



Eelgrass and Macroalgae Survey

Jetty Landing Boat Launch Connector Channel and North Marina Approach Dredging Project Everett, Washington

Prepared for
Port of Everett

December 14, 2021
Project No: 0202404-000 (1510060-01)



A division of Haley & Aldrich

Eelgrass and Macroalgae Survey

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and North Marina Approach Dredging Project
Everett, Washington**

**Prepared for
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Project No: 0202404-000 (1510060-01)**

**Prepared by
Hart Crowser, a division of Haley & Aldrich**

A handwritten signature in black ink, appearing to read "Joseph P. Krieter".

JOE KRIETER, M.S.

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A handwritten signature in black ink, appearing to read "Jessica Blanchette".

JESSICA BLANCHETTE

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Jessica.Blanchette@hartcrowser.com

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Jetty Landing Boat Launch Connector Channel and North Marina Approach Dredging Project Everett, Washington

1.0 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 Jetty Landing Boat Launch and North Approach Maintenance Dredging Project, located in Everett, Washington.

2.0 INTRODUCTION

The Port of Everett (Port) is proposing to dredge portions of a relatively new shoal, which has formed within the Snohomish River to maintain safe navigation access to their existing boat launch and around existing pier and dock structures. The shoal impedes vessel navigation to and from the Jetty Landing boat launch, North Guest Dock 8 (also referred to as the “Argosy Dock”), and the North Marina.

The Port of Everett Marina complex, including the South, Central, and North basins, is located adjacent to the lower Snohomish River at River Mile (RM) 0.8 to 1.3 in tidal portions of the river in Everett, Washington (Section 18, Township 29 North, Range 5 East) (Figure 1; Appendix A, Sheets 1 and 2). These basins contain the docks that make up the largest public marina on the West Coast, with 2,300 permanent and guest moorage slips for commercial and recreational tenants. The Port’s boat launch, adjacent the project site, is the largest in Washington State with 13 lanes that can be used to simultaneously launch trailered boats. The “project site” includes only the proposed nearshore dredge footprint (Figure 1; Appendix A, Sheets 1 and 2). This eelgrass and macroalgae survey was conducted to assess the project site for the presence of eelgrass. The survey also extended into an approximately 25-foot-buffer to capture the area immediately adjacent to the project site.



Figure 1 - Boat Launch Connector Channel and North Marina Approach Dredging Project Site and Vicinity.

3.0 SURVEY METHODOLOGY

Survey methods 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). Hart Crowser, a division of Haley & Aldrich (Hart Crowser), biologists conducted the survey from a 26 ft research vessel (R/V Catalyst). The eelgrass and macroalgae survey began using the Aqua-Vu 715c live video system and an experienced biologist to document the extent of eelgrass and macroalgae in the proposed project area. This footage and live view of the sediment surface was used to map any submerged vegetation and other subtidal and intertidal biota. A 25 foot by 25 foot mapping grid was created for the site, prior to the survey, loaded and displayed in real time using an integrated Simrad NSS evo3 system. This integrated system provides the operator a detailed chart, water depth, the vessels position and track using a differential Global Positioning System (GPS). This approach allowed for on-board annotation and had a geo-referenced resolution of less than 1 meter. GPS data collected on the Simrad system were exported for geographic information systems (GIS) mapping.

Macroalgae and eelgrass were recorded and translated to produce a map of survey extents, which includes a 25-foot buffer surrounding the dredge prism. Substrate, large invertebrate fauna and fish were also documented. Per WDFW interim guidance, survey tracks were oriented parallel to shore to detect the presence of eelgrass (Figure 2).

4.0 RESULTS

The video survey was conducted on July 14 and 15, 2021 using the R/V Catalyst. Weather conditions were partly cloudy with moderate and variable winds. The water column turbidity levels averaged 3.8 NTU, ranging from 1.2 NTU in the morning to 6.2 NTU in the late afternoon as boat traffic and currents increased. The majority of the survey occurred with an average visibility of 3 to 5 feet. Survey transects were maintained at an interval of 25 feet or less. Transects were repeated if vessel traffic, wind, or river currents caused vessel movement beyond the 25-foot interval target. The survey covered approximately 56,666 linear feet to include the dredge area and 25-foot buffer (Figure 2).

4.1 Benthos, Eelgrass, and Macroalgae

The gradient of the surveyed area from north to south was very gradual with elevations varying between –3 and –9 feet mean lower low water (MLLW) in the connector channel area, and –3 to –5 feet MLLW in the Argosy dock dredge area. Substrate elevations within the North Marina entrance dredge area were much more variable ranging from –7 to –18 feet MLLW.

The dredge prisms were characterized primarily by highly disturbed silty sand, which was the dominate substrate across this site (Appendix B, Photograph 1). Throughout the project area, there was a slight layer of detritus along the substrate as well as algae, wood debris, leaves, and some patches of shell hash. Macroalgae observed in the intertidal and shallow subtidal zone was predominately green ulvoid algae (*Ulva intestinalis*) with some patches of sugar kelp wrack draft (*Laminaria saccharina*), some of which may have been detached (Appendix B, Photographs 2 and 3).

No eelgrass was identified within the dredge prism. The survey delineated a small patch of eelgrass of approximately one square meter just outside of the dredge prism for the connector channel. Photograph 4, in Appendix B, shows the eelgrass within the survey area and the approximately 5 shoots that were present. Since this patch was visible from the video survey and was isolated to small area, the density we observed is estimated to be 5 shoots/square meter. The eelgrass within this patch is approximately 25 feet outside of the dredge prism near the entrance to the Jetty Landing boat launch (Figure 2).

The southeastern corner of the Argosy dock dredge area was more turbid due to the Argosy Cruise activities and tide action at the time of our survey. Video survey in the area identified a single green shoot in that was only observed once despite revisiting the area. The movement of the shoot in the water during the survey in relation to the water and camera suggests it may have been detached and clinging to the mussels below the dock or was flotsam wrapped around the camera cable. Pieces of eelgrass were observed floating along the water surface throughout the dredge area and entangled in the mussels and barnacles attached to the Jetty Landing boat launch docks.

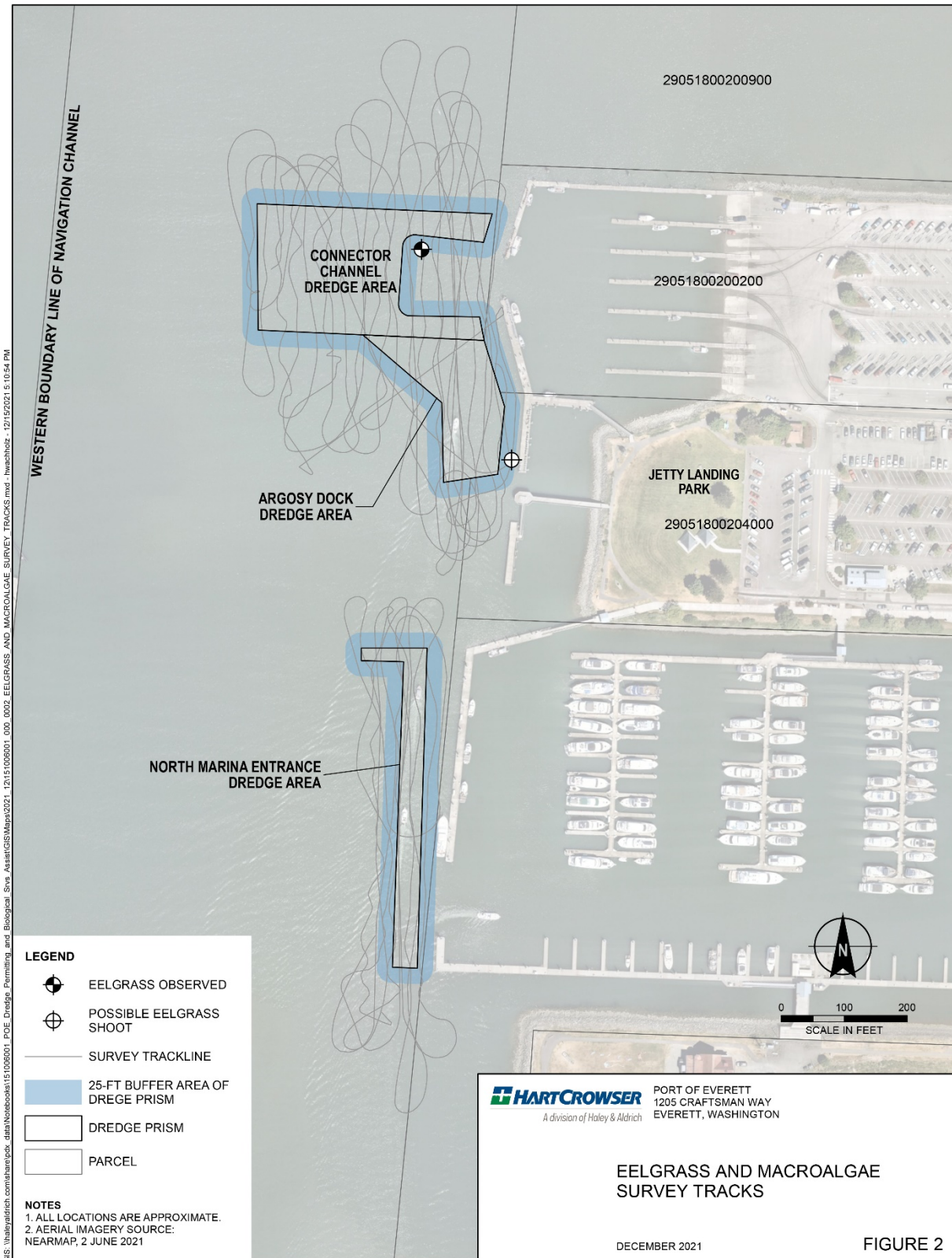


Figure 2 - Survey tracklines for the connector channel, Argosy dock, and North Marina approach.

