vessel.
18:44	Begin backfill placement.
18:49	Lester and Chad depart in survey vessel to adjust tide gauge; Chris boards DB Snohomish to process and upload survey results.
19:07	Lester and Chad return to dredge in survey vessel.
19:36	Pick up port spud to pivot bow east.
19:42	Chris departs for water quality readings. JPB and Arianne taking closer look at surface film/ bubbles. Noted a sheety organic sheen layer below bubbles, may be providing enough tension to keep the bubbles spreading rather than popping/ intermixing. Foam likely made during deposition action of the bucket churning the surface.
19:49	Chris returns from water quality monitoring. All sample site appear to be below 5 NTUs.