4.2 Invertebrate Fauna and Fish

Large mobile invertebrates were numerous throughout the site but low in diversity; species sighted were limited to Dungeness crab (*Metacarcinus magister*; Appendix B, Photograph 5). Shell hash from large clams were distributed throughout the site but the survey team did not detect presence of siphons or whole clams for positive identification.

A considerable school of hundreds of small fish were present on the western portion of the North Marina entrance, likely consisting of Shiner Perch (*Cymatogaster aggregata*; Appendix B, Photograph 6).

4.3 Anthropogenic Elements

The survey site is heavily used by recreational and commercial vessels that use the 10th Street boat launch and North Marina. During our survey, we did need to change course to maneuver around several vessels transiting the area. Survey timing was adjusted to accommodate the movements of the Argosy Jetty Island ferry. Water clarity noticeably degraded throughout the day as vessel traffic and water velocity increased.

A large, hardened, feature was noted near the entrance to the North Marina in a depression where the depth drops to over -15 feet MLLW. The feature clearly influences the local scour and fill regime near the entrance of the North Marina. The survey team was unable to produce a clear image of the feature at the time of survey.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The majority of the project site consists of highly disturbed silty sand over a gradual bottom gradient in the connector channel and Argosy dock area. The North Marina entrance is deeper with silty sand distributed over a highly variable bottom elevation, particularly on the southern end of the dredge prism. Ulvoids and brown algae were dominant in the subtidal zone with one small patch of eelgrass adjacent to the connector channel dredge prism. The project area is used by invertebrate and vertebrate fauna, almost exclusively by Dungeness crab and Shiner Perch during this survey. No eelgrass was identified within the dredge prism.

The size of the eelgrass patch, adjacent to the connector channel dredge prism, is limited to a small number of shoots outside of the area planned for the next dredging cycle. It is our understanding that no further survey is necessary to delineate the eelgrass as it is limited to a small area that was visible in its entirety. This small area is located within the previously authorized 10th Street Boat Launch maintenance dredging area (USACE 2018, USACE 2021a, USACE 2021b).

6.0 REFERENCES

Washington Department of Fish and Wildlife (WDFW), 2008. Eelgrass/Macroalgae Habitat Interim Survey Guidelines. Available at: <http://wdfw.wa.gov/publications/00714/wdfw00714.pdf>.

USACE 2018. Permit No. NWS-2017-239. Port of Everett (10th Street Maintenance Dredging). June 29, 2018.

USACE 2021a. Permit No. NWS-2017-239. Port of Everett (10th Street Maintenance Dredging). Permit Extension. June 29, 2021.

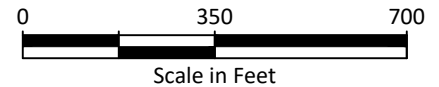
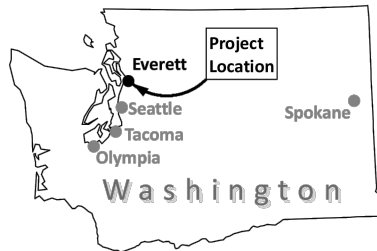
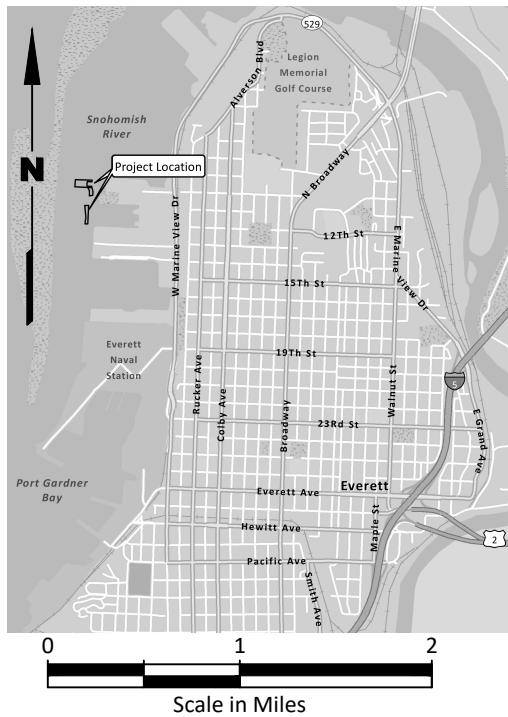
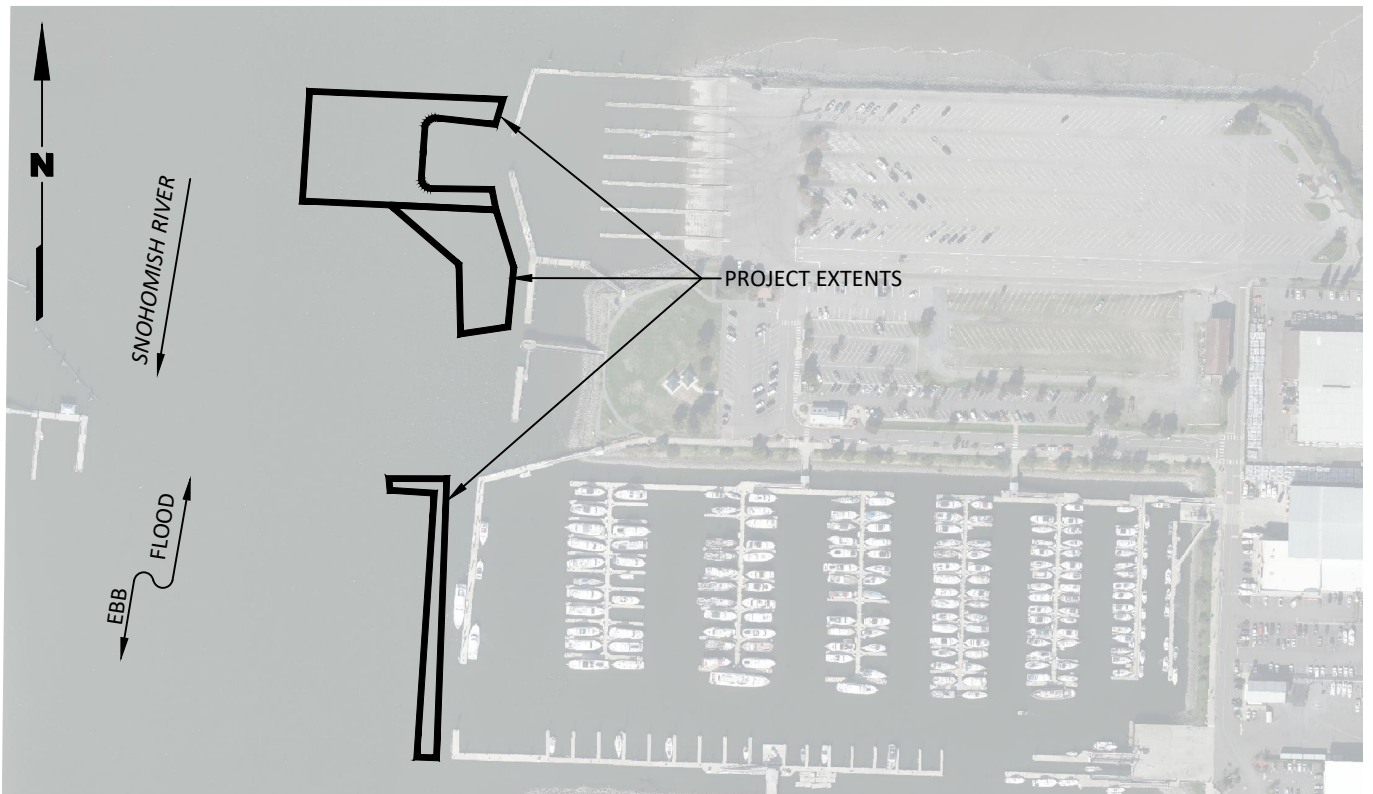
USACE 2021b. Permit No. NWS-2017-239. Port of Everett (10th Street Maintenance Dredging). Permit Modification. December 6, 2021.

\\haleyaldrich.com\share\pdx_data\Notebooks\151006001_POE_Dredge_Permitting_and_Biological_Srvs_Assist\Deliverables\Reports\FINAL_POE_Macro_Veg_Report\2021_1214_HCHA_POEMacroVegReport_F.docx

APPENDIX A

Project Drawings

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VERTICAL DATUM:

ELEVATION DATUM FOR THIS PROJECT IS 0.0' MEAN LOWER LOW WATER (MLLW)

BASED ON NOAA'S PUBLICATION SHEET (WASHINGTON 944-7659), DATED 05-27-2003, THE RELATIONSHIP BETWEEN NGVD 29 AND MLLW DATUM FOR EVERETT, POSSESSION SOUND, FOR THE TIDAL EPOCH 1983-2001 IS AS FOLLOWS:

MEAN HIGHER HIGH WATER (MHHW) = +11.09
MEAN HIGH WATER (MHW) = +10.21
MEAN LOW WATER (MLW) = +2.80
NAVD 1988 = +2.03
MEAN LOWER LOW WATER (MLLW) = 0.0

PURPOSE:
DREDGING TO ALLOW FOR CONTINUED USE OF EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

PROJECT VICINITY

IN: PORT OF EVERETT CONNECTOR CHANNEL, PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

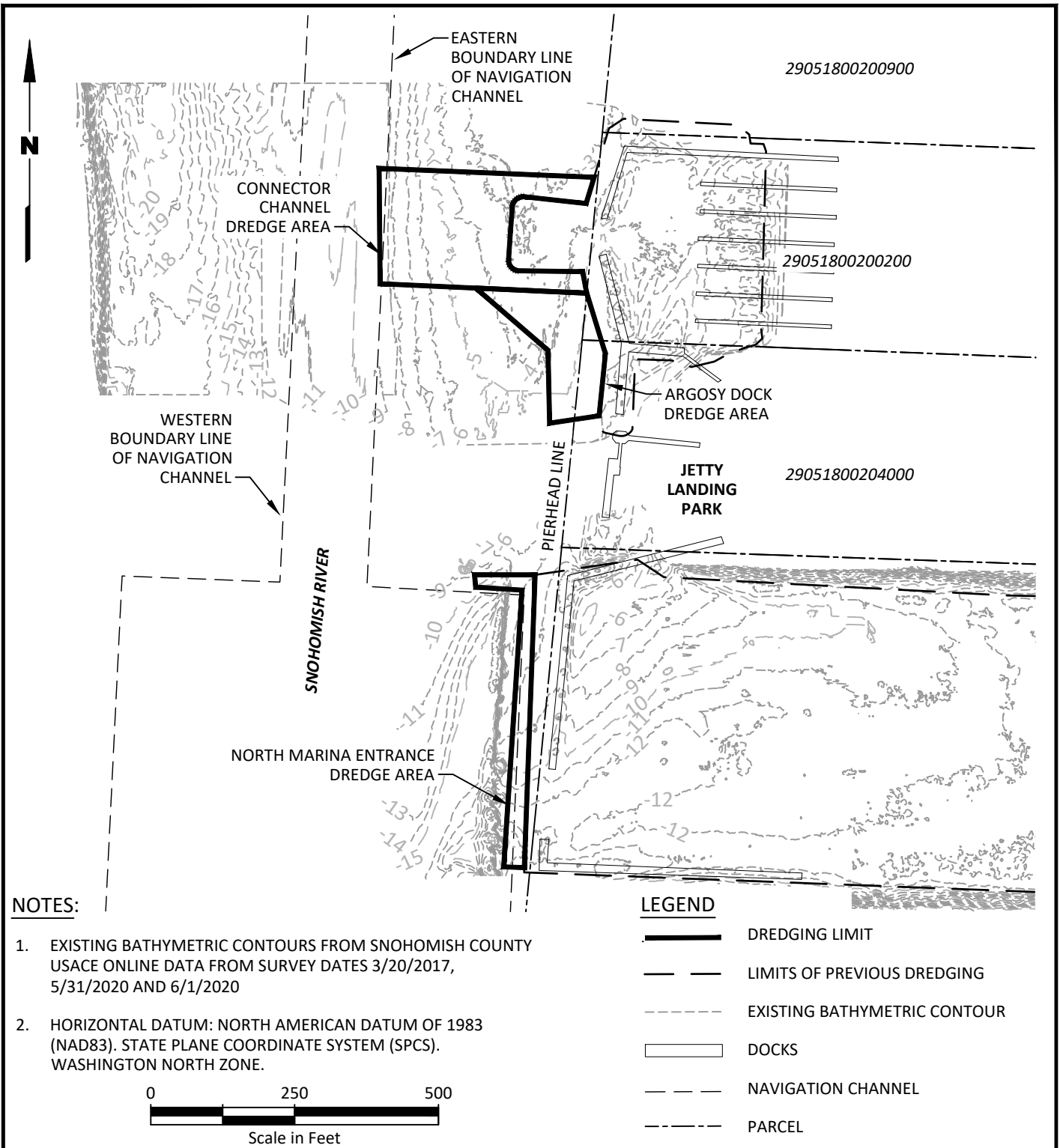
COUNTY OF: SNOHOMISH

STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: NOVEMBER 2021

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PURPOSE:
DREDGING TO ALLOW FOR CONTINUED USE OF EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

- WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

EXISTING CONDITIONS

IN: PORT OF EVERETT CONNECTOR CHANNEL, PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

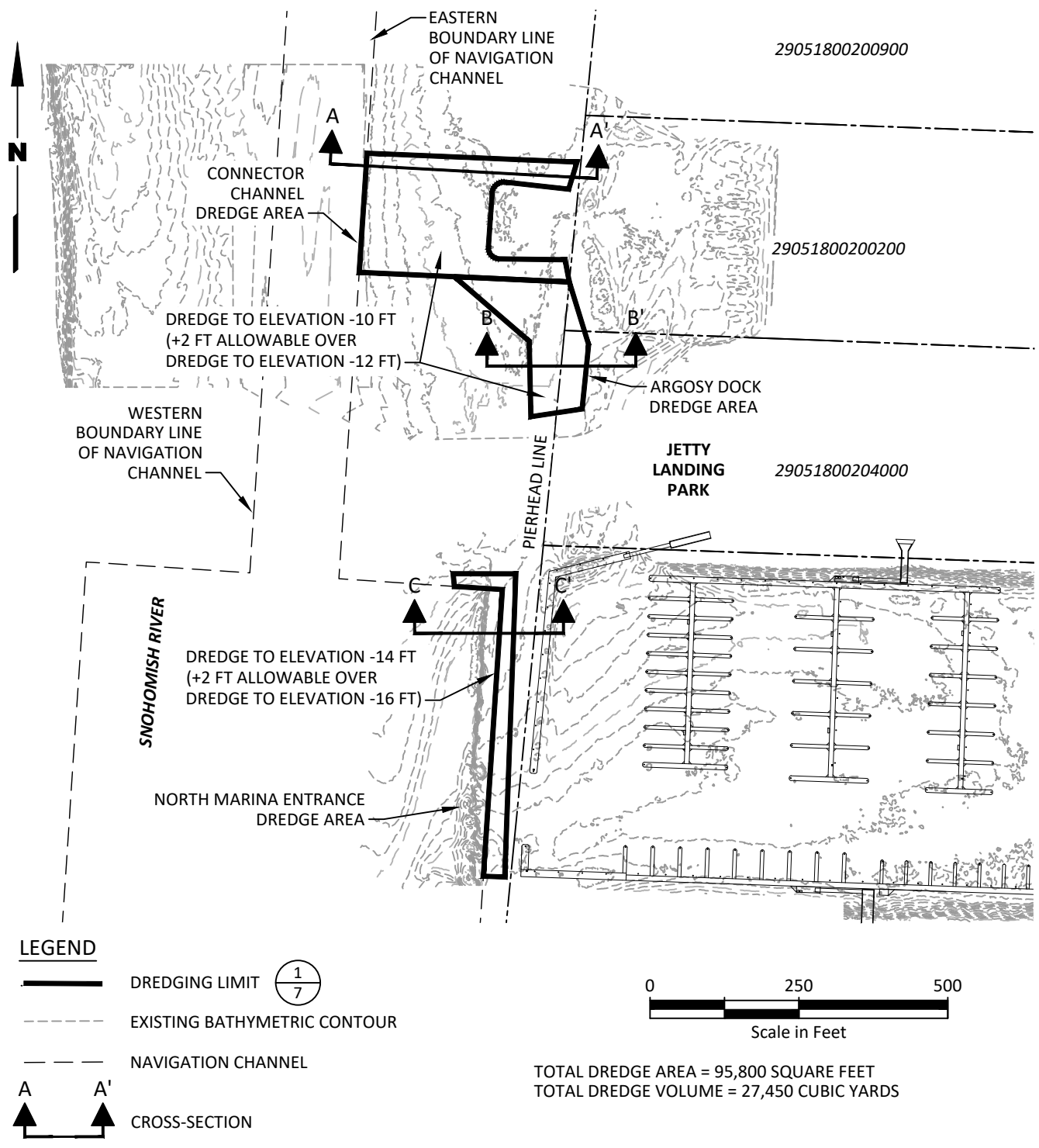
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: NOVEMBER 2021

SHEET: 2 OF 8

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PURPOSE:
DREDGING TO ALLOW FOR CONTINUED USE OF EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

- WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

PROPOSED DREDGING

IN: PORT OF EVERETT CONNECTOR CHANNEL, PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

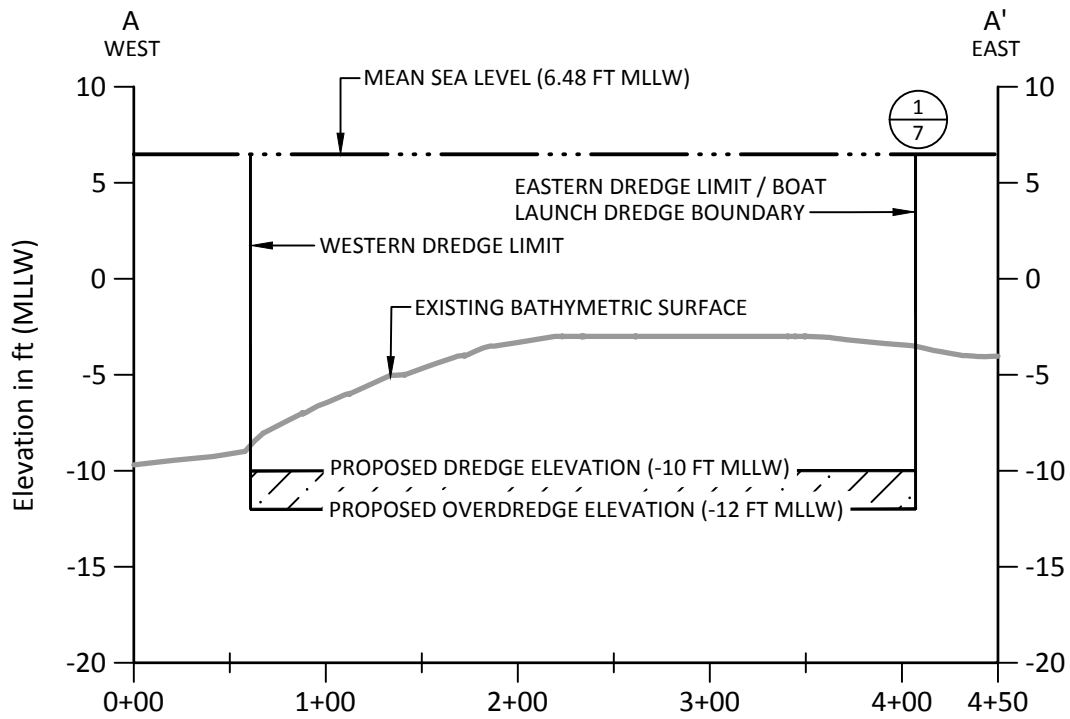
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: NOVEMBER 2021

SHEET: 3 OF 8

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Profile View: Alignment A-A'

Horizontal Scale in Feet: 1"=100'

Vertical Scale in Feet: 1" = 10'



PURPOSE:
DREDGING TO ALLOW FOR CONTINUED USE OF
EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL
RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

CROSS SECTION A-A'

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

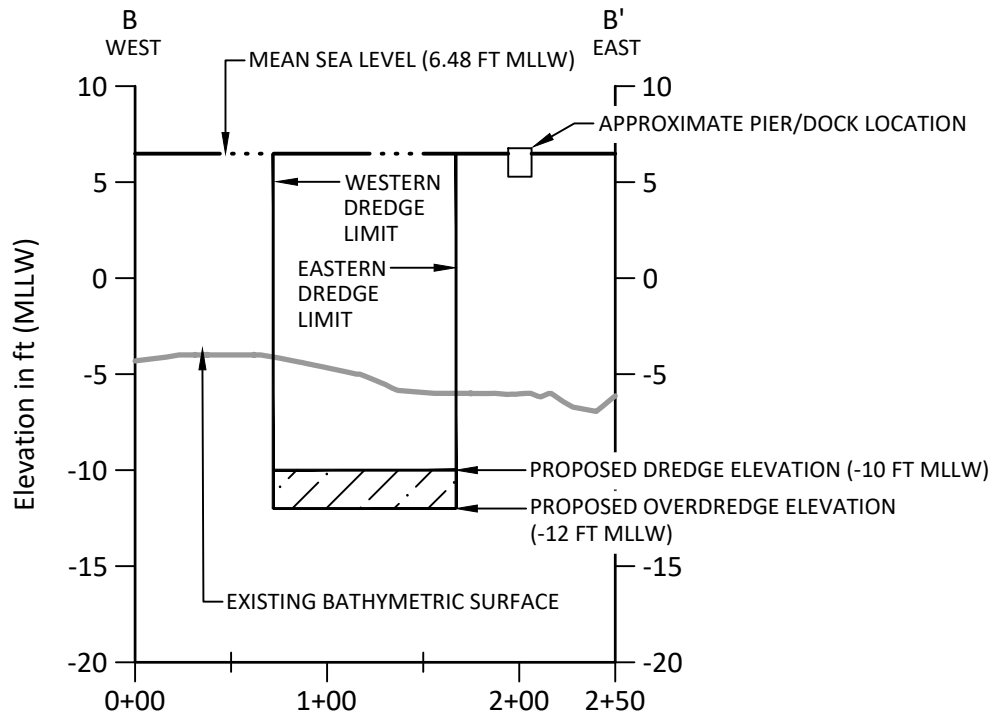
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APPLICATION BY: PORT OF EVERETT

DATE: NOVEMBER 2021

SHEET: 4 OF 8

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Profile View: Alignment B-B'

Horizontal Scale in Feet: 1"=100'

Vertical Scale in Feet: 1" = 10'



PURPOSE:
DREDGING TO ALLOW FOR CONTINUED USE OF
EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL
RESOURCES

PORT OF EVERETT

**CONNECTOR CHANNEL
GENERAL DREDGING**

**PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021**

CROSS SECTION B-B'

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

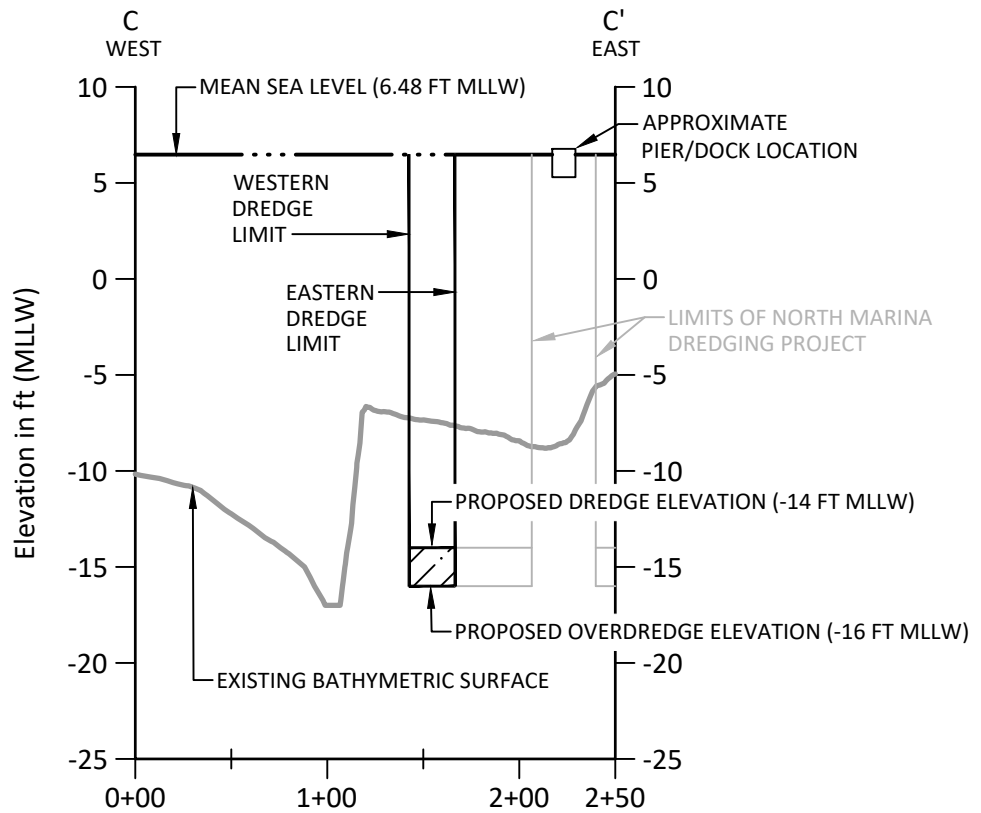
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: NOVEMBER 2021

SHEET: 5 OF 8

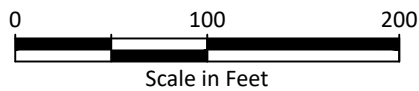
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Profile View: Alignment C-C'

Horizontal Scale in Feet: 1"=100'

Vertical Scale in Feet: 1" = 10'



PURPOSE:
DREDGING TO ALLOW FOR CONTINUED USE OF
EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL
RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

CROSS SECTION C-C'

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

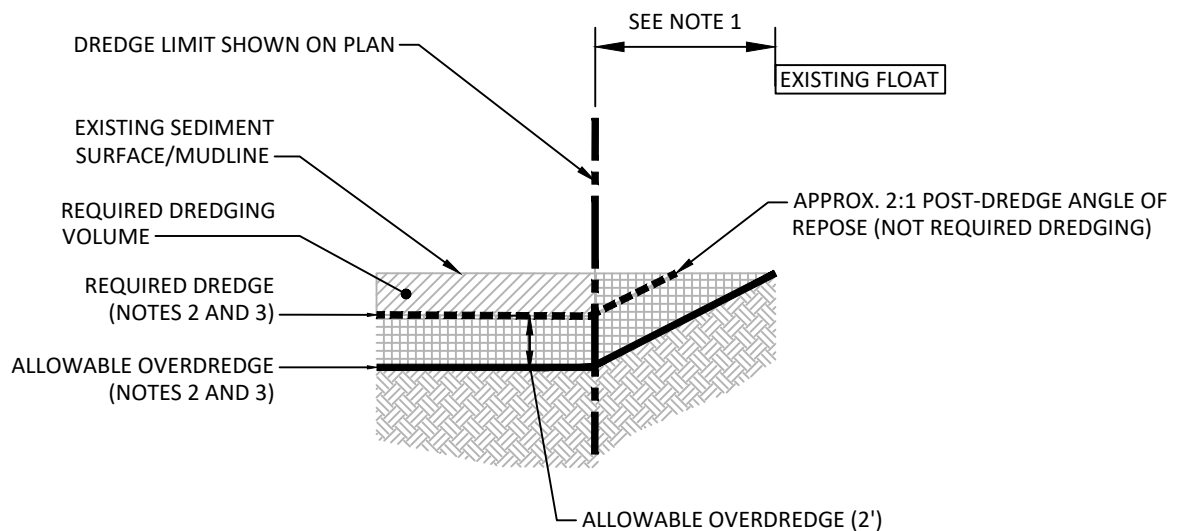
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: NOVEMBER 2021

SHEET: 6 OF 8

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1
3 TYPICAL DREDGE DETAIL
NO SCALE

NOTES:

1. REQUIRED MINIMUM SEPARATION TO DREDGE BOUNDARY IS 2 FT FROM EXISTING FLOATS AND STRUCTURES.
2. A DREDGE DEPTH OF -10 FT MLLW IS REQUIRED FOR THE CONNECTOR CHANNEL AND ARGOSY BERTHING AREAS, WITH AN ALLOWABLE OVERDREDGE OF -12 FT MLLW.
3. A DREDGE DEPTH OF -14 FT MLLW IS REQUIRED FOR THE NORTH MARINA ENTRANCE DREDGE AREA, WITH AN ALLOWABLE OVERDREDGE OF -16 FT MLLW.

PURPOSE:
DREDGING TO ALLOW FOR CONTINUED USE OF EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

PROPOSED DREDGING
DETAIL

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

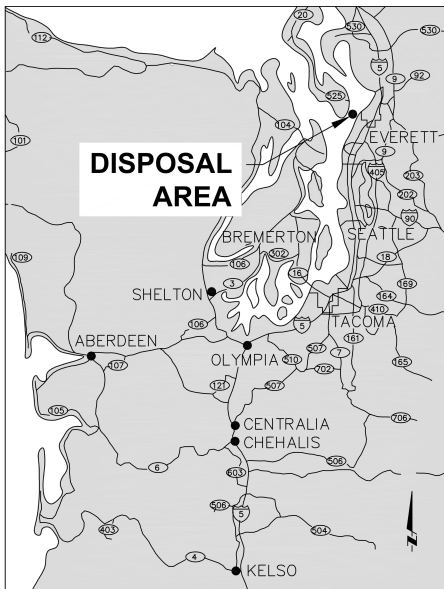
COUNTY OF: SNOHOMISH

STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

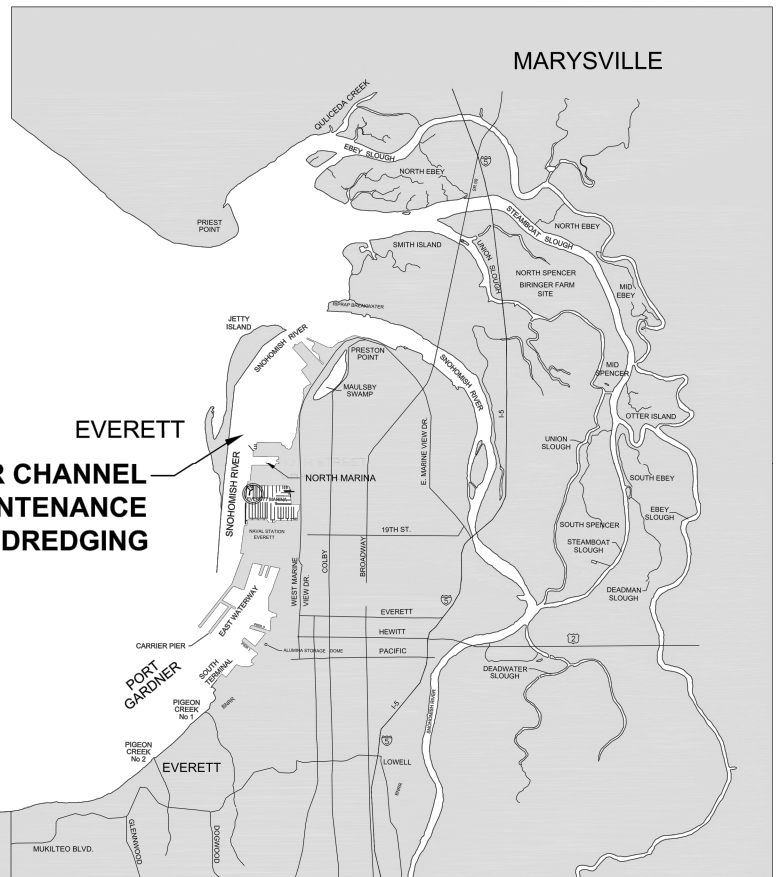
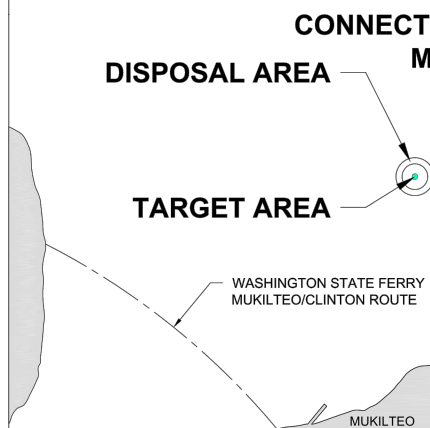
DATE: NOVEMBER 2021

SHEET: 7 OF 8



VICINITY MAP NO SCALE

PORT GARDNER DISPOSAL SITE
 TYPE: NONDISPERSIVE
 AREA: 318 ACRES DEPTH: 420 FT.
 SITE DIMENSIONS: 4200 FT. BY 4200 FT. CIRCULAR
 DISPOSAL ZONE: 1800 FT. DIAMETER
 TARGET AREA: 1200 FT. DIAMETER
 BARGE POSITIONING METHOD: GPS
 NAD27 LOCATION: LAT 47° 58.86' LONG 122° 16.67'
 NAD83 LOCATION: LAT 47° 58.86' LONG 122° 16.74'



VICINITY MAP NO SCALE

Note

1. REPRINTED FROM PORT OF EVERETT MARINA MAINTENANCE DREDGING PHASE I RECORD DRAWING PLAN SET BY DALTON, OLMSTED & FUGLEVAND, INC. DATED APRIL 30, 2012

PURPOSE:
 DREDGING TO ALLOW FOR CONTINUED USE OF EXISTING FACILITIES

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT

CONNECTOR CHANNEL GENERAL DREDGING

PORT OF EVERETT
 1205 CRAFTSMAN WAY, SUITE 200
 EVERETT, WASHINGTON 98021

OPEN WATER DISPOSAL SITE

IN: PORT OF EVERETT CONNECTOR CHANNEL, PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

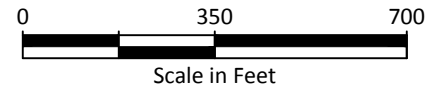
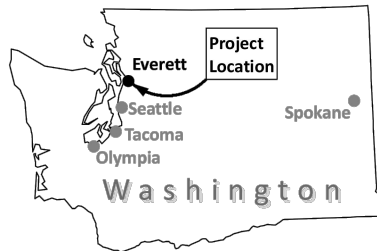
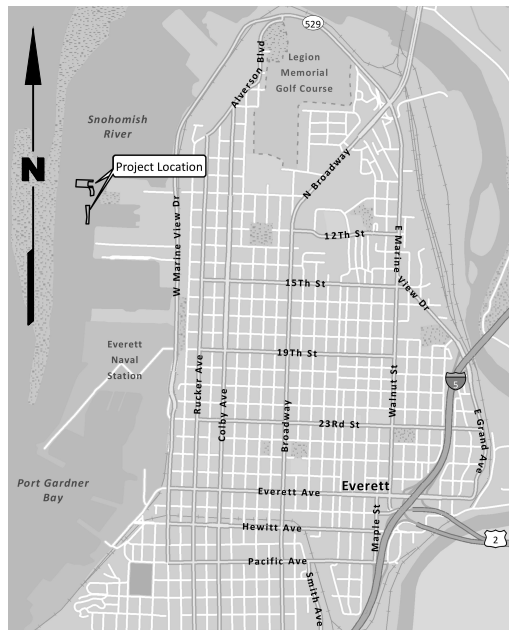
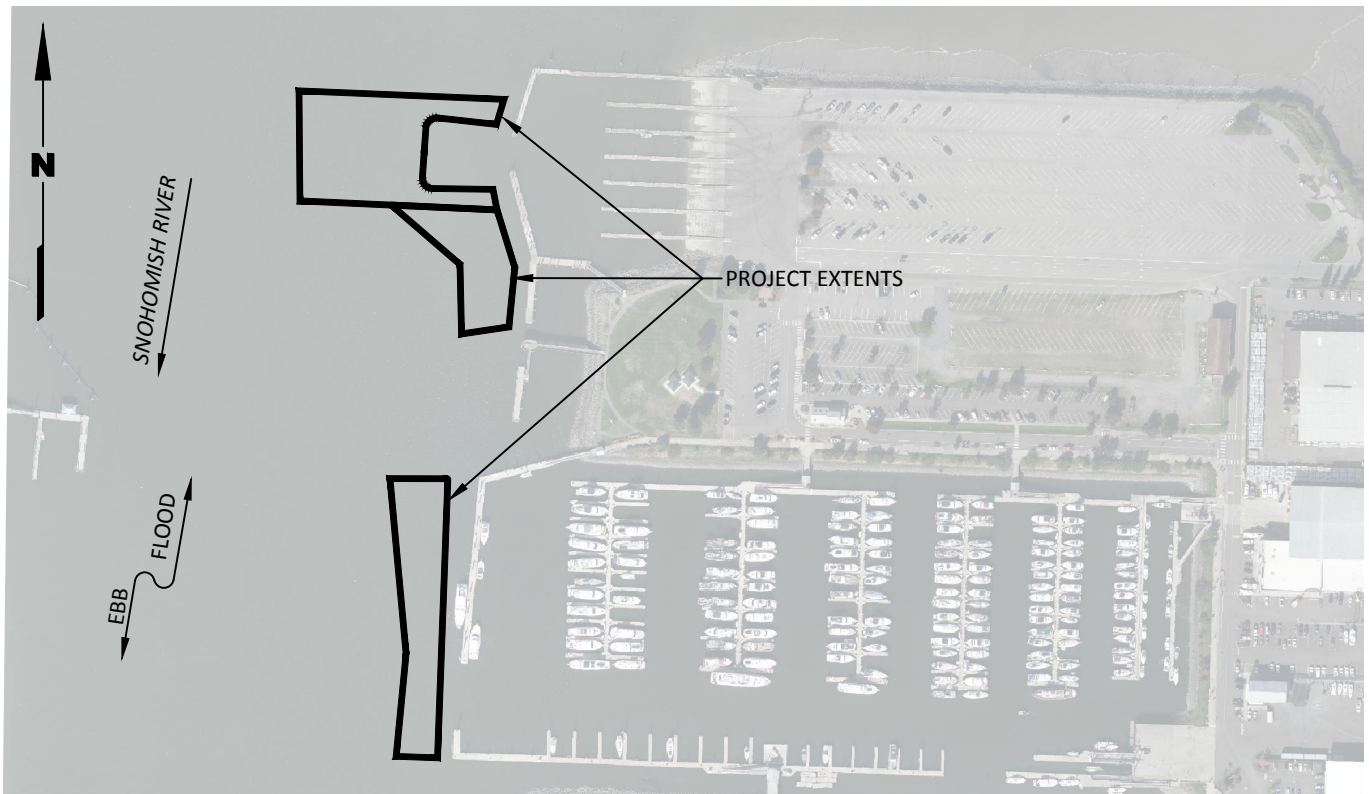
COUNTY OF: SNOHOMISH

STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: NOVEMBER 2021

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VERTICAL DATUM:

ELEVATION DATUM FOR THIS PROJECT IS 0.0' MEAN LOWER LOW WATER (MLLW)

BASED ON NOAA'S PUBLICATION SHEET (WASHINGTON 944-7659), DATED 05-27-2003, THE RELATIONSHIP BETWEEN NGVD 29 AND MLLW DATUM FOR EVERETT, POSSESSION SOUND, FOR THE TIDAL EPOCH 1983-2001 IS AS FOLLOWS:

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MEAN HIGH WATER (MHW) = +10.21
MEAN LOW WATER (MLW) = +2.80
NAVD 1988 = +2.03
MEAN LOWER LOW WATER (MLLW) = 0.0

DRAFT

PURPOSE:
MAINTENANCE DREDGING

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL MAINTENANCE DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

PROJECT VICINITY

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

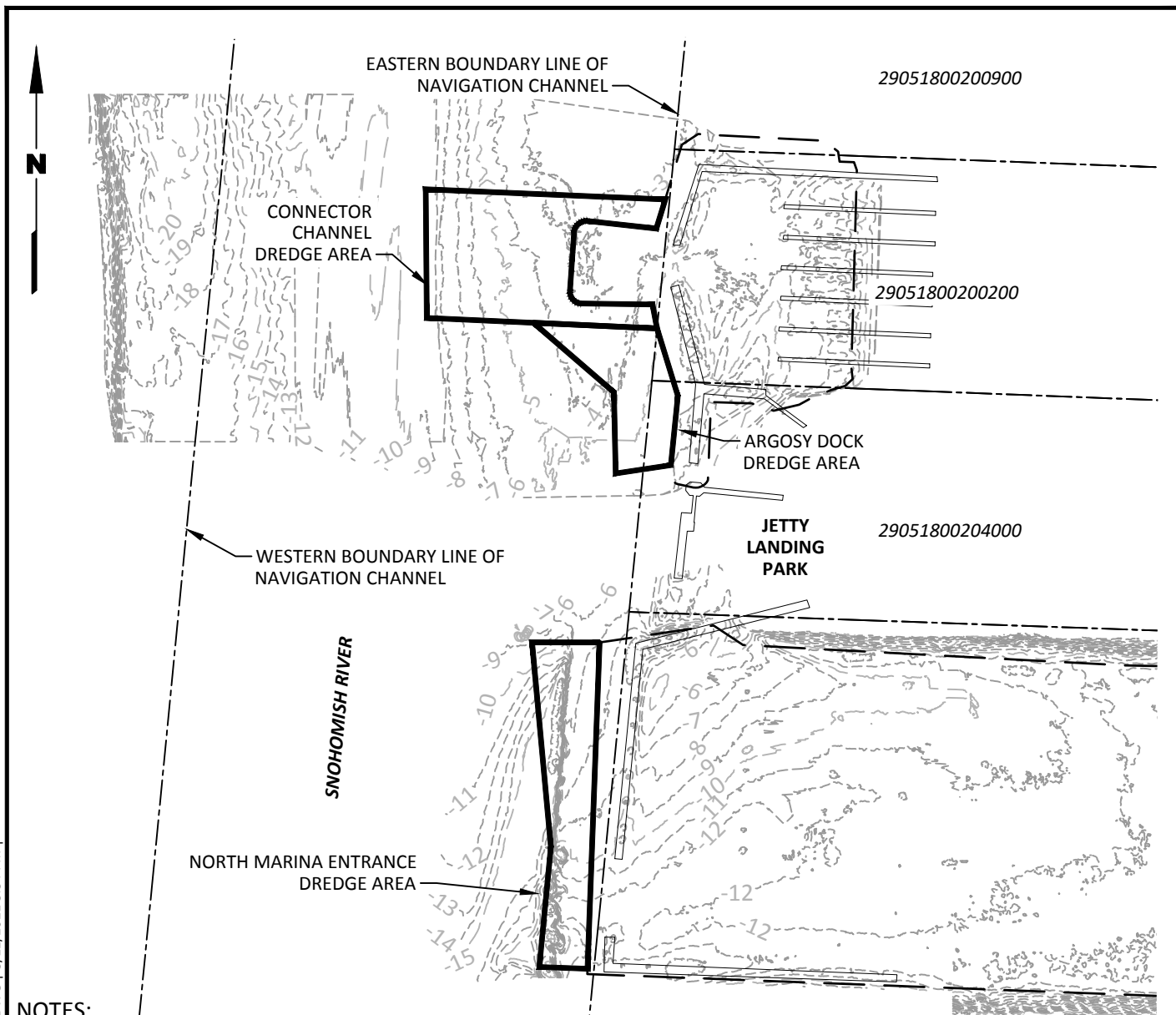
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: MARCH 2021

SHEET: 1 OF 8

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NOTES:

1. EXISTING BATHYMETRIC CONTOURS FROM SNOHOMISH COUNTY USACE ONLINE DATA FROM SURVEY DATES 3/20/2017, 5/31/2020 AND 6/1/2020
2. HORIZONTAL DATUM: NORTH AMERICAN DATUM OF 1983 (NAD83). STATE PLANE COORDINATE SYSTEM (SPCS). WASHINGTON NORTH ZONE.



LEGEND

- DREDGING LIMIT
- LIMITS OF PREVIOUS DREDGING
- EXISTING BATHYMETRIC CONTOUR
- DOCKS
- PARCEL

DRAFT

PURPOSE:
MAINTENANCE DREDGING

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL MAINTENANCE DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

EXISTING CONDITIONS

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

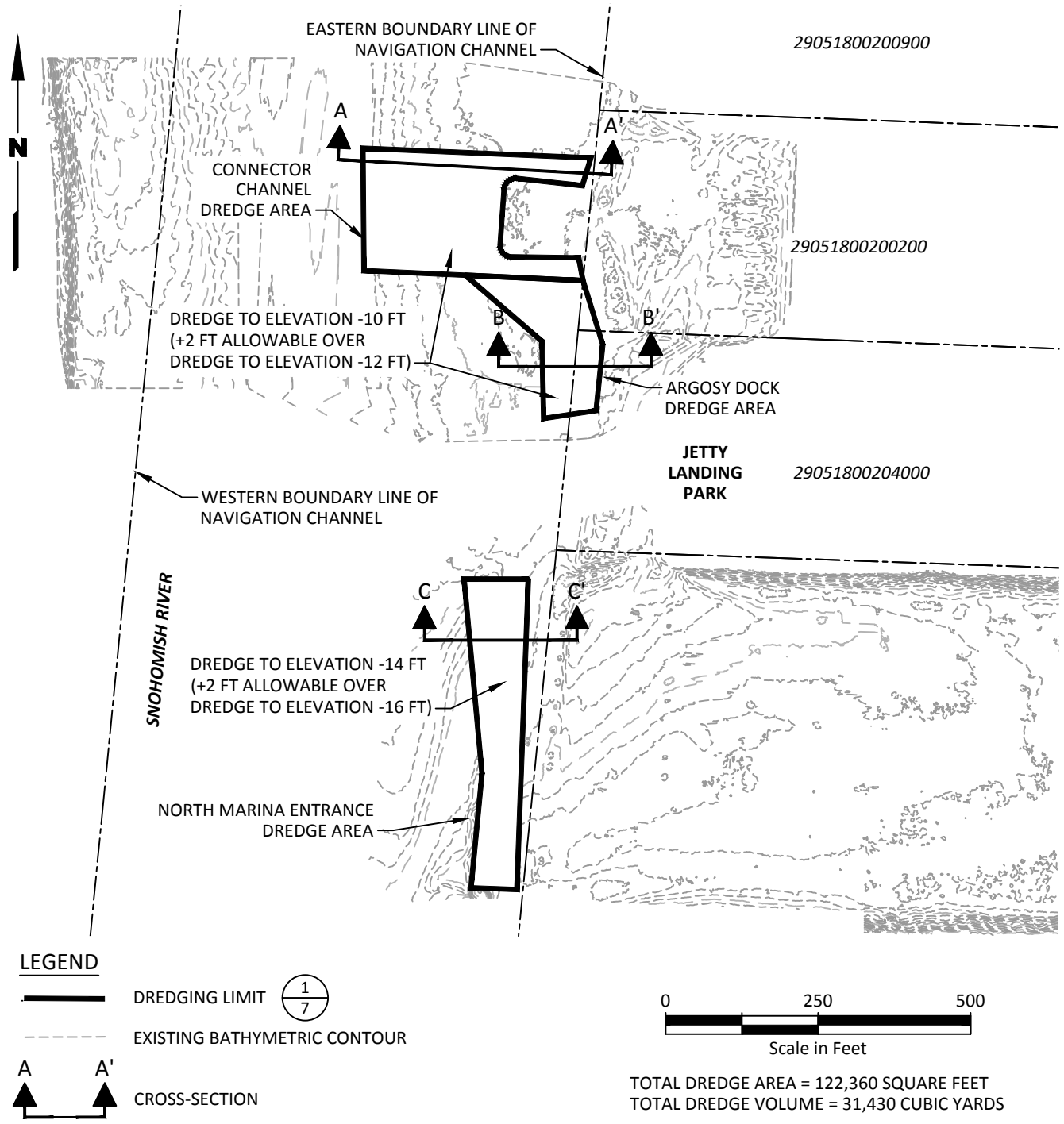
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: MARCH 2021

SHEET: 2 OF 8

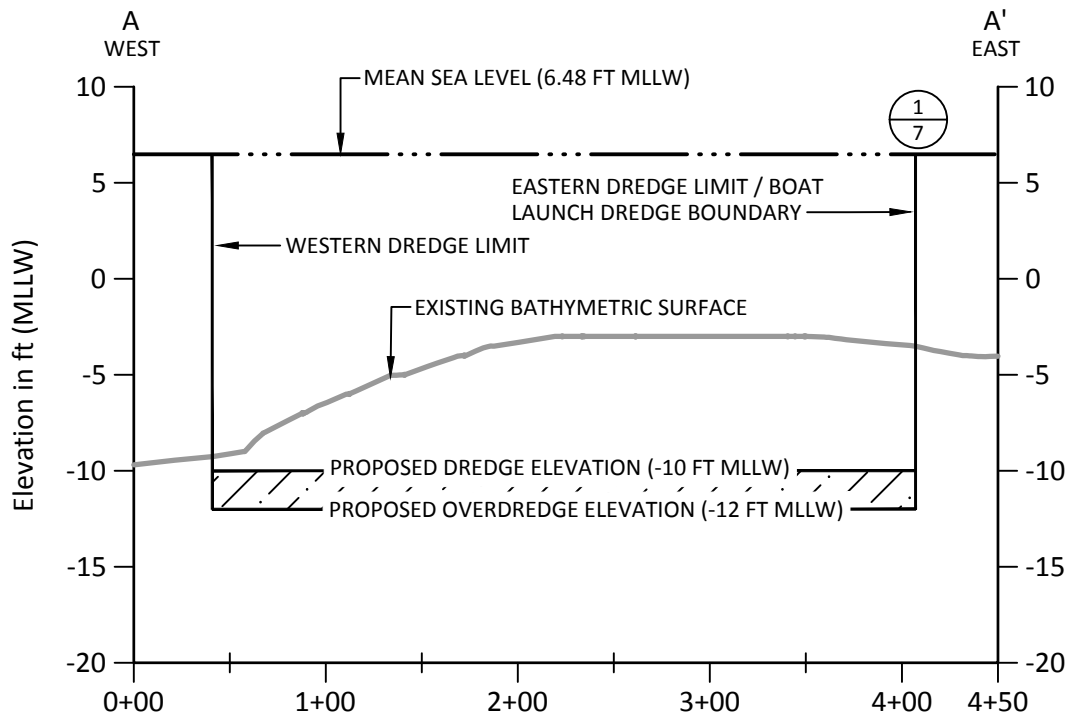
\\EDMGIS03\GRAPHICS\PROJECTS\1921\001\030 CONNECTOR CHANNEL\ARPA\ PROP DREDGE.DWG | 3/12/2021 3:34 PM |



DRAFT

<p>PURPOSE: MAINTENANCE DREDGING</p> <p>DATUM: MLLW= 0.0'</p> <p>TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E</p> <p>ADJACENT PROPERTY OWNERS: 1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES</p>	<p>PORT OF EVERETT</p> <p>CONNECTOR CHANNEL GENERAL MAINTENANCE DREDGING</p> <p>PORT OF EVERETT 1205 CRAFTSMAN WAY, SUITE 200 EVERETT, WASHINGTON 98021</p> <p>PROPOSED DREDGING</p>	<p>IN: PORT OF EVERETT CONNECTOR CHANNEL, PORT GARDNER; SNOHOMISH RIVER CHANNEL</p> <p>AT: PORT OF EVERETT</p> <p>COUNTY OF: SNOHOMISH</p> <p>STATE OF: WASHINGTON</p> <p>APPLICATION BY: PORT OF EVERETT</p> <p>DATE: MARCH 2021</p> <p>SHEET: 3 OF 8</p>
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Profile View: Alignment A-A'

Horizontal Scale in Feet: 1"=100'

Vertical Scale in Feet: 1" = 10'



DRAFT

PURPOSE:
MAINTENANCE DREDGING

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL MAINTENANCE DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

CROSS SECTION A-A'

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

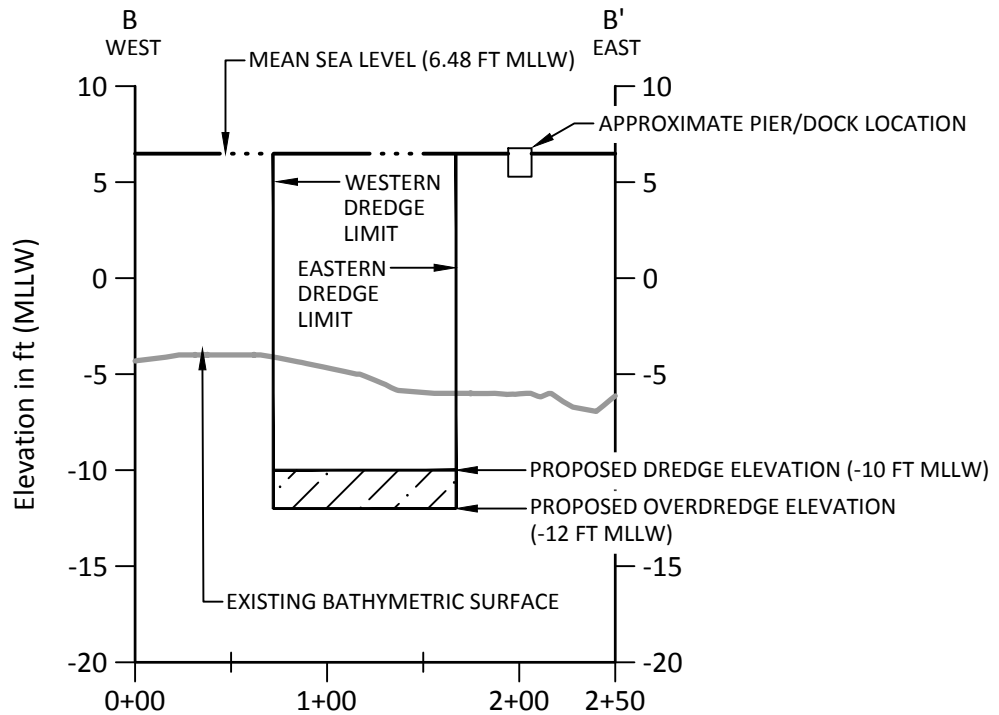
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: MARCH 2021

SHEET: 4 OF 8

\\EDMGIS03\GRAPHICS\PROJECTS\1921\001\030 CONNECTOR CHANNEL\JARPA\ PROP DREDGE.DWG | 3/12/2021 3:34 PM |



Profile View: Alignment B-B'

Horizontal Scale in Feet: 1"=100'

Vertical Scale in Feet: 1" = 10'



DRAFT

PURPOSE:
MAINTENANCE DREDGING

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL MAINTENANCE DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

CROSS SECTION B-B'

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

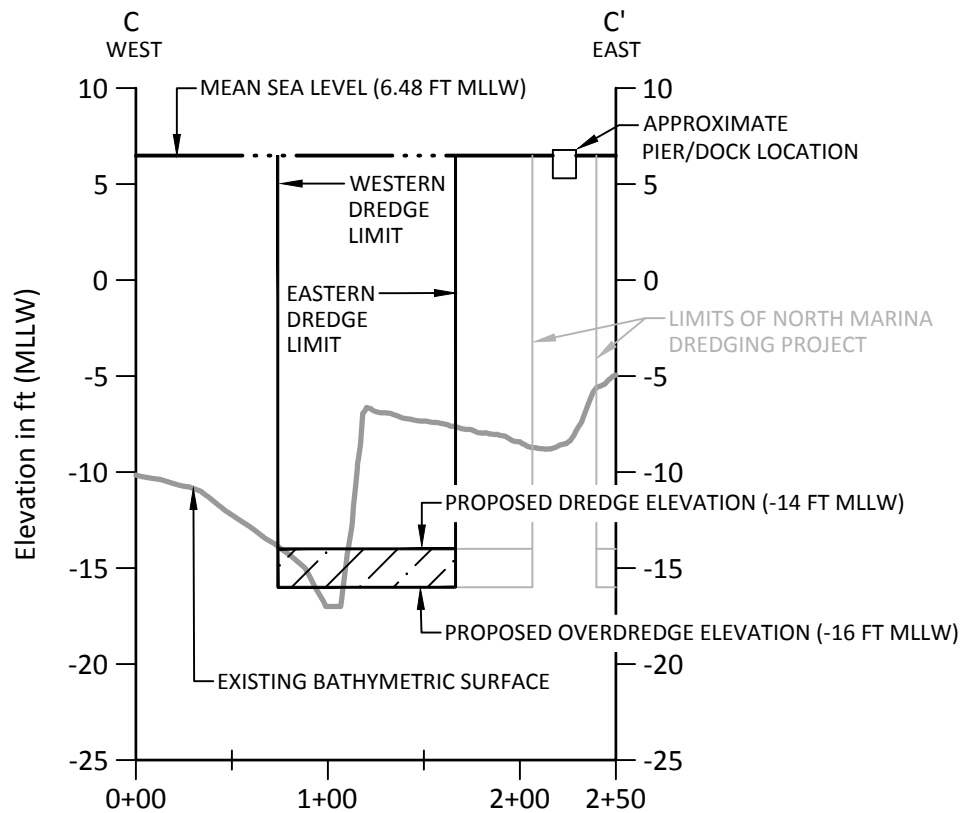
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: MARCH 2021

SHEET: 5 OF 8

\\EDMGIS03\GRAPHICS\PROJECTS\1921\001\030 CONNECTOR CHANNEL\JARPA\ PROP DREDGE.DWG | 3/12/2021 3:34 PM |



DRAFT

PURPOSE:
MAINTENANCE DREDGING

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL MAINTENANCE DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

CROSS SECTION C-C'

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

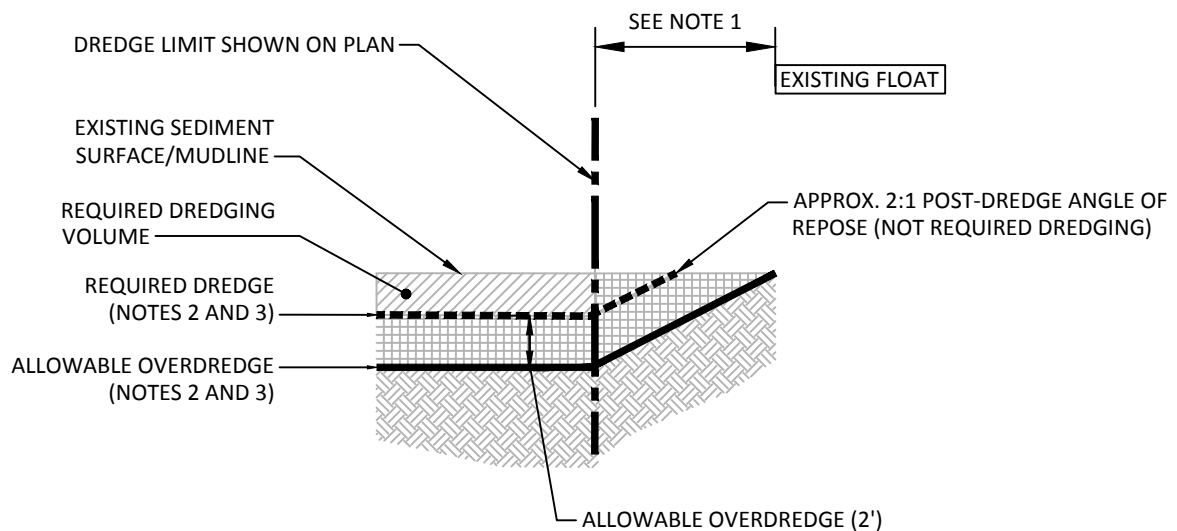
STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: MARCH 2021

SHEET: 6 OF 8

\\EDMGIS03\GRAPHICS\PROJECTS\1921\001\030 CONNECTOR CHANNEL\JARPA\ PROP DREDGE.DWG | 3/12/2021 3:34 PM |



1
3 TYPICAL DREDGE DETAIL
NO SCALE

NOTES:

1. REQUIRED MINIMUM SEPARATION TO DREDGE BOUNDARY IS 2 FT FROM EXISTING FLOATS AND STRUCTURES.
2. A DREDGE DEPTH OF -10 FT MLLW IS REQUIRED FOR THE CONNECTOR CHANNEL AND ARGOSY BERTHING AREAS, WITH AN ALLOWABLE OVERDREDGE OF -12 FT MLLW.
3. A DREDGE DEPTH OF -14 FT MLLW IS REQUIRED FOR THE NORTH MARINA ENTRANCE DREDGE AREA, WITH AN ALLOWABLE OVERDREDGE OF -16 FT MLLW.

DRAFT

PURPOSE:
MAINTENANCE DREDGING

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:

1. WASHINGTON DEPARTMENT OF NATURAL RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL MAINTENANCE DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

PROPOSED DREDGING
DETAIL

IN: PORT OF EVERETT CONNECTOR CHANNEL,
PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

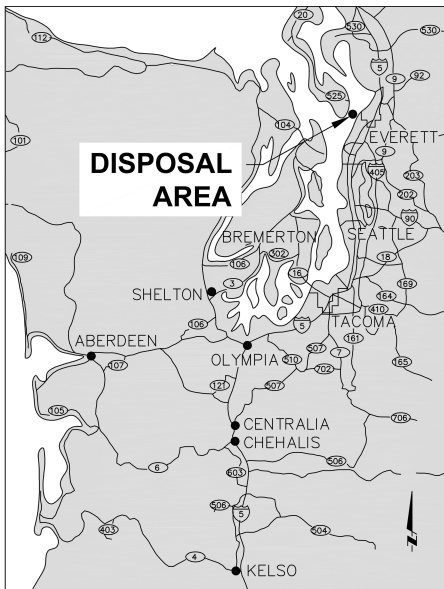
COUNTY OF: SNOHOMISH

STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: MARCH 2021

SHEET: 7 OF 8



VICINITY MAP

NO SCALE

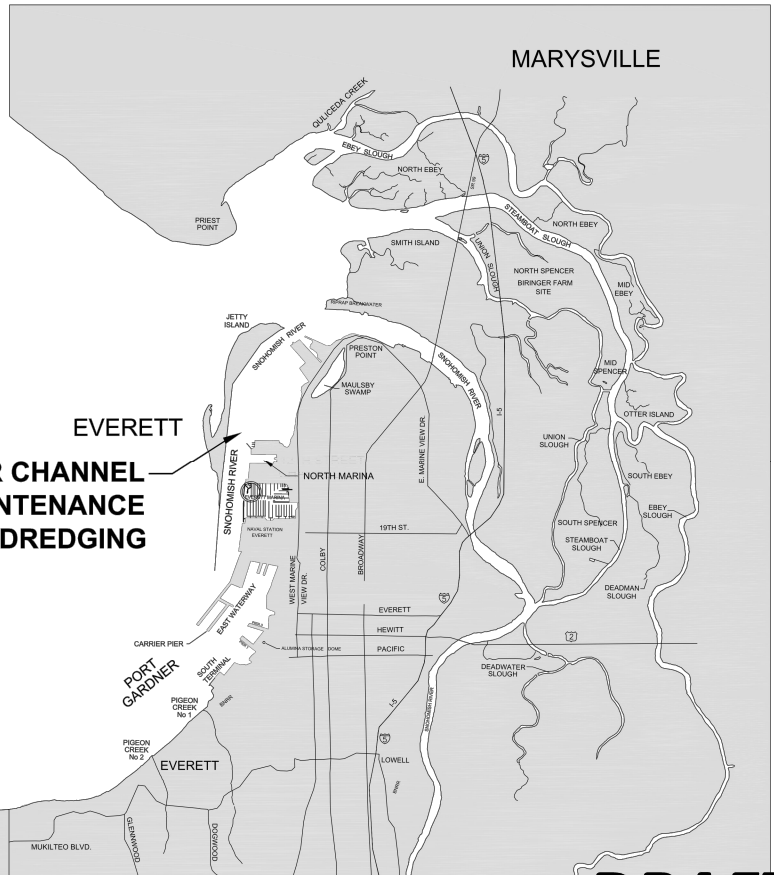
PORT GARDNER DISPOSAL SITE
 TYPE: NONDISPERSIVE
 AREA: 318 ACRES DEPTH: 420 FT.
 SITE DIMENSIONS: 4200 FT. BY 4200 FT. CIRCULAR
 DISPOSAL ZONE: 1800 FT. DIAMETER
 TARGET AREA: 1200 FT. DIAMETER
 BARGE POSITIONING METHOD: GPS
 NAD27 LOCATION: LAT 47° 58.86' LONG 122° 16.67'
 NAD83 LOCATION: LAT 47° 58.86' LONG 122° 16.74'

DISPOSAL AREA
CONNECTOR CHANNEL MAINTENANCE DREDGING

TARGET AREA

WASHINGTON STATE FERRY
 MUKILTEO/CLINTON ROUTE

MUKILTEO



VICINITY MAP

NO SCALE

DRAFT

PURPOSE:
 MAINTENANCE DREDGING

DATUM: MLLW= 0.0'

TOWNSHIP/RANGE: SEC 18 TWP 29N RGE 5E

ADJACENT PROPERTY OWNERS:
 1. WASHINGTON DEPARTMENT OF NATURAL
 RESOURCES

PORT OF EVERETT
CONNECTOR CHANNEL
GENERAL MAINTENANCE DREDGING

PORT OF EVERETT
1205 CRAFTSMAN WAY, SUITE 200
EVERETT, WASHINGTON 98021

OPEN WATER DISPOSAL SITE

IN: PORT OF EVERETT CONNECTOR CHANNEL,
 PORT GARDNER; SNOHOMISH RIVER CHANNEL

AT: PORT OF EVERETT

COUNTY OF: SNOHOMISH

STATE OF: WASHINGTON

APPLICATION BY: PORT OF EVERETT

DATE: MARCH 2021

SHEET: 8 OF 8

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APPENDIX B

Photographs



Photograph 1. Typical silty sand substrate observed throughout the site.



Photograph 2. Ulva intestinalis with typical substrate and wrack kelp.



Photograph 3. Layer of leaves, detritus, and wrack kelp (likely Laminaria saccharina).



Photograph 4. Eelgrass (Zostera marina) adjacent to the connector channel entrance.



Photograph 5. Dungeness crab (*Metacarcinus magister*) and light layer of organic/detritus.



Photograph 6. Individual from large school of Shiner Perch (*Cymatogaster aggregata*).